



**28<sup>TH</sup> EAA ANNUAL MEETING  
BUDAPEST, HUNGARY  
31 AUGUST - 3 SEPTEMBER 2022**



**ABSTRACT BOOK**

## ORGANISERS



## PARTNERS



## SPONSORS



## HOW TO READ THE ABSTRACT BOOK

The Abstract Book is ordered by session numbers which were allocated during the session submission (i.e., the number sequence is discontinuous).

Author's affiliation is stated in brackets following the author's name; where authors share the same affiliation, it is only stated once.

Index of Authors includes all session organisers and only the main authors of contributions.

Please note that names, titles and affiliations are reproduced as submitted by the session organisers and/or authors. Language and wording of titles and abstracts are not revised.

## 28th EAA Annual Meeting (Budapest, Hungary, 2022) – Abstract Book

**Technical editing:** Kateřina Kleinová (EAA)

**Design and layout:** Kateřina Kleinová (EAA)

**Design cover page:** Aliz Ertler

**ISBN:** 978-80-88441-02-1

European Association of Archaeologists

Prague, July 2022

© European Association of Archaeologists, 2022

**28TH EAA ANNUAL MEETING  
(BUDAPEST, HUNGARY, 2022)**

**ABSTRACT BOOK**



# CONTENTS...

10	United Europe of Things 3: Understanding Transition - Integration - [Re]Integration through Medieval Material Culture .....	7
12	Seeing the 'Art' in Artifacts: The Inter-connections of Archaeology and the Arts .....	10
16	The Dawn, Apogee and Modern Demise of Kurgans in Southeast and East-central Europe .....	18
17	Becoming a Published Archaeologist [ECA].....	23
27	Engaging the Public, Heritage and Educators through Material Culture Research .....	23
32	Skyscape, Landscape and Archaeology. Study of Ancient Buildings from Different Perspectives and Disciplines to Give Them a Cultural Meaning [SEAC-EAA] .....	27
35	Where's My Tribe? Developing New Approaches to Connectivity, Mobility and Community in Early Medieval Europe after the Ethnic Paradigm .....	32
38	Characterization of Lithic Material in Prehistory, Methods, Problems, Results.....	36
39	Presentism and the Archaeologies of the Present: Engaged Practices and Methodologies.....	39
45	Becoming Roman: The Role of Biological Resources in the Expansion of New Economic and Cultural Models throughout the Empire .....	44
51	Conquest, Migration and Cultural Change in the Medieval Mediterranean.....	50
53	Technology, Regionalisation and Environmental Adaptation in Europe and beyond [PaM] .....	59
67	Cremation Funerary Practices across the Roman Empire: A Bioarchaeological Approach.....	61
83	Climatic Changes in the Medieval World: Evidence for Adaptation and Resilience.....	66
85	Understanding Neanderthal Symbolic and Cultural Behaviour and Their Cognitive Underpinnings. Where Do We Stand? [PaM] .....	69
86	Prehistoric Warriorhood in Transition.....	70
90	The Technology and Use of Metals in the Prehistoric Eastern Mediterranean: Recent Advances through Microscale Analysis .....	76
93	Beyond the Chronology and Pathways of Dispersal: Reasoning the Use and Abandonment of Broomcorn Millet Cultivation across Eurasia.....	79
96	Neither River nor Lake: Human-made 'Waterscapes'. The Use of Ground- and Rainwater in Neolithic Times .....	85
98	Hunter-Gatherer's Societies in the Southwestern Europe between 18,500-10,000 cal. BP [PaM].....	87
100	Human Forensic Taphonomy – How Multidisciplinary Approaches Shed Light on Past Funerary Practices .....	94
102	Campaigning Strategies for Archaeology and Cultural Heritage - Principles, Strategies, and Practical Experiences .....	100
108	The Times Are a Changing - Socio-Cultural and Ecological Change during the Atlantic Biozone and Their Impact on Human Life [PaM] .....	103
109	Animal and Plant Management in Prehistoric Hunter-Fisher-Gatherer Communities [PaM] .....	105
112	Prehistoric Inter-Societal Dynamics along the Atlantic Façade II. Neolithic to the Iron Age.....	109
126	Limiting Spaces: The Attribution of Spatial Meaning through the Creation of Boundaries .....	112
127	Integrations, Interactions, and Intersections in Islamic Archaeologies of Afro-Eurasia.....	118
128	Above and around 60 Degrees North: Movement of Ideas, Practices, Materials and People AD 300-1300 .....	123
129	Populism, Authoritarianism, Autocracy and Other Kids of Neo-liberalism – in Academia and Archaeology .....	127
130	New Interactions and Relations with Heritage. Different Approaches between Heritage and Stakeholders .....	128
134	In the Margins of the Fabric: Towards a Social Archaeology of Industrial Impact in the Modern and Contemporary Eras .....	132
135	The Medieval Marketplace in Europe - Interdisciplinary and Theoretical Approaches to Its Biographies and Developments.....	136
142	Gender Archaeology at the Crossroads: The Future and Its Challenges [AGE].....	141
143	The Evolution of Coastal Archaeological Sites: Submerged, Preserved, in Flux .....	146
149	Interactions, Innovation and Communication in the Late Neolithic and Copper Age .....	150
153	Apps and Archaeology. Use of Apps as Archaeological Tools.....	160

154	Towards an Archaeology of Household Practices – Current Archaeological and Scientific Contributions .....	163
157	Finds Stories: Archaeological Biographies in Contexts of Mobility.....	168
161	Peripheral Regions in the Prehistory of Temperate Europe.....	172
162	Digital Humanities and Medieval Archaeology: Re-Integrating Isolated, Fragmented and Overlooked Archaeological Evidence .....	175
170	The Houses of Death as Ancestral Monuments. The Archaeology of Neolithic Long Barrows in Europe .....	181
174	Rhythms of Life. Exploring the Imprints of Temporalities and Annual Cycles on Prehistoric Settled Life.....	185
176	Ornaments as a Key to Understanding the Hunter-Gatherer to Farming Transition in Europe .....	188
177	Organic Materials in Tombs: The Quiet Protagonists .....	192
180	Multi-proxy Microarchaeological Approaches: State of the Art, New Advances, Limitations and Future Perspectives .....	195
181	Control the Divine: Integrating Sacred Spaces and Rituals at the 'Fringes' (Ancient Central and South Asia).....	206
184	Center vs Periphery. Interdisciplinary Approaches to the Study of Material Culture, Architecture, and Landscape in the Caucasus Region.....	210
187	The Network Former: Trade and Exchange of Glass in Antiquity.....	212
192	Multi-proxy Approaches to Kinship in the Greco-Roman World.....	217
194	Safer-Spaces Policies in Archaeological Practice [EAA ExB] .....	220
195	Silk: A Catalyst for Interconnection in the Sixth to Tenth Centuries AD/CE.....	221
196	"A Universe with an Additional Dimension": The Socioenvironmental Archaeology of Fishing [PaM] .....	226
197	Standardization in Qualitative and Quantitative Use-wear Analysis of Prehistoric Stone Tools: Discussing Issues and Solutions [PaM] .....	229
198	From Fire to Light.....	233
201	"For the Love" – The Impact and Potential of Amateur Enthusiasts on Archaeological Sites and Activities .....	238
203	Across the Maelstrom: Searching for New Departures in the Archaeology of the Viking Age .....	238
206	No Braudel for the Balkans? Forging a New, Interconnected Prehistory of the Balkan Peninsula .....	241
207	Remembrance of Things Past: New Approaches to the Construction and Uses of Cultural Memory from Iron Age to Antiquity .....	249
208	Telling Stories about Impacts of Academic Research in Archaeology on Society: Wider Lessons from the UK Research Excellence Framework Experience [EAA ExB] .....	251
210	Digging Women: Use and Misuse of Ancient Women as Role Models in Archaeological Research and Dissemination [AGE] .....	252
211	Right Here, Let's Get It Right Now. Collaborative Creation of Standards and Guidance to Define Good Archaeology in Different Jurisdictions.....	255
213	Isoscapes, Foodwebs and Provenance – Isotope Archaeology beyond Materials and Specialisations .....	258
215	Facing Water Resources and Variations in Central Asia from Prehistory to Timurid Period: Disaster(s), Adaptation, Anticipation .....	268
218	Science or Humanities – Whither Archaeology? .....	271
220	Apprenticeship as Research Method .....	276
221	Revisiting Husbandry and Subsistence in Southwestern Asia Using Integrated Approaches and the Latest Development in Bioarchaeology .....	278
222	Ad Salubritatem Civitatum. The Archaeology of Water Evacuation Infrastructures in Roman Urban Settlements ....	281
223	Winds of Change? Post-medieval and Historical Archaeology in Southern Europe and the Mediterranean .....	284
224	Hunter-gatherers Resilience: Adaptation Patterns to Climatic Shifts at Different Latitudes from MIS3 to MIS 1 [PaM].....	290
225	Anarchy and Archaeology: Towards New Theoretical and Practical Perspectives.....	296
226	Foreign vs Local in Medieval and Modern Age Foodways in the Baltic Sea Region.....	300
229	Development and Use of Garden Archaeology in Different Parts of Europe, Comparing Individual Approaches, Interactions, Cooperation to Asses Their Effectiveness.....	302
230	Sediment and Soil Archives to Decipher Human-environment Interactions in Wetland Landscapes from the Neolithic to the XXth Century.....	305
231	Bioanthropology in Western Asia: Moving forward (A Session in Honour of Prof Holger Schutkowski) .....	314
232	Dressing Europe: Mapping and Disseminating European Textile Heritage through Digital Resources .....	319

233	Islands, Monasteries and Water Management.....	324
237	Protecting the Past Is the Key to the Future: Rights of Archaeological Heritage Stakeholders and Social Justice.....	326
239	A Look beneath the Surface: Micro-archaeological and Geoarchaeological Approaches to the Study of Occupation Surfaces.....	330
241	Archaeology as Study of the Future.....	338
243	Coming Back to Life: Reuse of Medieval Buildings.....	342
248	New Approaches to Lithic Raw Material Studies: Inferring Past Human Mobility [PaM].....	345
250	From Local to Microregional and Beyond: Spatial Structures in and around the Early Medieval Carpathian Basin.....	354
252	Borderline Lithics: From Spatial Patterns to Social Processes during the European Neolithization [PaM].....	359
254	Understanding the Dynamics of Making and Trading Goods across Medium and Long Distances in the 2nd Millennium BC.....	364
256	Curation or Reburial — Current Practices and Decision Making on Storing Human Skeletons in Archaeological and Historical Collections.....	371
257	Big Project, Big Data: Creating a Web of Knowledge.....	374
260	Whose Pot Is It Anyway? Style, Influence, Integration and Meaning in European Ceramics.....	379
263	Craft Specialization in Worked Hard Osseous Materials: Conversations on a Complex Conceptual Category in Archaeology.....	386
264	Bioarchaeological Approach to Human Health throughout the Medieval Period in Europe.....	390
267	Towards the sea: human ecology, subsistence and adaptations along the European coasts from the Lower Palaeolithic to the Neolithic [PaM].....	397
268	Human Remains: Between Objects of Science and Lived Lives. Toward a New Ethics for Human Remains in Archaeology.....	404
269	More than Walls and Fences - The Importance of Space and Boundaries in Systems of Violence and Oppression.....	407
271	The Social Role of Pottery and Potters in Neolithic and Copper Age Societies of the Balkans and Central Europe.....	410
273	FAIRly Front-loading the Archive: Moving beyond Findable, Accessible and Interoperable to Reuse of Archaeological Data.....	418
274	Approaches to Communities in the Past and the Present.....	428
275	The Role of Archaeology (and Archaeologists) in the Covid-19 Recovery Plans across Europe and beyond [EAA ExB].....	435
280	Pottery and Identity in the European Neolithic: The Interpretative Path between Archaeological Features and (Pre)Historical Narratives.....	440
283	(Re)integration of the Carpathian Basin into the European Middle Palaeolithic: Cultural Contacts, Interregional Mobilities, Variability in Subsistence and Settlement Strategies [PaM].....	447
284	Visualizing, Interpreting, and Presenting Archaeological Sites to the Public.....	452
285	Gender Dynamics at the Dawn of the Classical World: An Indigenous Perspective [AGE].....	460
286	Public Archaeology and Sites of Conflict [Public Archaeology Community].....	465
287	Macroarchaeology - Definition, Objectives and Applications of a New Archaeological Paradigm.....	468
289	The Materiality of Lived Religion Under and After Rome.....	473
291	Interaction in Neolithization, Neolithization as Interaction. Archaeological Data and Analytical Procedures for Defining Interaction Contexts [PaM].....	477
298	Raw Material Acquisition, Management and Technological Choices from the Mesolithic to the Bronze Age in South-Eastern Europe [PaM].....	481
304	Investigating Székely History through Regional and Interdisciplinary Approaches.....	487
305	Unravelling the Urban Palimpsest: The Re-use and Integration of Urban Fabric in Time and Space [Urban Archaeology Community].....	491
306	Early Iron Age Landscape Transformations in the Carpathian Basin and Adjacent Areas.....	496
309	From the Present to the Past and Back: Crossing Disciplinary and Time Boundaries in Agricultural Research.....	501
311	Community Archaeology of the Edges: Challenges and Solutions.....	508
312	Continuity and Discontinuity of Transport Systems from Antiquity to the Present.....	508
315	New Technologies, New Trends, New Ethics in Cultural Heritage Management.....	513

316	Small Objects Reflecting Great Changes .....	518
320	Archaeologies of Displacement Heritage, Memory, Materiality .....	522
321	Human Resilience during Eurasian Paleolithic and Mesolithic from a Bioarchaeological Perspective [PaM] .....	524
323	Microhistory and Social Archaeology in Western Europe .....	532
324	Roman Housing on the Shores of the Eastern Mediterranean. Global Trends, Local Responses? .....	536
325	"Open Science" in Archaeology and Heritage: Challenges and Future Perspectives.....	539
326	Machine Learning and the Creation of Archaeological Narratives.....	542
327	Stone Age Stray Finds and How to Use Them [PaM] .....	544
330	Sustainability in Archaeology and Today: An Interdisciplinary Approach .....	551
331	Possibilities and Challenges of the Archaeological Science Revolution in the Caucasus.....	556
336	Experimental approaches to Palaeolithic and Mesolithic Archaeology [PaM] .....	561
337	Archaeology Matters. The Need to Re-define the Relevance of Archaeology [EAA ExB] .....	566
338	Pottery from Post-medieval Period in Carpathian Basin. Evolution or Revolution? .....	566
339	"More than Just Bones" - Understanding Past Human Adaption and Behaviour through the Study of Human Remains.....	568
340	North European Trading Networks for Iron and Copper.....	586
341	Oversea and Inland – Culture Contact Dynamics in the Mediterranean during the 1st Millennium BCE.....	589
342	What Do Archaeologists Want from a Distributed Science Infrastructure? Introducing IPERION HS and E-RIHS .....	592
343	Metals and Metalworking in the Borderlands .....	593
344	Integrating Neanderthal Legacy: New Opportunities for Cooperation [PaM].....	601
345	Let It Burn! Experimental and Ethnoarchaeological Approaches in Pyroarchaeology .....	608
346	Bringing Roman Coarse Ware to the Point: The Challenge of a Common Approach .....	615
347	Natural Resources of Highlands and Hinterlands in the Mediterranean.....	618
349	Dark Horse – Archaeologies of Horses and Horse Culture in the Middle Ages .....	622
350	[Re]Integrating a Dispersed Agenda: Advancing Archaeological Research in Central Eurasia.....	627
351	Routed Archaeology III – Getting around.....	632
353	Ethics, Conflict Archaeology and Society in the 20th and 21st Centuries.....	636
354	'Hidden Hillforts'. The Importance of Archival Sources for the Future Study of Fortifications [COMFORT] .....	639
355	Re-visiting the Global/Local Continuum in Archaeological Heritage Practice: Contrasting Histories, Perspectives, and Experiences within and beyond Europe.....	644
358	Can You See Me? Putting the 'Human' Back into 'Human-Plant Interactions' [ARCHWILD] .....	645
359	Borderlands, Interaction Zones, and Bounded Spaces in the Prehistoric Eastern Mediterranean: Interdisciplinary Studies in the Reconstruction of Connectivity .....	651
362	Balkan Archaeology as a Laboratory: Challenging Old Paradigms and Experimenting with New Ones .....	659
365	Life and Death behind the Wall: A Multidisciplinary Approach to Monasticism in Past .....	664
366	Interdisciplinary Approaches to the Analysis of Funerary Archaeology during the Bronze - Iron Age Transition in Atlantic Europe .....	669
367	Agent-based Modelling of Socio-ecological Systems in Archaeology. Towards a New Research Community .....	672
368	Avocational Metal-Detecting in Europe: International Experiences and Local Considerations.....	676
369	Commerce in the Late Antique West: Approaches to Analyse Trade Networks in Times of Change.....	676
371	Population History and Community Formation in Early Medieval East-Central Europe: Integrating Genetic, Isotopic, Archaeological and Historical Perspectives.....	680
372	Advances in Geometric Morphometric Methods Applied to Lithic Studies [PaM] .....	690
373	Discussing the Future of Big Data for the Study of the Human Past .....	693
374	The Archaeobotanical Puzzle: (Dis)Integrating Botanical Proxies to Better Comprehend Past Plant-People Interactions.....	697
375	The Societal Impacts of Climate Changes in the Past – What Can Hunter-Gatherer Archaeology Contribute to the Current Debate? [PaM] .....	702
376	Economic Systems in the Neolithic and Bronze Age: Pathways of Production, Consumption, Storage, Control and Exchange .....	705



378	Moving beyond the Fact of Mobility? Re-evaluating the Strengths and Limitations of Strontium Isotope Analyses in Archaeology .....	711
379	The Archaeology of Large-scale Conflicts: The Emergence of the Mongol Empire and the Invasion of Central-Europe in its Eurasian Context.....	720
380	Can you Future Proof Skill Development Work in Archaeology? .....	721
381	Waterscapes: Traces of Interaction between People and Water from Neolithic to Bronze Age Europe .....	722
382	Technology, Risk, and Change.....	727
383	Scaling up: Archaeological Science Contributions to Big-picture Narratives on Human-Animal Relations .....	731
384	Women's Status and Agency in the Neolithic and Metal Ages of Central Europe [AGE] .....	732
385	Place Name and Archaeology – New Interdisciplinary Approaches in Europe .....	737
388	Towards an Open Platform for Computer Simulations of Past Socio-ecological Systems.....	741
389	Moving into the Mediterranean – New Developments in the Research on Genetics, Mobility, Culture Change and Languages.....	741
390	All on Walls. Current Issues on Historical Wall Painting Science, Conservation, and Restoration .....	747
392	The Anti-HABI Toolkit: Practical Solutions and Measures for Preventing and Addressing Harassment, Assault, Bullying and Intimidation in Archaeology [AGE] .....	752
394	So Many Settlements so Few Graves? Neolithic and Chalcolithic Practices with the Dead in Circum Pontic Region and Southeastern Europe .....	754
395	Medieval Stone Monuments: Reuse and (Re)Integration .....	757
396	Reenactment and Living Museum – Make History Accessible .....	759
397	Archaeological Prospection and Field Evaluation Practice from Bologna Process to Convention of La Valetta. Do We Practice What We Preach? [Archaeological Prospection] .....	764
399	Linking Databases for Comparing Research: Do We Need a European Hillfort Information System? [COMFORT] ....	769
400	Step by Step. The Rough Road towards Community Archaeology.....	769
401	To Use or Not to Use: 3D Documentation in Fieldwork and in the Lab [3D-Archaeology] .....	772
402	Scaling Bronze Age Societies – Between the Micro and Macro .....	776
403	Domestication of Space: Internal and External Dwelling Structures in Middle and Upper Palaeolithic Sites [PaM] ...	779
404	Socio-environmental Systems and Resilience to Disturbance Regimes .....	781
405	"The Grass Is Always Greener on the Other Side?" The Benefit of the Local and Regional Lithic Raw Materials .....	785
406	Ancient and Traditional Crafts in Changing Environments: Addressing the Needs for Temporal Perspectives .....	786
407	Digital Religioscapes: Current Methodologies and Novelities in the Analysis of Sacr(aliz)ed Spaces.....	790
416	Challenging Island Archaeology with the Third Science Revolution .....	794
417	As Far as Vases Go: Studies on Ancient Greek Pottery Trade and Its Contexts.....	801
419	Using Forensic Archaeological Approaches to Inform the Past .....	807
420	EAA Community for Climate Change and Heritage (CCH) Roundtable.....	814
421	Space Syntax: The Material Imprints of Spatial Integration Processes .....	814
422	'... In with the New!': The Future of Archaeological Research in Medieval Europe .....	818
424	Actors, Not Spectators. Community Representation in Archaeology and Cultural Heritage in the 21st century.....	819
426	From Isotope Ratios to Narratives: Exploring the Ways that Biogeochemical Studies are Impacting Eurasian Archaeology .....	823
427	Prehistoric Histories: Linking Individual Agency and Broad Transformations.....	828
430	Percussive Osseous Industry a Human Revolution between Pre-formation and Waste Selection [PaM].....	830
432	Logistics and Natural Resources: Supply and Transportation through Time (5th century BC – 5th century AD).....	833
434	Creation of European Identities – Food, Textiles and Metals in the Iron Age Between Alps, Pannonia and Balkans.....	836
436	General session.....	839
437	Reintegration in Medieval Archaeology (MERC Forum) .....	844
438	Europe's medieval past: a manifesto (MERC Round table).....	844
	Index of session organisers and authors.....	848



**Theme: 2. [Re]integration**

**Organisers:** Sawicki, Jakub (Institute of Archaeology, Czech Academy of Sciences in Prague) - Lewis, Michael (Portable Antiquities Scheme; British Museum) - Vargha, Mária (Department of Archaeology, Charles University Prague)

**Format:** Regular session

Following two successful MERC-sponsored sessions at the EAA 2019 and EAA 2021 on portable material culture (i.e. archaeological small finds), we now wish to take the debate and discussion further at EAA 2022. As in previous years, we are interested in whether the idea of 'a unity of culture' within Medieval Europe is also visible in its portable material culture. To be more precise, what are the similarities and differences in portable material culture, 'in and between areas and regions, and in the processes of transition, integration and reintegration which we might observe through and in material culture? One of the aims of this session is to serve as a forum for researchers dealing with this topic within Europe to reintegrate, share ideas and thought processes. To date, the chronological framework has focused primarily on the high and late medieval periods (1000-1550). This time, we would like also to include more recent finds (up to ca. 1700), which may (for example) explore how specific trends change from the late medieval to the post-medieval period.

We would accept papers focusing on, among others:

- finds that are typical and/or rare in regions, as well as their comparison with other areas
- possible borders and peripheries of common material culture
- interactions between local material culture and imported things
- moments of change, including material culture (or technologies) taking over older ones
- theoretical studies about interpreting material culture and ideas of 'common material' culture
- the impact of finds gathered by metal-detectorists and other public finders
- grave finds and their presence in burials.

## ABSTRACTS

### 1 LETTERING ON MEDIEVAL AMPULLAE: EXPLORING ENGLISH AND WELSH FINDS WITHIN A EUROPEAN CONTEXT

**Abstract author(s):** Lewis, Michael (British Museum; Portable Antiquities Scheme)

**Abstract format:** Oral

Medieval lead ampullae are common in England and Wales, thanks to the work of the Portable Antiquities Scheme (PAS) recording archaeological finds made by the public. It is not known how these items - generally assumed to be vessels for holy water or oil - entered the ground, though various theories have been proposed, including that they were deliberately deposited for ritual purposes.

What is particularly fascinating about these small leaden items is that they can be decorated (sometimes ornately, other times not), also sometimes with letters. It is often presumed that these letters stand for saints and/or their cult centres - e.g. 'T' for St Thomas of Canterbury, 'W' for Walsingham - but that is by no means certain. This paper will test this theory by examining the distribution of ampullae in England and Wales within a European context, but also in the hope of better appreciating transition in art and style and integration of forms and types across Europe.

### 2 THE MEANING, USE AND REUSE OF PILGRIMBADGES - METALDETECTING AND ARCHAEOLOGICAL FINDS AS SOURCE TO MEDIEVAL RELIGIOUS PRACTICE IN DENMARK

**Abstract author(s):** Søvsø, Mette (Museum of Southwest Jutland)

**Abstract format:** Oral

Metal detecting and excavation activity in Denmark the last decades has not only changed the amount and distribution of finds related to pilgrimage and religious practice in medieval daily life. A much more varied and many faceted picture can be drawn today when it comes to the meaning, use and circulation of these artefacts in the medieval society. Observations of the finds, traces of use and find contexts like burials shows, that from the time pilgrim badges and related objects occur in the find material from around 1200, they were associated with inherent, protective powers. These properties, deriving from their origin, motives and symbolism, were useful not only for individuals but also to communities. It is clear that the objects often had an "afterlife" probably in the hands of several people or in different contexts. They were not always handled as delicate, sacred objects, but rather as practical utensils in everyday life and ritual.

### 3 **SEXUAL BADGES AND ITS UNIQUE VISUAL CULTURE: THE PERSPECTIVE OF THE LATE MEDIEVAL LOW COUNTRIES ON SEXUALITY**

**Abstract author(s):** Fenucci, Lisa (Group van Vooren - Department Archaeology)

**Abstract format:** Oral

In comparison to religious themed pilgrim badges, which are found throughout Europe, Late Medieval sexual badges have a sexual theme and are mostly found in the Low Countries. Therefore, these sexual badges are perceived as rare material culture, unique to the Low Countries. The rarity of these sexual objects does not automatically mean that the visual imagery that is depicted on these sexual badges is unique. This poster investigates if the visual imagery of the sexual badges really is as unique as the badges themselves are.

To better understand the rarity of the sexual imagery, this research focusses on the deeper analysis of three visual images that are regularly seen in sexual badges. The first visual concept compares figures of women displaying the vulva, depicted on sexual badges, with Sheela Na Gigs. The second category focusses on the depiction of the wound of Christ and its visual resemblance with the pointed oval in vulva badges, and the last category focusses on the fallus badges and its comparison with the Roman tintinnabulum.

Eventually, these results show that the visual imagery in sexual badges, for example vulva or fallus badges, are not completely unique to the region of the Low Countries. The true uniqueness of the sexual badges lies in the fact that they depict a seemingly similar sexual imagery to the one that can be found throughout Europe, but transformed it through the cultural context of the Low Countries.

### 4 **BLUE AND WHITE GLASS VESSELS AND EQUIVALENTS IN EUROPE IN THE 10TH-12TH CENTURY CE.**

**Abstract author(s):** Pactat, Inès - Gratuze, Bernard (Centre Ernest Babelon - IRAMAT - UMR 7065)

**Abstract format:** Oral

First considered as antique, the blue and white glasses found on elite and religious sites between the 10th and 12th centuries CE contrast with the contemporaneous glass productions, using wood or plant ash as flux. Although they are natron glasses, the forms and the contexts of discovery are typical of the Middle Ages. Their manufacture is based on the recycling of mosaic tesserae and perhaps ancient coloured vessels, a process described in the 12th century treatise of the monk Theophilus, *De Diversis artibus*. The decoration of these specific glass vessels plays with the contrast between a translucent dark blue body and opaque white trails and droplets. White vessels with a vivid coloured decoration and others with the same decoration associated to a purple or a green body belong to the same group. We offer here an overview of findings, including unpublished data, to discuss the significance of their large distribution, from Norway to Italy. These glass vessels seem to share the same symbolism, which makes sense over a very huge territory among religious and secular elites. Their manufacturing process also certainly gives them a special value. It will be discussed using archaeometric data and compared to other recipes in use at that time. Blue and white glass vessels and their equivalents are part of a common material culture covering most of the medieval Europe. Their interpretation constitutes an archaeological and a historical challenge to understand the diffusion of goods and/or knowledge across these various territories.

### 5 **TOOLS OF A MEDIEVAL RURAL METALWORKER**

**Abstract author(s):** Vargha, Maria (Charles University Prague)

**Abstract format:** Oral

The present paper showcases a unique find complex, the late-romanesque tools of a rural metalworker. The assembly, consisting of 25 items, has been discovered piece-by-piece by years of metal-detecting and was submitted to the Katona József Museum of Kecskemét together. The find complex consists of tools for shaping sheet metal: chasing tools, and several dies, all cast from brass; some not even shaped after casting, some of them quite worn. The designs – amongst others, four-lobed frames, various geometric forms, lilies, and a bird show a late Romanesque style.

The site was disturbed by agricultural works, which brought the finds up to the topsoil. Although the Museum has conducted two seasons of excavations to verify the context of the discoveries, unfortunately, there is little to know about it. It has been confirmed that an Avar period cemetery was once on the site. Later, a larger village developed there in the high middle ages, including a church and churchyard. The village ceased to exist in the thirteenth century, perhaps in connection to the Mongol invasion of the country; its name is lost. This unique find complex offers a rare insight into the metalworking practices of the contemporary rural communities, something that we otherwise have very little knowledge about.

6

## WHY THE BELLS RING FROM WEST TO EAST? A WESTERN TECHNOLOGICAL PATTERN OF BELL CASTING IN MEDIEVAL TRANSYLVANIA

**Abstract author(s):** Cringaci Tiplic, Maria Emilia (Institute of Social Sciences and Humanities Sibiu, Romanian Academy)

**Abstract format:** Oral

Although hundreds of churches and numerous medieval bells are documented in Transylvania in the 13th-15th centuries, very little is known about the process of casting medieval bells in Transylvania from an archaeological point of view but also from a documentary perspective.

According to the written data, the bell craftsmen are attested in the most important towns of Transylvania (Sibiu, Sighișoara, Brașov, Bistrița, etc.), but the most exciting and mysterious chapter regarding their history concerns the workshops and the places, where the bells were cast. This paper aims to present a very rare find in Transylvania, which shows very good similarities to Central and Western European ones. It is about a bell-casting pit discovered inside a Romanesque church in southern Transylvania, namely in Cîsnădie, very close to Sibiu. Cîsnădie, similar to Sibiu, is a settlement established during the Arpadian king Geza II (1141-1161) and it is part of the process of German colonization. In 2017 and 2019-2020, as a result of an extensive restoration project of the medieval fortified church of Cîsnădie, archaeological research was carried out for the first time. Fragments from a medieval bell-casting pit were identified in one of the trenches made inside the church, near the foundations of the western bell-tower. In our presentation we aim to discuss about the casting technology used in medieval Cîsnădie and the itinerant bell craftsmen, to suggest a chronology of the bell-casting pit and to identify the technological pattern which could be compared with other bell casting in Central and Western Europe.

7

## DRESS ACCESSORIES AS GRAVE-GOODS: THE CASE OF THE CHURCHYARD CEMETERIES OF SIBIU AND BAIA MARE

**Abstract author(s):** Szocs, Peter Levente (County Museum Satu Mare, Romania) - Marcu-Istrate, Daniela (Vasile Pârvan Institute of Archaeology, Bucharest)

**Abstract format:** Oral

Rescue excavations carried out during the last decade, have revealed a large number of medieval and early modern burials belonging to the churchyard cemeteries of the Transylvanian urban parish churches. The Lutheran Church of Sibiu (Nagyszeben, Hermannstadt) is the former medieval parish church of the town, and the religious center of the Transylvanian Saxons, inhabiting the southern part of the province since the 12th century. The exterior of the church was researched in 2005, while the interior in 2018 and 2019, revealing more than 2000 burials. In case of Baia Mare (Nagybánya, Frauenbach/Neustadt) the site of the former medieval parish church was researched during 2012 and 2014, revealing more than 700 burials. Both the towns were major economic centers during the Middle Ages and the Early Modern period: Sibiu was a hub of trade and craft of southern Transylvania, while Baia Mare a center of gold- and silver-mining and -processing in the northern part of the province. The earliest graves dates back at the beginning of the settlements: the 12th century at Sibiu and the 14th century at Baia Mare, while in both cases the cemeteries were in use until the 18th century (with sporadic continuation in the later decades). These aspects, more precisely the social and economic statuses of the towns, the number of the researched graves and their chronology make the two sites exquisite for individual and comparative analysis. In this sense, a brief survey will be presented on the types of the discovered grave-goods, focusing especially on the most numerous categories of dress accessories. In the same time, the changes during the functioning of the cemeteries will be highlighted, where the contexts of the discoveries permit. Furthermore, a comparative view of the finds, and their analogies might give an insight into the regional specificities of these finds.

8

## WERE THERE BORN A "NEW" TRADITION? EARLY MODERN SEGMENTED BELTS FROM CENTRAL EUROPE

**Abstract author(s):** Sawicki, Jakub (Institute of Archaeology, Czech Academy of Sciences in Prague)

**Abstract format:** Oral

In the 16th century, a new type of a female dress accessory can be observed in Central Europe. These items are often called in the literature of the subject the Bridal's girdle (German: „Brautgürtel“) and seem to be specific for the region. They are known from iconography, museum collections, as well as from texts from the era, i.e. probate inventories and criminal court records. Most of the specimens known from these sources are valuable items made of precious metal alloys.

The situation is slightly different with the archaeological finds, where the majority of specimens are made of copper alloys. In the older literature of the subject, segmented belts were often confused with the clasps and fittings of books, and even now, there are only few archaeological studies dedicated to those objects. The majority of finds consist only of single parts of the whole segmented belts, which had a complex construction. However, this picture

is complemented by funerary finds that allow the reconstruction of entire belts and also allow to ask more questions regarding the social context.

The purpose of this presentation is to discuss these characteristic belts, classify them, and try to understand this specific phenomenon.

## 9 LOCAL COOKS MEET FOREIGN GOODS: IMPORTED POTTERY AND LOCAL SOAPSTONE AT A PROTO-URBAN SITE ON THE EUROPEAN PERIPHERY

**Abstract author(s):** Blobel, Mathias (University Museum Bergen)

**Abstract format:** Oral

It is a truism in Norwegian medieval archaeology that there was no local pottery production in the country during the Middle Ages. Nevertheless, a large amount of ceramic vessels from the time period have been found, overwhelmingly in urban and proto-urban sites. These imports, mostly from central and western Europe, are a phenomenon unique to the Middle Ages (and later periods). The sudden contact with foreign tableware and kitchenware must have had an impact on local foodways. This paper looks at how this change is reflected in the finds spectrum from the medieval settlement of Borgund in Western Norway. In this proto-urban site, traditional local soapstone vessels (as well as bakestones and wooden vessels) were used side by side with imported pottery. The site covers the period from the first appearance of imported pottery to the disappearance of soapstone as a cooking medium by the end of the Middle Ages and thus makes it possible to chart this crucial period in Western Norwegian foodways.

## 10 FASHION ON THE TABLE – TABLEWARE OF WESTERN ORIGIN AND THEIR INFLUENCE IN LATE MEDIEVAL TRANSDANUBIA (HUNGARY)

**Abstract author(s):** Kovács, Bianka (Institute of Archaeology, Research Center for the Humanities)

**Abstract format:** Oral

Tableware is an interesting group within the medieval archaeological finds, as it had not only functional but also representative role. So the share of import products in this group is relatively high. Western goods were already present in the early centuries of the Hungarian Kingdom, but from the 13th century onwards they played a more important role. The latter is also the date from which we can clearly distinguish between kitchen utensils used for cooking or storage and tableware used for serving in Hungary. Foreign goods have always played an important role at the tables of the upper classes (metal, glass and ceramics alike). The more distant western products (e.g. Siegburg and Dreihäusen cups) are found only by the highest layer, while the closer ones (e.g. Loštice cups) are also widespread among the broader nobility. However, in many cases local potters also made ceramic imitations (e.g. about metal cups), which were the possibility of imitation and an affordable luxury for the lower classes. These social differences are a good indication of the direction and intensity of trade relations in the past, but also of the spread of a common material culture. The presentation will focus on foreign ceramic ware of the 14th-15th century and their influence on the local production in the western half of Hungary, but will also cover other types of tableware.

---

## 12 SEEING THE 'ART' IN ARTIFACTS: THE INTER-CONNECTIONS OF ARCHAEOLOGY AND THE ARTS

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Jameson, John H (ICOMOS ICIP; ICOMOS ICAHM) - Tint, Küllike (Tallinn City Museum)

**Format:** Regular session

The practice of archaeology, as well as archaeologically derived information and objects, can inspire a wide variety of artistic expressions ranging from straightforward computer-generated reconstructions and digital interventions to traditional artists' conceptions and other art forms such as public sculpture, poetry, music, opera, theatrical performances, exhibits, and storytelling. Although some level of conjecture will always be present in these works, they may be no less conjectural than technical interpretations and have the benefit of providing visual and conceptual metaphors that can communicate context, setting, and resource significance in compelling, novel, diverse, and unique ways. Conversely, experience with and exposure to art can inspire researchers to use and produce artistic and innovative expressions. These cognitive connections between archaeology and the arts reflect an inferential approach in defining, explaining, and introducing an object or resource and making it more meaningful to the public.

Our session examines a variety of examples of this approach as it applies to more meaningful and effective processes of interpretation that emphasize public awareness, access, and inspiration. We invite illustrations that show the relationships between archaeological phenomena and artistic representation, i.e., how archaeology has inspired artistic expression, and, conversely, how artistic expression has affected the ways archaeology is carried out and perceived by the public. Our hope is that the session will serve as a cornerstone for developing a substantive elaboration and publication sequel to an innovative book with a similar theme, entitled *Ancient Muses: Archaeology and the Arts* (University of Alabama Press, 2003).

**1 BEYOND ANCIENT MUSES: CAPTURING THE INTERPLAY BETWEEN ARCHAEOLOGY AND THE ARTS**

**Abstract author(s): Jameson, John H (ICOMOS)**

**Abstract format: Oral**

The practice of archaeology, as well as archaeologically derived information and objects, can inspire a wide variety of artistic expressions ranging from straightforward computer-generated reconstructions and traditional artists' conceptions to other art forms such as 2- and 3-dimensional art, public sculpture, poetry, music, opera, theatrical performance, and storytelling. Although some level of conjecture will always be present in these works, they may be no less conjectural than technical interpretations and have the benefit of providing visual and conceptual metaphors that can communicate context, setting, and resource significance in compelling, novel, diverse, and unique ways. These cognitive connections between archaeology and the arts reflect an inferential approach in defining, explaining, and introducing an object or resource and making it more meaningful to the public. In this paper, I present the results of the Ancient Muses project and book that presented case studies of "interpretive narrative archaeology," the practice of using creative methods to interpret and present current knowledge of the past. In examining examples of connections between archaeology and the arts, our plan is use the outcome of this session to publish a sequel that addresses the modern interplay between archaeology and the arts and how this is changing public perceptions about the meanings and values associated with material culture in relation to cultural and historic contexts, communities, and belief systems.

**2 NEW TECHNOLOGIES ANT THE INTER-CONNECTIONS BETWEEN MAYA ARCHAEOLOGY AND THE ARTS**

**Abstract author(s): Munoz Cosme, Gaspar (Universitat Politècnica de València) - Vidal Lorenzo, Cristina - Aliperta, Andrea (Universitat de València)**

**Abstract format: Oral**

Research into the main pre-Hispanic cities of the Maya area has benefited greatly from the existence of abundant illustrations made by explorers from the 18th century onwards. These intrepid travellers, who in many cases were also artists, embarked on the adventure of discovering and documenting these spectacular cities, most of them embedded deep in the tropical forest. Their drawings, engravings, watercolours and (in later stages) photographs are today fundamental tools of archaeology and, at the same time, authentic expressions of the visual culture of the eighteenth, nineteenth and twentieth centuries.

The diffusion of these images and travel diaries in North America and European countries were an incentive for other travellers of different nationalities to undertake expeditions to the heart of the Maya area. Their initial endeavours were followed by the organization of scientific research projects sponsored by various national and foreign institutions. The images became very valuable testimonies for the conservation and restoration of buildings and sculptural monuments, as well as for iconographic research. The introduction of new digital technologies in the 21st century and their application in archaeology has helped to produce some interesting reconstructions and 3D models of these buildings, monuments, and objects of material culture. In turn, these models have served to create another series of highly valued applications today, such as proposals for videomapping od archaeological ruins or other immersive digital experiences, a reflection of contemporary visual culture.

In this paper we present illustrations of the Palace of the Governor at Uxmal, which show the relationships between archaeological phenomena and artistic representations from the 19th century to the present day. These images are the result of our current research at this archaeological site in the Yucatan Peninsula (Mexico), inside the framework of the MAYATECH project.

**3 THE EYE OF THE BEHOLDER: ART APPRAISAL AS AN OBSTACLE TO ARCHAEOLOGICAL CONTEXT, THE CASE OF EARLY CYCLADIC ANTHROPOMORPHIC SCULPTURE**

**Abstract author(s): Hadji, Athena (DIKEMES - College Year in Athens; American University of Rome)**

**Abstract format: Oral**

About 5,000 years ago a small-scale culture flourished in the central Aegean archipelagos, producing, among other fabulous artifacts, a wide array of mostly marble sculptures echoing the human form. Until the advent of modernism in early 20th c. art and with the prevalent paradigm of classicism, the abstract renditions of the so-called Early Cycladic sculpture were considered brutal, naïve, ugly, 'abhorrent' (sic).

The rapid shift in their appreciation by the likes of Pablo Picasso, Henry Moore and Barbara Hepworth, among other proponents of modernism, resulted in an unprecedented popularity for the type, also a priority of a falsified aesthetic study thereof, at the expense of the archaeological context. With looting and forgery gaining ground in the 1960s,

thousands of the so-called figurines circulated widely in collections, museums and auction houses and lack of provenance rendered a systematic archaeological study almost impossible.

Art in this case worked as a distorting mirror, leading even established scholars to negate the obvious presence of painted-on details on the sculptures. The present contribution will discuss the relationship between art and archaeology as a contested category from a twofold perspective: the priority given to art in the archaeological record and its study as well as the effect of art-derived approaches and fallacies to the practice of archaeology.

#### **4 VISUALISING THE DEVELOPMENT OF A DISCIPLINE: THE ATLAS OF ARCHAEOLOGY – CHARTING THE HISTORICAL TRANSFORMATIONS OF A DISCIPLINE**

**Abstract author(s): Sinclair, Anthony (University of Liverpool)**

**Abstract format: Oral**

Archaeology has shared a long, fruitful relationship with geography in the creation of visual ways to understand our information. The map, and the historical atlas have become well-established and easily understood visual media in both disciplines for expressing an understanding of transformations in human behaviour across space and time. In contrast, traditional histories of disciplinary change (including archaeology and geography) take inspiration from history. They employ the form of textual narrative written following through the close reading of documents by a specialist. The historical process of transformation becomes a thread, narrating the story of interaction of people or themes or objects across time. Where visual media are present they are usually photographs of protagonists in the narrative be it person, place or object.

This paper explores the application of science mapping of bibliometric data – the indexed metadata of documents – for the construction of an historical atlas of the development of the discipline of archaeology since 1960. A series of interactive science maps will be presented to explore the relationships between themes, people, places (of study and publication) across time in an interactive manner, perhaps allowing us to escape the confines of the traditional literary narrative.

#### **5 INTERDISCIPLINARY RESEARCH ON THE BODY DECORATION OF A MUMMY FROM PACACHAMAC (PERU)**

**Abstract author(s): Bak, Judyta (Jagiellonian Univeristy) - Gerst, Robin (Goethe-Universität Frankfurt)**

**Abstract format: Oral**

The depots of the "Ethnologisches Museum" Berlin, Germany hold several human remains with a pre-columbian context from the Andean region. The collection includes mummified body parts and full-body mummies. Several of the mummies are still wrapped within the bundle (fardo) while others were left unwrapped earlier.

One of the unwrapped mummies presents an eye-catching set of unic, permanent skin marks (tattoos) with a very good state of preservation. The presumed place of discovery is the archaeological site Pachacamac near Lima (Peru), beyond that there is no cultural or chronological connection known. To date, only few studies have been conducted on this body, not have the findings been published, besides some examinations with conventional X-ray equipment in 1993. Apart from that, the skin signs of this body have not been recorded and described until now.

The proposed presentation aims of this new research is to collect and compile the existing results, to complement the approach with new scientific and archeological methods, in order to finally try to contextualize the more or less provenance-less body. The first results of an interdisciplinary research team dedicated to the questions around this mummy with different points of view, mainly anthropological and archaeological perspective, including archaeometric surveys and digitization, scientific investigations, anthropological data and iconographic comparisons.

#### **6 JUXTAPOSED: COLLABORATIONS WITH ART AND ARCHAEOLOGY**

**Abstract author(s): Nimura, Courtney - Creswell, Miranda (University of Oxford)**

**Abstract format: Oral**

The use of artworks in archaeology could be viewed on a spectrum, with historical visual reconstructions on one side, visual metaphors on the other, and a myriad of ways of illustrating archaeological research in between. However, what happens when an artwork and a piece of archaeological research are juxtaposed without an obvious representative connection between them? Does this allow the viewer and reader to think and interpret more freely and lead to more multi-vocal ideas than those generated by direct illustrations? Is it possible to present these disparate works on an equal footing?

The juxtaposition of art and archaeology can show two distinct and separate ways of investigating one topic. This may help inspire ideas and interpretations that are difficult to define in words or visual terms and fall between two ways of investigating, such as poems that relay a mood or an unexpected moment for the reader to consider. In this paper, University of Oxford School of Archaeology's Artist-in-Residence Miranda Creswell and archaeologist Courtney Nimura will present recent work undertaken by Miranda and members of the School, from a recently published



Atlas to a public engagement project. Through these case studies, they will consider the questions posed above and offer insights into this type of collaborative working.

## **7 EDUCATION FOR ARCHEOLOGY AND THE ARTS IN THE ROMAN RUINS OF MILREU, ALGARVE, PORTUGAL**

**Abstract author(s): Tété Garcia, Cristina (DRCA; CEAACP/UALG)**

**Abstract format: Oral**

This communication intends to present the results of a cultural promotion program, which was developed between 2015 and 2020, at the National Monument of the Roman Ruins of Milreu.

This programme was developed by the Algarve Regional Directorate of Culture, aimed to bring the population closer to its Archaeological Heritage, disseminate scientific knowledge in its various aspects of archaeology, geology, astronomy and landscape and promote artistic creation in a space of exceptional beauty.

Thus, it was possible to carry out activities to explore themes related to the History of the Monument, involving schools and the general public, taking advantage of the local synergies of artists, local associations and the university, promoting the exercise of different perspectives and artistic practices on the Archaeological Heritage.

Some practical cases related to creative workshops are presented through the exploration of themes such as Roman mosaics, symbols and money in Roman times, the use and application of medicinal and aromatic herbs, the traditional techniques of application of lime in the covering of tiles, pottery, the preparation of incense, among other activities.

Finally, the exploration and interaction with the archaeological site and its landscape through the promotion of artistic expression in its various aspects, such as "land-art", school theater, popular music, proverbs, shadow games, plastic expression, video production and traditional storytelling.

In conclusion, this non-formal education and artistic expression project developed affective bonds between the archaeological site and its community, teaching its meaning and value for the future generations.

## **8 PUBLIC ARCHAEOLOGY AND DANCE - A CASE OF TALLINN CITY MUSEUM**

**Abstract author(s): Tint, Küllike (Tallinn City Museum) - Tuominen, Suvi (University of Arts Helsinki)**

**Abstract format: Oral**

The paper presents an event that took place in Tallinn City Museum in September 2019. "One object, many stories" was an interplay between public archaeology and dance, where performers conveyed various meanings and interpretations of archaeological objects and excavations. The preliminary purpose of the project was to materialise the liminal space between the preservation of museum artefacts and the engagement of the public. The museum turned into an immersive performance space that allowed the public to connect with the objects through different sensory experiences. The bodies of the dancers used archaeological finds dynamically in the performance and so evoked the imaginations of the museum visitors. The presentation also brings forth different types of data that was collected from the performances and from the museum visitors. Throughout the performance weekend the museum visitors were encouraged to express their reactions, interpretations and feelings onto answering sheets. These answers will then be taken into account in the future public archaeology projects.

## **9 EXCAVATION PRAXIS IN AN ART/ARCHAEOLOGY TOPOS**

**Abstract author(s): Ifantidis, Fotis (University of the Aegean, Department of Cultural Technology & Communication)**

**Abstract format: Oral**

The focus of the paper is the archaeological photo-ethnographic research carried out on the excavation of a Neolithic site, that of Koutroulou Magoula in Central Greece. The static and moving imagery produced during the excavation praxis is a theme, which -though extremely familiar, and embodied, to the archaeological agents- has only very recently entered the field of an academic discussion regarding its expressive and hermeneutic potential qualities in the context of the creation of an art/archaeology topos -either as the key component of an art installation, an alternative academic documentation or a non-artefactual museological proposition aiming to the public.

To illustrate the various issues that emerge in imagining and re-imagining these art/archaeology topoi, examples are drawn from previous visual experimentations concerning both the excavation practice and the archaeological processes in general, and from the Koutroulou Magoula work-in-progress, which is related to the creation of a phygital, hybrid, art/archaeology museological installation.

## 10 **ARCHAEOPOETICS: A CONTEMPORARY ART INSTALLATION PRESENTED IN AN ARCHEOLOGY MUSEUM**

**Abstract author(s): Saillant, Francine (Université Laval) - Courier, Camille (UQAM)**

**Abstract format: Oral**

The presentation offers a virtual staging and discussion of the exhibition Archéopoétique and its sequels, which began in August 2021 at the archeological museum Îlot des Palais (Quebec, Canada) and will continue in 2022. The exhibition suggests a staging of 'false figurines' inspired, among other things, by Greek figurines founded at the Lipari Museum of Archeology (Italy) as well as at the Museum of Anthropology in Mexico City. The exhibition is a free, playful and poetic assemblage of scientific elements (earth blades, measuring tools), pieces founded in the archaeological site of the Îlot des Palais and figurines created by the anthropologist artist from a very large body. Anthropology Francine Saillant has joined the artist Camille Courier whose large format drawings create a dialogue with the figurines of F.Saillant and the spirit of the place, in particular the presence of Egyptian figurines dating from 600BC. within the Îlot. A sound creation by Alexandrine Boudreault-Fournier completes the installation. The discussion will focus on the notion of beauty, and authenticity in art and archeology. ans in the context of the dialog between contemporary art and archeology.

## 11 **ANCIENT AESTHETICS, PERCEPTION, AND CREATION OF BEAUTY. PALEOLITHIC AND MODERN ARTISTS' MINDS CONVERGE IN THE PROJECT "MATTER, GESTURE, SOUL"**

**Abstract author(s): Lindstrom, Torill Christine (University of Bergen; SapienCE, Univ. of Bergen)**

**Abstract format: Oral**

Ancient artefacts often strike us as being astonishingly beautiful. To have a distinct sense for beauty, seems to be a typical and exclusive human ability, connected to higher cognitive functions in the brain. As the brain evolved, so did the aesthetic and artistic creativity. In one investigation we study whether the aesthetic qualities of artefacts developed over time in the Paleolithic, using standardized criteria of aesthetics. In another investigation we study whether the brain activity is different during the production of stone tools of varying complexity (Oldowan, Acheulian, Levallois, Still Bay). In the "Matter, Gesture, and Soul"-project, a collaboration between SapienCE Centre for Early Human Cognition and Department of Contemporary Art, archaeologists and artists collaborate in exploring the artistic qualities and semiotic properties of ancient artefacts and symbolism. We expand their elements in novel works of art, and we express them, both artefacts and the art they inspire, in a museum exhibition, open to the public: "Dig it up, and put it in a bag" at The University Museum in Bergen, Norway. The exhibition is connected to a book "The Palimpsest", published by The University of Bergen. It is written by a team of artists, archaeologists, and a psychologist, exploring the materials, meanings, emotions, moments of imagination, perceptions, and experiences of creativity in both the ancient and the modern mind. Mutually inspiring for both archaeologists and artists!

## 12 **POSSIBILITIES OF INTERPRETATION OF THE NON-ATTRIBUTED ARTIFACTS**

**Abstract author(s): Chikunova, Irina (-)**

**Abstract format: Oral**

During the excavations of the Sargatka culture dwelling of the early Iron Age a small clay object was found. It is a hollow cylinder with a diameter of 4.5 cm and a length of 6 cm. The ends are deaf. In the middle of the forming face there was a round hole with a diameter of 1 cm . This item could not be attributed. And only a happy accident was able to lift the veil of secrecy in the process of cleaning this object from sand and dust. When blowing sand out of the inner space, a melodious sound was extracted. It turned out that when air is blown into the hole at a certain angle, the sound inherent in all ceramic whistles is obtained. Thus, we can say that this is one of the first known musical instruments of the Sargatka culture of the Early Iron Age in the territory of Western Siberia.

## 13 **KHANQAH ARCHAEOLOGY**

**Abstract author(s): Khalilli, Fariz (Azerbaijan State Culture and Art University)**

**Abstract format: Oral**

Various archaeological researches were carried out in Azerbaijan in the field of Khanqah Archaeology over the last 10 years. Agsu Archaeological Expedition conducted excavations at Shikhmazid Khanqah situated in Agsu City and found a mosque and a tomb, as well as Muslim graves with jar cover around the tomb in 2012-2014. MIRAS Social Organization in Support of Studying of Cultural Heritage and International YOCOCU Association carried out conservation and consolidation work in Sheikh Dursun Tomb, which belongs to Sheikh Dursun Khanqah, and read the Arabic inscriptions over the tombstones in 2018. The remains of another building belonging to the Khanqah were also revealed while cleaning the area around the tomb. Agsu Archaeological Expedition conducted archaeological excavations in Pir Muhammed Khanqah in Basgal settlement of Ismayilli region in 2019-2021, studied epigraphic samples of the mosque, ancient plane tree and grave monuments. A project was prepared to turn this Khanqah into an

archaeopark and the work is being done in that direction. Agsu Archaeological Expedition conducted archaeological research in Pir Omar Khanqah located in Avakhil Village of Shamakhi region in 2020. The expedition discovered the tomb of Pir Omar Khalwatiyya, the founder of Khalwatiyya Sufi Order, the inscription of his tomb, his grave, the graves of his successors and other epigraphic samples. Khanqah Archaeology will allow to determine the methods of studying khanqahs - training centers that play an important role in social, cultural, economic and political life of Turkic-Muslim cities on the historical Silk Road.

## 14 **ARCHAEOLOGY AND THE ARTS: THE ANCIENT OLYMPIC GAMES AS A SOURCE OF ARTISTIC INSPIRATION**

**Abstract author(s): Pateraki, Kleanthi (Freelance)**

**Abstract format: Oral**

The aim of the oral presentation is to highlight how the ancient Olympic Sports and Music (performing arts) Games, held in the Panhellenic Sanctuary of Zeus at Olympia from 776 BC. until 393 AD, were a prolific source of artistic inspiration.

Firstly, the main premises (the Stadium, the Gymnasium, the Palaestra) will be referred. Secondly, the relevant ancient sources (i.e. the list of the Olympic winners, the account of the 2nd c. AD traveller Pausanias) will be mentioned. Moreover, findings related to the competing events (aryballoi, dumbbells, strigils) and the athletes' victories (athletes' statuettes, inscriptions with rules and lists of athletes, etc.) will be presented.

Then, attention will be focused on the numerous works of ancient Greek literature (e.g. Pindar's victory odes, epigrams, etc.) and the arts (sculpture, painting, vase painting, numismatics, etc.), that were inspired from the specific Games. Other artistic expressions of later periods with main theme being the Olympic Games will be examined. Art competitions, which formed part of the modern Olympic Games from 1912 to 1948, will especially be mentioned; also, "The Noren Curtains", the exhibition presented at the Olympic Agora of Tokyo 2020 with the works by five Olympian and one Paralympian artists will be discussed.

## 15 **IMAGINE TO KNOW MORE – ART AS CREATIVE WAY TO REAWAKEN EGYPTOLOGICAL AND ARCHAEOLOGICAL COLLECTIONS**

**Abstract author(s): Zinn, Katharina (University of Wales Trinity Saint David)**

**Abstract format: Oral**

This paper focuses on case studies involving two fine-arts painters, a poet and a ballet choreographer/dancer, which are part of a unique annually recurring activity called The Museum of Lies within a wider project – led by the first author – of literal and cultural (re-)discovery of neglected ancient Egyptian artifacts completely devoid of their archaeological provenance and kept in Cyfarthfa Castle Museum, Merthyr Tydfil, Wales.

Inspired by the archaeological artifacts, artists, poets, craftsmen and pupils studying either art as A-level subject or getting acquainted with the skill of writing short-stories, are creating alternative narratives since 2017. These creative outcomes are exhibited together with the objects and their academic descriptions in annual pop-up exhibitions outside the museum. The artwork and stories function as simultaneous types of cultural representations. The emotional power and imagination connected with artistic representations allows to invoke and capture an inherent potential which otherwise cannot be detected. All narratives taken together allow to write a full object biography via different media (academic outputs, exhibitions, story-telling, and the Museum of Lies) for different audiences, thus capturing the temporality of social agency and changing identities these artifacts have or are able to stimulate. As such, they not only help to "unpack the collection" and to trace the "networks of material and social agency" (Byrne et al. 2011), but also connect different audiences with different interests and bring the objects back to life.

This paper and videos of Julie Davis and Prof Catrin Webster (painters), Samantha Wynne-Rhydderch (poet) and Friederike Zinn (choreographer/dancer) describe the commission of the artwork forming the case studies, their creative process and the ways in which art can enhance the Egyptological and archaeological exploration by overcoming the still accepted divide between traditional forms of research and audience related activities.

## 16 **ARCHAEOLOGY ON THE STREET**

**Abstract author(s): Ernyey, Katalin (Government Office of the Capital City Budapest, Heritage Department)**

**Abstract format: Oral**

In my paper, I would like to present a collection of Hungarian public works of art dedicated to archaeology, famous archaeologists or inspired by archaeology (chronologically until the Hungarian Conquest Period).

The basis of the collection is a community-based on-line database of public works of art, which I added with material collected through correspondence by the help of colleagues. The works of fine arts can be divided into figurative and non-figurative works, mainly sculptures and reliefs. In some cases, I also took into account the plaques only with

text, but I did not deal with the building ornaments. A separate group, but included, the non-in situ archeological finds (e.g. Roman tombstone) on a public square.

At the national level - at first glance - there are a significant number of works of art of the founders of Hungarian archaeology, the founders of the first museums. There are also works of art portraying archaeologists who have lived recently, but in much smaller numbers. However, there are only a few examples of sculptures representing archeology itself as a profession.

From the point of view of chronology most of the sculptures are connected to the Roman Period and the Period of the Hungarian Conquest. With the help of some examples, I will show how the artists have been influenced by the results of excavations, reconstructions and the historical tradition, how faithful the finished work is from an archaeological point of view. I would like to present the history, use and impact of the sculptures on the community through some examples.

At the end I will try to interpret the archeological public works from the point of view of the representation of archeology, also from the point of view of possible professional tasks.

## 17 **THORVALDSEN'S MUSES: THE REBIRTH OF THE ANCIENT FRESCO FROM VILLA ARIANNA IN STABIAE IN BERTEL THORVALDSEN'S WORK**

**Abstract author(s):** Petreková, Eliška (Masaryk University)

**Abstract format:** Oral

In the middle of the 18th century, the most famous archaeological sensation was gradually revealed near Naples in the form of the perfectly preserved ancient cities of Pompeii, Herculaneum, and Stabiae. Naples soon became a sought-after destination for travellers, scholars, collectors, and artists, and all of Europe eagerly awaited any news from the sites. Although it was the privilege of King Charles VII to publish discovered treasures, unauthorized picture albums and sets of prints soon appeared, mainly focusing on the mural painting.

One of the most famous motifs is the so-called Venditrice di amorini discovered in the Villa Arianna in Stabiae, which experienced a real rebirth in the 18th century. A year after its official publishing by the Royal Academy, the French painter Joseph-Marie Vien chose it as inspiration for his painting and presented his own (somewhat racy) paraphrase of this motif at the Paris Salon, which caught the attention of the influential art critic Denis Diderot. After this successful introduction to the art scene, the ancient fresco was reworked and reinterpreted by some of the most famous artists of the era.

The fresco also captivated the Danish sculptor Bertel Thorvaldsen, who created a marble relief based on the Stabian motif. He added several figures and adapted the story he told his visitors in his sculpture studio. The popularity of his marble soon went beyond that of an admired art object. It became a model for interior design and decorative arts. Thorvaldsen's legacy can be found on many aristocratic mansions throughout Europe, and thanks to him the decorative motif has once again revived and regained its original function, which was to represent the prestige and sophisticated taste of its owner.

## 18 **ART AND ARCHAEOLOGY AT THE TRAIN STATION**

**Abstract author(s):** Host-Madsen, Lene (Museum Skanderborg) - Dissing, Nina (Skanderborg Municipality)

**Abstract format:** Oral

Art Laboratory - Perron1 is a project created in a collaboration between the Museum and the local Art Council in Skanderborg. The project is part of the dissemination strategy that Museum Skanderborg is working on in the process of making a new museum.

The project works with concepts for the interpretation of archeology through contemporary art; both in temporary exhibitions and in building-integrated art in the building as a whole. One of the initiatives is to involve contemporary art as an active and outgoing citizen-involving participant.

In the exhibition Art Laboratory, special work is done with concepts for the dissemination of contemporary art, and artists are invited inside to explore, try out and challenge some of the museum's spaces,. Furthermore, to work with, and test concepts such as "Art to go" and "Bring Art". Visitors will be able to experience works of art in the stairwells, which connect the museum building's three floors together and in the exhibition space. They can experience "Art to-go" and also be a part of an art-piece themselves.

The art speaks a new language in communicating archaeology to the audience, and helps to explore opportunities. The knowledge gained by these experiments will contribute to the design of the future museum.

We find that the cooperation between art and archaeology possess great potential and would love to share our experiences in this session.

## 19 STAFFS WITH ELK HEADS – BETWEEN ARCHAEOLOGY AND ART

**Abstract author(s):** Iršenas, Marius - Butrimas, Adomas (Vilnius Academy of Arts)

**Abstract format:** Oral

One of the most striking archaeological stone age finds discovered in the settlements and burial sites of the Baltic region and European Russia and which is depicted in petroglyphs is a curved antler staff with an elk's (Alces alces) head. These staffs are described in detail and discussed in the archaeological literature. An overview of archaeological literature reveals evaluations which transcend the boundaries of archaeology and which can be understood in the context of a range of other disciplines. This paper is aimed at exploring the evaluation of staffs with elk heads as objects of art. It involves not only aesthetic evaluation but also hypotheses as to the function that these staffs served. The latter move closer to art criticism or even the theory and practice of artistic research which has emerged recently.

It turns out that archaeologists are more artists than they think because they use artistic research strategies. Meanwhile, art is just beginning to discover the phenomenon of elk-staffs.

## 20 SIGNS AND MONUMENTS

**Abstract author(s):** Gheorghiu, Dragos (National University of Arts - Bucharest; ITM Macao)

**Abstract format:** Oral

Although they are considered to be valuable elements of the cultural heritage, prehistoric and ancient monuments have lost their magic importance and visibility and coexist modestly alongside the structures of the modern world.

In order to be revealed and integrated into the contemporary world, they should be translated into the current visual language, respectively to be associated with an aesthetic vision with which we are accustomed, created by contemporary art and the new technologies. The image of each monument can be transformed into a sign or in a series of signs, inspired by the shape or the iconography of the monument. The sign(s) can be of large dimensions, they can be transposed over the place of the current monument, and can be made with the help of installations, land-art, or POIs on digital maps.

In this fashion, in the real and the digital worlds, the places of the monuments can be marked by signs and reveal their initial monumental dimension.

The paper presents several experiments of revealing prehistoric monuments in Wales and Portugal using different artistic and IT techniques.

## 21 ART, FOLK ART AND CRAFT: ARCHAEOLOGICAL PERSPECTIVES ON HISTORIC AND CONTEMPORARY MEMORIAL PRODUCTION

**Abstract author(s):** Mytum, Harold (University of Liverpool)

**Abstract format:** Oral

Archaeologists have shown interest in historic gravestones for over 50 years, but they have generally taken a distinctly different approach to them than art historians. This paper examines these divergent traditions and then considers the avoidance of archaeologists confronting how memorials fit within the debate regarding art, folk art and craft. Examples of memorial design inspired by archaeological discoveries - including reworking more ancient funerary art and memorial styles - will be contrasted with contemporary masons and artists demonstrating the range of practice in the present. Themes include Classical revival motifs widely used in 18th and 19th century mortuary motifs, as well as Egyptian motifs. Antiquarian investigations of early medieval sculpture and medieval monastic sites, together with discoveries during church restorations, led to a wide range of low monuments and crosses in a variety of medieval revival styles being designed for 19th century monuments. Today's products can be understood in the context of past stylistic change, sometimes reviving techniques of carving and letter cutting and choice of motifs.

## A. FROM ASSYROPHOBIA TO ASSYROMANIA: THE ENTANGLEMENTS OF ART AND ARCHAEOLOGY IN THE DRAWINGS OF ENRIC MONSERDÀ (1850-1926)

**Abstract author(s):** Garcia-Ventura, Agnes - Vidal, Jordi (Universitat Autònoma de Barcelona)

**Abstract format:** Poster

The archaeological campaigns led in northern Iraq by Paul-Émile Botta (1802-1870) or Austen Henry Layard (1817-1894) since the 1840s put before the eyes of the Europe of the moment a new artistic universe. Their diggings in settlements such as Nineveh and Khorsabad unearthed figurative reliefs portraying rich motifs and elements. The reception of this art was controversial, and even its consideration as art was matter of debate. This led to what we might call Assyrophobia and Assyromania, two trends well attested in Europe at the end of the 19th century and at the beginning of the 20th century.

In this poster we focus on one case study which exemplifies this complex reception of the Assyrian art at that moment. We concentrate on a sample of drawings of elements of Assyrian art, so far unpublished, by the Catalan painter Enric Monserdà (1850-1926). These drawings were made by Monserdà when preparing a lesson on Assyrian art in the framework of a course titled "History of the Decorative Arts". In this lesson, Monserdà claimed that the ancient Assyrians were able to produce masterpieces. This was, therefore, a good example of Assyromania. Interestingly enough, in a former lesson on the same topic, which was included in a previous general course titled "History of Art", Monserdà emphasized the opposite: the low quality of ancient Assyrian art. In this case, then, he was an advocate of Assyrophobia.

All in all, through this case study developed from Monserdà's drawings, we aim to discuss the two-way nature of the art and archaeology entanglements this session proposes to explore. We will show how archaeology inspired Monserdà's drawings and, at the same time, how his drawings and lessons clearly conditioned the way the Assyrian reliefs were perceived by his audience.

---

## 16 THE DAWN, APOGEE AND MODERN DEMISE OF KURGANS IN SOUTHEAST AND EAST-CENTRAL EUROPE

**Theme: 5. Climate Change and Socioenvironmental Perspectives**

**Organisers:** Peto, Ákos (Hungarian University of Agricultural and Life Sciences) - Heyd, Volker (University of Helsinki, Department of Cultures, Archaeology) - Dani, János (Déri Museum, Debrecen) - Kulcsár, Gabriella (Eötvös Loránd Research Network, Research Centre for the Humanities, Institute of Archaeology)

**Format:** Regular session

They once virtually dotted the steppe flatlands of southeast and east-central Europe: Burial mounds, often called kurgans deriving from their ancient Turkic synonym. For the westwards migration of Yamnaya populations some 5000 years ago, they are the only visible monuments. However what do we know about their erection? What comprises the activities of their construction? What does a mound tell us about the kurgan-builder community?

Equally important is the landscape archaeology of kurgans. We find them alone, in groups, in clusters, sometimes covering whole regions with distinct boundaries. Beyond, not a single mound is erected despite seemingly same landscapes and environmental conditions. What are the dynamics of this distribution? And what the intentions of their constructors? Burial mounds are equally significant elements of and research material for multiproxy scientific approaches. Buried soil profiles underneath the mound, and in its soil body, hold the 'memory' of the once existed landscape and its climatic conditions, being point-wise 'time capsules' on the map.

Finally, it is the ongoing destruction of kurgans that can only be called a heritage tragedy. Measures were already taken in some countries to protect these monuments, but are minimal in others. When comparing with early topographical maps the overall losses mostly due to industrial-scale agriculture and drastic landscape transformations become apparent. But reliable datasets for the degree of this destruction are patchy: What is the percentage of surviving kurgans compared to original numbers; are there correlations with size; how much is still preserved even when the burial mound has vanished? And what are the possibilities/limitations of making complete kurgan cadastres?

The session thus aims at linking, in an interdisciplinary way, various scientific approaches with landscape archaeology and ecology, and heritage management to the better understanding of burial mounds, their micro- and macro environmental conditions, and their legacy.

## ABSTRACTS

### 1 BURIAL MOUNDS IN YAMBOL DISTRICT, BULGARIA

**Abstract author(s):** Valchev, Todor (Regional Historical Museum)

**Abstract format:** Oral

The Yambol district is situated in South-east Bulgaria, on the border with Turkey, and is comprised of four municipalities with total area 3 335.5 sq. km. This area includes some 2,300 archaeological sites.

Burial mounds are earthen structures ranging from 0.5 to 10.0 m in height and up to 60 m diameter. They were built from the Early Bronze Age to the beginning of Late Antique period in connection with mortuary practices. Burial mounds are cultural monuments of national significance.

The aim of the present report is to examine the current condition of burial mounds in Yambol district. More than 1,200 such cultural monuments are known in this region. From the beginning of the 20th century 60 burial mounds have been excavated and provided interesting information about mortuary practice and beliefs of ancient people. In the last decade 850 burial mounds have been visited by local and foreign specialist during several field survey projects. All the visited sites have been registered with GPS points, photographed and their current condition was

thoroughly described. Knowing the exact position of archaeological sites is very important for the protection of these cultural monuments, especially during different infrastructure projects.

The "Cultural Heritage Law" of Bulgaria states that burial mounds are carriers of "historical memory, national identity and have scientific or culture value". They must be preserved for the next generations and for the prosperity of the community.

## 2 PATTERNS OF THE YAMNAYA CULTURE BARROW DISTRIBUTION IN THE NORTH-WEST PONTIC AREA

**Abstract author(s):** Topal, Denis (National Museum of History of Moldova)

**Abstract format:** Oral

According to my calculations, almost 11 000 burial mounds are located on the territory of the Dniester-Prut interflaves, with about 6 300 barrows in Moldova and 4 400 in the Ukrainian part. Between the Dniester and Prut rivers at least 1323 barrows containing at least 6300 burials were excavated. At the same time, over a third of the barrows remain unpublished, and most of them belong to the territory of the Odessa Region. Most likely, the erecting of the barrows appears in the North-Western Black Sea region no later than the second quarter of the 4th millennium BC and continues until modern times, while the Nogais population is still preserved in the Budzhak steppe. It is easy to see that the barrow erecting covers two main chronological sequences. Most of the mounds were erected in the late Eneolithic – early Bronze Age and early Iron Age – Roman period. More than three quarters (77%) of all the excavated barrows were constructed once, 13% have a second construction level, and 6% the third, 3% — the fourth, 1% — the fifth, in one case seven levels were recorded. And that is the most important feature that distinguishes the beginning of the Kurgan Era in the Late Copper Age and Early Bronze Age from the Kurgan Renaissance in the Scythian and Sarmatian times. So, in addition to the erection of burial mounds, the Yamnaya and Pre-Yamnaya population rearranged both "their own" and previous mounds (that increase the diameter and height of the barrow). Of course, within the main periods of "barrow construction" the monuments are unevenly distributed. Thus, according to preliminary data, most of the Yamnaya graves (at least 50%) belong to the most ancient Dniester type, while monuments of the later Budzhak type are about 30%.

## 3 MIDDLE DNEIPER AREA IN THE SYSTEM OF PIT-GRAVE RELICS

**Abstract author(s):** Syvolap, Mykhaylo (Cherkasy City Archaeological Museum)

**Abstract format:** Oral

The Middle Dnieper group (Merpert, 1968) of Pit-Grave relics covers forest-steppe Middle Dnieper Area with the territory of some 70,000-90,000 sq km. The relics are predominantly represented here by thousands of barrows and dozens of basic settlements and seasonal sites with poor cultural layer. The quantity of barrows in this area decreases from east to west and from south to north. In more deforested areas of southeast, on average, 1 barrow accounts for 1,5-3,5 sq km and further to the west 1 for 20-30 sq km and even more. The dimensions of barrows are different: 0,5-1m, less often 2-3m, sometimes up to 4-5m. One can trace the non-simultaneous addition of soil to embankment in the majority of barrows. Additions of soil were of fully circular, annular or local character. The thrice-repeated foot-shaped additions of soil were discovered too (Kuzmina, 1983; Syvolap, Syvolap, 1990). Sometimes, ditches can be traced around the ancient embankment, some of them are interrupted (Syvolap, 1998). The number of burials in barrows is between 1-3, less often up to 5-6. The funeral pits are rectangular, less often oval or of irregular shape. They are covered with longitudinal and transverse wooden boards (less often with bark) and cane. The peg holes (always 8) are found at the bottom. The bottom of funeral pits is covered with bark and cane bedding, powdered with red ochre. Fragments of ritual ochre paintings at the bottom of graves (Syvolap, 2001) have been discovered too. Western orientation prevails among the primary burials. Among the inlet ones, it is frequently combined with orientation to the primary burial by three basic principles: consecutive, circular and radial. The inventoryless burials are prevalent. Pottery from Pit-Grave barrows of this area shows conformity with the ceramic complex of nearby settlements.

## 4 EARLY BRONZE AGE BURIAL MOUNDS IN SOUTHEAST TRANSYLVANIA

**Abstract author(s):** Szász, Hajnal (Budapest History Museum)

**Abstract format:** Oral

The Early Bronze Age burial mounds of Southeast Transylvania are less researched, compared to other neighboring regions of the Carpathian Basin, such as the Great Hungarian Plain or the Apuseni Mountains (Western Romania). This type of burial rite in the Late Copper Age – Early Bronze Age period is thought to originate from the north-Pontic steppes (Yamnaya); however, the presence of this group has not yet been proved in SE Transylvania. Regarding the funerary rites, more likely a form of influence can be observed here. With just a handful of cemeteries identified in the specialized literature, the small number of sites in SE Transylvania is explained by historical events and the geographical positioning of the mounds. These are found on higher grounds, on mountain ridges, which are rather difficult to access. Some of the known sites were already researched in the 19th century; however, significant new survey or

excavation has been done more than a hundred years after their first discovery. Even so, the research of these sites seems to evolve rather slowly.

The aim of this presentation is to shed some light on this region as well, as the presence of the EBA burial mounds can be attested, however, larger-scale conclusions should be considered carefully. The ongoing debate in the scientific community on some aspects of terminology and chronology of the archaeological cultures make interpretations difficult, as well as the mixed characteristics of the funerary rites, which point to a rather transitional state of the given region.

## 5 KURGANS IN THE DEBRECEN AREA (NE-HUNGARY)

**Abstract author(s): Dani, Janos (Déri Múzeum, Debrecen) - Tóth, Csaba (Debreceni Deák Ferenc Tehetségfejlesztő Középiskolai Szakkollégium) - Czírbik-Gulyás, Tímea (Déri Múzeum, Debrecen)**

**Abstract format:** Oral

The research of the earthen tumuli in the periphery of Debrecen goes back to more than 100 years tradition. Lajos Zoltai not only carried out the first kurgan excavations around Debrecen, but he also prepared and published the first cadastre of all types of mounds found on the territory of the city. The location of the known kurgan sites in the Debrecen area shows a peculiar arrangement, behind this phenomenon the existence of different topographical and environmental conditions can be identified. In the wider area of Debrecen (up to the Tisza), more than 260 mounds were known in Zoltai's time. Recently, however, Csaba Tóth pointed out that during the last 250 years, the number of kurgans within the current city boundaries has decreased by more than 66%.

Historical maps allow us to trace the dynamics of their destruction up to the present day. In addition, the biographies and current state of some of the tumuli in the downtown of Debrecen show their inadequate protection. Hopefully, this shocking ratio and the poor condition of the kurgans will give food for thought to local and heritage authorities, archaeologists and encourage them to develop and adopt new, more effective conservation plans and measures.

## 6 ENEOLITHIC SANCTUARIES AND BRONZE AGE KURGANS IN THE PONTIC STEPPE AS MARKERS OF CLIMATIC SHIFTS

**Abstract author(s): Nikitin, Alexey (Grand Valley State University) - Ivanova, Svetlana (Institute of Archaeology, National Academy of Sciences of Ukraine)**

**Abstract format:** Oral

Large-scale cultural transformations are often connected with major climatic shifts. The end of Atlantic Climatic Optimum was associated with a series of climatic oscillations, leaving a mark on the cultural landscape of Europe in the early Metal Ages. These climatic fluctuations in the circum-Pontic region resulted in the appearance of cultural and genetic packages that transformed Europe in the Early Bronze Age (EBA). A unifying feature of the most recognized EBA steppe group, the Yamna historical-cultural complex, is kurgan burial. We will discuss a hypothesis that the origins of kurgans in the Pontic steppe are connected with the spread of megalithic/ditch-enclosed ground-level sanctuaries in the late 5th - first half of the 4th millennium BCE, coinciding with major climatic changes in the circum-Pontic area. By the end of the 4th millennium, these ritual constructions became foundations for the Yamna kurgans, wherein the main kurgan burial would be placed within the ritual space of the earlier sanctuary. In the 3rd millennium, the Yamna kurgans were expanded by the Catacomb and Babino cultural communities, while preserving ties with the ritual center space of the kurgan. The latter cultural transformations can also be tied to climatic events.

## 7 CULTURAL IDENTITY OF BARROWS IN EAST SLOVAKIA – XXTH CENTURY INVESTIGATIONS AND PRESENT-DAY PROSPECTIONS

**Abstract author(s): Jarosz, Pawel (Institute of Archaeology and Ethnology Polish Academy of Sciences) - Horváthová, Eva (Archeologický ústav SAV) - Podsiadło, Michał - Przybyła, Marcin (Dolmen S.C.) - Szczepanek, Anita (Institute of Archaeology and Ethnology Polish Academy of Sciences; Collegium Medicum Jagiellonian University) - Włodarczak, Piotr (Institute of Archaeology and Ethnology Polish Academy of Sciences)**

**Abstract format:** Oral

The aim of the study is to demonstrate the potential of incorporating geophysical analysis towards identifying funerary customs. The conducted prospections verified the presence of a groups of barrows in the area located in East Slovakia mainly Ondava and Laborec Uplands as well as Eastern Slovakia Lowlands near mounds excavated in the XXth century by V. Budínský-Krička. All barrows are situated in the upper parts of hills, in exposed places and they often form chains. Comparison of currently visible mounds with earlier published maps shows that barrows located in woodlands are still present but these ones situated in agricultural terrains nearly completely disappeared and their existence can be noticed only by vegetation differences or the colour of the ground visible on Google Maps. The biggest of explored mounds, located in Lešne was over 3 meters high others were 1–2 m in height and 10–15 m in diameter. Under mounds, there was usually one, centrally situated burial pit or the dead were deposited directly on the surface of the ground or within a specially prepared place. The burials were poorly equipped but funeral rite is



typical for Corded Ware or Yamnaya cultures. Generally in the Final Neolithic inhumation dominated but cremation graves have been also discovered, six of which were found in the Ondava Upland. The eastern Slovakia area seems to be a contact zone of both – the Corded Ware and Yamnaya cultures. Planned in the next years excavations of selected barrows will demonstrate the scale of these cultural units influences in time. The project is currently realized (National Science Centre, Poland, NCN 2020/37/B/HS3/03816).

## 8 LANDSCAPE ARCHAEOLOGICAL AND TOPOGRAPHICAL RESEARCHES ON PREHISTORIC KURGANS IN THE MAROS-KÖRÖS INTERFLUVE (HUNGARY AND ROMANIA)

**Abstract author(s):** Bede, Ádám - Valkó, Orsolya - Deák, Balázs ('Lendület' Seed Ecology Research Group, Institute of Ecology and Botany, Hungary)

**Abstract format:** Oral

Only a few ancient architectural monuments have remained standing in the central region of the Great Hungarian Plain. However, the kurgans that are unique 5,000-year-old anthropogenic objects still exist in this area, and have many landscape archaeological and topographical research prospects. The Carpathian Basin is the westernmost extent of the Yamnaya Entity, which is best known from the steppe zone of Eurasia. The Yamnaya Culture were nomadic people who built large burial mounds during the Late Copper and Early Bronze Ages. Mounds can be found at the banks of (sometimes no-longer existing) rivers and at some points of higher altitude areas. The main aim of our study was to map each mound located in the research area the Maros-Körös Interfluve that is situated in the Eastern Great Hungarian Plain. The study area covered approximately 8,000 km<sup>2</sup> in Hungary and in Romania. We surveyed almost 2,000 ancient burial mounds in 114 settlements. We collected all the available sources (handmade maps from the 18-19th centuries, medieval and later archives and archaeological documents) and other scientific publications (local history, archaeology, folklore, onomatology, botanics, natural science, etc.) about the mounds. The topography of the three kurgan fields (Kétegyháza, Hungary; Grăniceri-Șiclău and Sânmartin-Macea, Romania) were especially interesting. These were located relatively close to each other on the two sides of the country border. The mounds in the project area provide a valuable record of cultural and environmental conditions occurred at the time of their construction, as well as they serve as refuge for ancient loess steppe vegetation, therefore their conservation is highly recommended.

## 9 THE ROLE OF KURGANS IN GRASSLAND CONSERVATION - CASE STUDIES ON THE BIODIVERSITY POTENTIAL OF STEPPIC BURIAL MOUNDS

**Abstract author(s):** Deák, Balázs - Bede, Ádám - Valkó, Orsolya (MTA-ÖK 'Lendület' Seed Ecology Research Group)

**Abstract format:** Oral

Eurasian steppe and forest steppe are among the most endangered biomes of the world. Due to the intensified land use during the past centuries, they suffered a huge loss both in area and biodiversity. In many cases remaining stands of grassland habitats are maintained in small habitat islands such as road verges and river balks that are inadequate for cultivation. Besides these marginal sites, kurgans also have a high potential in grassland conservation. By using series of case studies, we aimed to reveal the conservation role of kurgans and the ecological processes and socio-economic factors that support or threaten their biodiversity potential. Data derived from our continental-scale database (Eurasian Kurgan Database) suggest that a high proportion of kurgans (61.5%) still hold grasslands, even in highly transformed landscapes, where they act as isolated safe havens for grassland species. We revealed that in Hungary, mounds covered by grasslands extend the borders of official nature reserves, since kurgans embedded in agricultural landscapes had the same biodiversity of plant and arthropod species as kurgans situated inside protected areas. This function is supported by the steep slopes hindering ploughing and also leading to a high level of environmental heterogeneity that enables the co-existence of several species with contrasting habitat requirements. The cultural, historical and religious values associated with kurgans also contributed to the maintenance of grassland vegetation by suppressing intensive land use and ensuring extensive management. Effective biodiversity conservation on kurgans requires active measures to suppress the most typical threats, such as ploughing, soil excavations, woody encroachment and activity of burrowing animals such as red foxes.

## 10 COMPLEX PALEOENVIRONMENTAL STUDIES OF KURGANS IN THE CARPATHIAN BASIN

**Abstract author(s):** Peto, Ákos - Braun, Ádám (Hungarian University of Agricultural and Life Sciences) - Dani, János (Déri Museum, Debrecen) - Kulcsár, Gabriella (Eötvös Loránd Research Network, Research Centre for the Humanities, Institute of Archaeology)

**Abstract format:** Oral

Kurgans are man-made geomorphological values of the Eurasian steppe zone. During the construction of these structures, humans sealed one of the most important information sources of the ancient environment: the surface soil cover. This conscious human act – the erection of these earthen features – isolated and therefore kept the original

soil in untouched conditions. These buried soil profiles act as 'time capsules', which can be opened for the sake of the better understanding of the contemporary environmental conditions.

Current presentation provides an overview of the complex scientific studies (incl. phytolith analysis, archaeobotany, soil scientific approaches and geoarchaeological methods) conducted at multiple kurgan sites within the territory of the Great Hungarian Plain (Hungary).

The main objective at each kurgan was to collect data on the possible construction phases of the mound structure, to identify and describe the buried paleosoil, and to collect paleoenvironmental data in order to complement our knowledge on the ancient environment of the Bronze Age.

## 11 GEOCHEMICAL ANALYSIS OF A BRONZE AGE KURGAN FROM THE WALLACHIAN PLAIN, ROMANIA

**Abstract author(s):** Braun, Ádám - Pető, Ákos (Hungarian University of Agriculture and Life Sciences, Institute of Nature Conservation and Environmental Management, Gödöllő) - Frînculeasa, Alin (Prahova District Museum of History and Archeology, Department of Archaeology) - Preda-Bălănică, Bianca - Heyd, Volker (University of Helsinki, Department of Cultures)

**Abstract format:** Oral

Kurgans are special, human-made formations of the endless steppes of Eurasia. For centuries, archaeology has been the primary science to deal with these features. Kurgans are not only bearers of notable botanical, zoological, pedological and geomorphological values, and as elements of the cultural heritage they represent unique aesthetical and culture historical significance of the landscape. The soils buried under these burial mounds are the messengers of ancient landscape forming factors and soil generation processes.

The aim of the research is to elucidate the construction of mound-bodies, to describe modern soil development, to analyze the buried soil under the formations and to reconstruct the ancient, paleoenvironment. This information can be accessed through the elemental composition of the layers of the mound body and the horizons of the buried paleosoil.

A kurgan located near the village Boldești-Grădiște (Romania, Prahova County-Muntenia region) was excavated and the cross-section sampled for geochemical and pedological analyses. Samples have been taken from the mound in a 5 cm resolution. The organic content was measured by loss of ignition at 550 °C, and the carbonate content was estimated by the loss of ignition at 950 °C. The samples have been digested both with aqua regia and hydro-fluoric acid. The major and minor elements have been measured with MP-AES (Agilent 4200) and ICP-MS (Agilent ICP-MS 8800). The dataset was evaluated using a multivariate statistical approach. Principal Component Analysis (PCA) and hierarchical cluster analysis was used to explore patterns of the multivariate space and assign the samples into groups. The correlation of the pedological layers and the assigned clusters was investigated. Linear discriminant analysis (LDA) was then used to assess the probability of cluster memberships. Lastly the LDA model was used to categorize the background samples collected nearby the mound, and from these results environmental information is drawn.

## A. KURGANS AS BIODIVERSITY HOTSPOTS IN AGRICULTURAL LANDSCAPES – RARE AND PROTECTED PLANT SPECIES ON THE MOUNDS OF THE TISZÁNTÚL, EAST-HUNGARY

**Abstract author(s):** Deák, Balázs - Kelemen, András ('Lendület' Seed Ecology Research Group) - Tölgyesi, Csaba (University of Szeged, Department of Ecology) - Bede, Ádám - Valkó, Orsolya ('Lendület' Seed Ecology Research Group)

**Abstract format:** Poster

In heavily transformed agricultural landscapes of Europe dry grassland habitats suffered a considerable decline during the past centuries being transformed into arable lands, afforestations and urban areas. In such landscapes small remnant grassland islands have a considerable role in preserving biodiversity and maintaining ecosystem services. In the steppe and forest-steppe biomes of continental Eurasia ancient burial mounds, the kurgans often act as refuges for grassland species and have an important role in fostering biodiversity. Using data from our large-scale survey we provide an overview on the nature conservation potential of 270 mounds in Hungary. The mounds were situated in the Tiszántúl region, in the Great Hungarian Plain covering an area of 22 600 km<sup>2</sup>. The mounds were covered by loess and alkali steppes and secondary dry grasslands formed after the cessation of arable farming. However, in many mounds we detected the signs degradation processes caused by ploughing, encroachment of woody and weedy species, soil excavation and activities of burrowing animals (foxes and badgers). We found altogether 536 taxa, of which 56 were protected (*Anchusa barrelieri*, *Aster sedifolius*, *Carduus hamulosus*, *Centaurea solstitialis*, *Chamaecytisus rochelii*, *Inula germanica*, *Phlomis tuberosa* and *Ranunculus illyricus*) or regionally rare (*Aegilops cylindrica*, *Asplenium ruta-muraria*, *Astragalus austriacus*, *Lychnis viscaria*, *Rosa gallica*, *Rosa rubiginosa* and *Stipa capillata*) dry grassland species typical to steppe and forest steppe species. The studied kurgans also harboured several formerly widespread arable weeds that became especially rare due to the intensive use of herbicides in agriculture; thus, are

also important from the nature conservation point (*Ajuga chamaeepytis*, *Androsace elongata*, *Carthamus lanatus*, *Caucalis platycarpus*, *Erodium ciconium*, *Glaucinum corniculatum* and *Nigella arvensis*). Our findings demonstrated that kurgans have a vital role in maintaining the populations of rare and endangered grassland species even in transformed landscapes, thus their protection is essential for preserving disappearing biodiversity of open habitats.

## **B. LANDSCAPE HISTORICAL AND ECOLOGICAL CHARACTERIZATION OF THE MOGYORÓS-HALOM KURGAN (ÖCSÖD, HUNGARY)**

**Abstract author(s):** Bede, Ádám - Valkó, Orsolya - Deák, Balázs ('Lendület' Seed Ecology Research Group, Institute of Ecology and Botany)

**Abstract format:** Poster

Ancient burial mounds (kurgans) built by nomadic steppic entities are iconic landmarks in the Eurasian steppe and forest steppe zones. The aim of our case study was to provide a comprehensive landscape ecological and botanical investigation of the Mogyorós-halom kurgan which is located in Southeast-Hungary. Historical data showed that in the migration period a cemetery and in the middle ages a village was established in the vicinity of the kurgan. The kurgan has served as a border mark between the settlements of Öcsöd and Békésszentandrás since the 18th century. On the maps from the late 18th century, the mound is situated in a farmland and it was ploughed until the 1970s. The kurgan has been subjected to several forms of disturbance during the centuries, including ploughing, archaeological excavations, mining, establishment of a triangulation point and garbage deposition. Despite these disturbances, the slopes of the mound still harbour dry grassland and meadow steppe vegetation. The most important plant species from the conservation viewpoint are *Aegilops cylindrica*, *Allium atropurpureum*, *Androsace elongata*, *Artemisia pontica*, *Aster sedifolius*, *Centaurea scabiosa*, *Centaurea solstitialis*, *Linaria biebersteinii*, and *Ornithogalum brevistylum*. Currently, the mound is not managed, and for the improvement of its conservation status, regular mowing would be necessary. On the long run, the eradication of invasive plant species, and the reconstruction of the body of the mound would be desirable.

---

## **17 BECOMING A PUBLISHED ARCHAEOLOGIST [ECA]**

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Brami, Maxime (Johannes Gutenberg University Mainz) - Coltofean-Arizancu, Laura (Archaeology and Gender in Europe - AGE - Community of the EAA) - Kolář, Jan (Academy of Sciences of the Czech Republic) - Preda-Bălănică, Bianca (University of Helsinki) - Frieman, Catherine (Australian National University)

**Format:** Round table

Publishing our work is a major part of being an archaeologist, but the routes to publication are not always clear. There are national differences in style and preferred publication type, different sub-disciplinary norms, and language and style barriers that may seem insurmountable. Moreover, wisely planned publication strategies are often necessary for gaining research funding at national and international levels. This round table hosted by the EAA's Early Career Archaeologists (ECA) community and European Journal of Archaeology (EJA) brings together journal editors and book publishers from around Europe to discuss the archaeological publishing ecosystem, answer questions about publication norms and practices, and address specific concerns early career archaeologists may have regarding the publication process.

Topics to be considered include:

- How does the journal editorial/peer review process work (and not work)?
- What do traditional publications do (and not do)?
- What do I need to know to start publishing my research?

---

## **27 ENGAGING THE PUBLIC, HERITAGE AND EDUCATORS THROUGH MATERIAL CULTURE RESEARCH**

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Wilson, Katherine - Pickles, Thomas (University of Chester) - Antenhofer, Christina (University of Salzburg)

**Format:** Regular session

This session will focus on the ways in which material culture can be and has been used successfully to engage members of the public, heritage and educators across Europe. Using the example of three European projects run by the session organisers, (Mobility of Objects Across Boundaries 1000-1700 (MOB), Early Christian Churches and Landscapes (ECCLES) and Virtual Materialities/Material Virtualities) it will investigate how interdisciplinary collaborations and research have, can and should be used to forge the future of work on material culture. Several key questions will shape the contributions to this session: Which material culture research projects have successfully engaged the public, heritage and/or educators? What methods and practices in these projects have successfully engaged the public, heritage and/or educators? What are the interdisciplinary collaborations that have shaped engagement with the

public, heritage/and or educators? What are the unexpected outcomes of material culture engagement with these groups? By addressing these questions, this session will contribute to a key moment for all who work with material culture in their research, which is how engagement with the public, heritage and educators is crucial for the future of Heritage, Archaeology and History.

## ABSTRACTS

### 1 THE HIDDEN LIFE OF THE LADY WITH CARNATION. CONNECTING HISTORY, MATERIAL CULTURE AND MUSEOLOGY

**Abstract author(s):** De Groot, Julie (Universiteit Antwerpen)

**Abstract format:** Oral

The temporary exhibition in the Mayer van den Bergh museum in Antwerp, *Madonna meets Mad Meg. Masterpieces and Their Collectors*, unites and confronts the fifteenth and sixteenth century collections of nineteenth century collectors Fritz Mayer van den Bergh and Florent Van Ertborn (5 October 2019 to 9 January 2022). Fritz Mayer van den Bergh was particularly attracted by a small late fifteenth century and anonymous portrait by Pieter Casenbroot, depicting a young woman in a simple dark colored dress, holding a white flower. It is certainly not the most striking piece in his collection, but it has a remarkable story of its own. This paper considers paintings as objects that had an important use value to their owners. Some, though not all, secular portraits were pendants, representing man and wife. They embodied both status and the liaison or marriage. These paintings symbolized some very familiar emotions of attachment, belonging and remembrance, honoring key moments in life. Nonetheless, the museum (like many other museums) chose to display all of the paintings and other pieces of art in a very traditional way, one next to the other, at a short distance to the visitor. But how can a visitor connect to the story of the anonymous painted lady? In other art exhibitions as well, attention is devoted almost exclusively to material-technical and style-typical features of portraits, sometimes reuniting pendants or showing the backside of paintings, but almost always without paying attention to their original context and to the biography of the object as part of a collection. This paper wants to investigate how seemingly 'old' emotions through seemingly high-end pieces of material culture can be captured and translated into museological settings and how these 'old' emotions can interact with emotions of museum visitors and learners today.

### 2 FOSTERING PARTNERSHIP ACROSS THE GREAT STEPPE

**Abstract author(s):** Amirova, Saltanat (University of Cambridge; Department of Archaeology) - Roberts, Rebecca (McDonald Institute for Archaeological Research; University of Cambridge; Fitzwilliam Museum) - Zainulla, Samashev (Margulan Institute of Archaeology) - Toleubayev, Abdesh (Al-Farabi Kazakh National University) - Nurgazyeva, Svetlana (East Kazakhstan Regional Museum of Local History)

**Abstract format:** Oral

The 'Gold of the Great Steppe' exhibition of Iron Age artefacts on loan from the East Kazakhstan Regional Museum of Local History, opened at the Fitzwilliam Museum, University of Cambridge, on the 28th September 2021 and ran until 30th January 2022. The text of the exhibition and accompanying catalogue drew on research by Kazakh archaeologists, and aimed to convey both the beauty and the scientific importance of the artefacts to the public in the United Kingdom, many of whom were entirely unfamiliar with Kazakhstan and its archaeology. Despite pandemic restrictions, it attracted over twenty-five thousand visitors. In addition to the public display, a programme of non-destructive research on the materials was carried out in Cambridge, in consultation with colleagues in Kazakhstan. The curation, design, build, and transportation of the exhibition was carried out during extraordinary times, beginning just before the first lockdowns of March 2020, and ending when modern Kazakhstan was changed forever by the tragic events of Bloody January.

Emerging from what was at times an overwhelming experience, we begin to reflect on the exhibition, and look ahead to future work. What worked well? What could we have done better? How can we build on the positive public response to the exhibition? What does a successful legacy look like? How do we promote knowledge exchange, both professional and public? Should we propose a 'return match' exhibition in Kazakhstan showing Iron Age artefacts from ancient Britain? How do we navigate collaborations going forward under the changed political landscape? How can we work to foster and support the next generation of archaeologists and museum-going public from Kazakhstan, and how can new research material be integrated into student learning at Cambridge? We have some answers to these questions, but at the same time are open to critical discussion.

### 3 **OBSCURE DUNGEONS: ON THE POTENTIAL OF VIRTUAL REALITY IN CASTLE HOHENSALZBURG**

**Abstract author(s):** Zimmermann, Judith - Färberböck, Peter (University of Salzburg)

**Abstract format:** Oral

What should "museums of the future" look like? One key approach from an ever-growing pool of possibilities are virtual worlds. Thus, this proposed paper will look at an educational approach in museums concerning the use of virtual reality and its technical possibilities. We want to highlight how inaccessible rooms/spaces can be processed and presented to visitors. These "obscure" rooms and their material culture are lost to the public. This dilemma can be approached from different angles. On the one hand, this virtual experience can be a supplement to traditional exhibitions. On the other hand, these virtual exhibitions can establish an accessible way of visiting a museum from home. Specifically, this paper will look at the chances and boundaries of Virtual Reality using the obscure dungeons of Castle Hohensalzburg which were located in the "Hoher Stock" ("high floor"). This paper will work with the current digital humanities project Hohensalzburg digital: the aim of that project is the digital processing and linking of space and object-based information from historical sources and historical building data of Hohensalzburg. Their gathered data will be included in Time Machine Europe, with which a new way to experience virtual journeys through time and space has been established. We would like to offer a different idea to that particular virtual journey. Virtual reality can serve as a link between space and information and unveil invisible rooms and data. Therefore, it can be a public history service that makes historical research accessible.

Virtual Reality can be an immersive experience that enhances traditional museum media already in existence. The Castle Hohensalzburg is presented as an example of how these media such as a website, a brochure or an audio guide combined with virtual offer a new interactive experience beneficial for visitors and the impact of the material culture as well.

### 4 **CARVING WITH LIGHT. SCANNING AND RE-MAKING THE BALLACHULISH GODDESS**

**Abstract author(s):** Griffiths, Mark (Freelance) - Power, Orla (MaREI the Center for Energy, Climate and Marine)

**Abstract format:** Oral

Discovered by chance in a village in the highlands of Scotland, the Ballachulish goddess is a near life size anthropomorphic figure, that is thought to represent a female deity connected with harsh weather and the three mountain peaks that dominate the landscape. Immediately after her excavation in 1880 this Alder wood figure (c. 600BC), was taken to the National Museum of Scotland where, due to poor initial conservation, her features have distorted dramatically.

The Pallasboy Project, recreated this prehistoric wooden artefact using laser scanned data as a guide. This multidisciplinary approach offered the woodcarver a unique opportunity to study and replicate not only tool marks, but also the flow and 'signature' of its original maker.

Using the village hall as a base, we actively encouraged members of the public to use our replica tools, discuss the figure's meaning and importance, and share with us their local heritage. This paper will reflect on the understanding, value, and insights gained by being present in the landscape of the original find, and the mutual exchange of knowledge that emerged through ongoing engagement with community participants.

Once finished this new representation was gifted to the people of Ballachulish and its heritage society. She went on to tour local schools and institutions where pupils were able to touch and explore the textures of the worked timber, before engaging with the accompanying 3D models of both the original and contemporary figures.

Initially, we had not appreciated the deep importance this wooden figure had to the cultural history of the people of Ballachulish and the resentment that removing this enigmatic find from the landscape, which inspired it, had previously evoked. Eventually, the heritage society held their own ritual and interred this new goddess close to the site of the original, restoring this guardian of storms and mountains.

### 5 **USING ARCHAEOLOGY AND LOCAL HERITAGE AS A COMMON THREAD FOR THE EDUCATIONAL PROJECT IN TWO RURAL SCHOOLS**

**Abstract author(s):** Carballido González, Elías - Rebollar Flecha, Luis (University of Oviedo) - López Gómez, Pablo - Fernández Mier, Margarita (University of León) - Fernández Fernández, Jesús (University of Oviedo)

**Abstract format:** Oral

The project "ConCiencia Histórica: Historia y Arqueología en comunidades rurales" is a cooperative activity of co-construction of knowledge in which the Academia, schools and the local community converge to stimulate scientific vocations in the rural space. The concession of two projects by the FECYT (Fundación Española para la Ciencia y la Tecnología) and the cooperation of municipalities, schools and the social and economic fabric of these territories have made possible to carry out excavations with the students of both rural schools —Belmonte and Proaza—, moving from children's games to working on a real intervention.

The project allowed us to be part of the design of the educational project along with the teachers, using archaeology as a basic tool to increment scientific culture, a critic spirit and a positive attitude towards the custody of cultural and local (both material and immaterial) heritage, serving this as the central element around which all the knowledge branches of the educational curriculum were articulated.

Thus, working in the classroom and organizing didactic workshops —designed to provide students with the necessary tools to understand the scientific process of archaeology— culminated with the design of an archaeological intervention in which the students participated actively in the associated research: from the previous studies to the field work and the analysis of the recovered material. The group looked for new ways to communicate the results of this project, which led to the recording of two short films and the diffusion of different materials through social media trying to implement a close, accessible and comprehensive communicative style.

## 6 TOUCHING THE PAST. RECONSTRUCTIONS OF ARTIFACTS AND EDUCATIONAL WORKSHOPS FOR CHILDREN – A CASE STUDY FROM POLAND

**Abstract author(s):** Dziechciarz, Pawel - Łukowska-Dziechciarz, Agnieszka (Uniwersytet Warszawski)

**Abstract format:** Oral

Popularization of the Past and material culture of former communities is one of the essential aspects of archaeological heritage management. However, for conservation, logistic or legal reasons, it is not always possible to use material remains in educational activities exclusively. The answer to this may be the use of accurate reconstructions and exact replicas of findings. This practice is widely used, among other areas, within private initiatives related to historical education. An example may be the activity of a small private business 'Archeologiczne Warsztaty', operating in Poland, run by the authors of this study.

Understanding the enormous possibilities offered by the use of modern technologies in education, we try to popularize archeology in a different manner, as assumed by the "Touching the Past" method. As part of educational workshops attended by over 35,000 school and preschool children so far, we build stories about the Past from objects that could be discovered during archaeological research, using reconstructors, replicas and high-quality models of archaeological relics. We put the participants of the classes as adepts of archeology, asking them questions about the functions and use of the objects, often referring to the contemporary reality they know. We also use appropriate materials to recreate past techniques and crafts together with workshop participants, following the path: material – object - action.

Within this study an attempt will be made to indicate the advantages of using the reconstruction of artifacts and direct contact of children with them. Examples of popularization projects conducted by 'Archeologiczne Warsztaty' in accordance with the 'Touching the Past' method will also be presented.

## 7 THE PUBLIC AND THE EXTRAORDINARY – MATERIAL CULTURE AS THE TOOL TO FASCINATE

**Abstract author(s):** Zinn, Katharina (University of Wales Trinity Saint David)

**Abstract format:** Oral

Museums-excavations – discovering unprovenanced and forgotten objects in museums' storerooms – open new opportunities for the engagement with the public and shed new light on the consequent necessity to contextualise the discovered artefacts. Despite being unprovenanced – one could even say especially because of that – it is important to make sense of these "ordinary" finds. Developing strategies of unmasking the EXTRA-ordinary within such neglected objects and the communication of these finds as part of imaginative activities for the wider public and the research community has been at the core of the cooperative projects between Cyfarthfa Castle Museum, Merthyr Tydfil, Wales (UK) and the University of Wales Trinity Saint David Wales aiming at the literal and cultural (re-)discovery of ancient Egyptian artefacts. As this regional museum serves the local South Wales valleys by representing the daily life and history of this region, it was seen difficult to incorporate the Egyptian collection into the narrative of the museum's permanent exhibition. The project brings these objects back to life by simultaneously creating different types of cultural representations via academic outputs, exhibitions, story-telling, a Museum of Lies and artwork inspired by the items in order to "unpack the collection (Byrne et al. 2011). This approach connects these objects, most of which lie dormant, with several identities in which they are placed: locally at Merthyr Tydfil in rural Wales – where the museum is situated, students of UWTSU in Lampeter who are becoming involved in primary research, local school children using the exhibited objects as case studies in their Religious Education and English curriculum, the community around Lampeter, the research community (Egyptologists, anthropologists, heritage professionals) and more. This is only possible by thinking about applicable methodological and theoretical approaches so that conclusions can be drawn.

A short introductory video can be seen here <https://www.youtube.com/watch?v=lx6168O8tJE>

## INFLUENCING THE PUBLIC. USING SOCIAL MEDIA PLATFORMS FOR ENGAGING ONLINE COMMUNITIES

**Abstract author(s):** Gergácz, Rebeka (Hungarian National Museum)

**Abstract format:** Oral

With the far-reaching appearance of social media platforms many new opportunities, and also several obstacles, have risen for archaeology. Hungarian archaeologists and museums were tardy in exploiting the tools of social media, and many are still yet to recognize the importance and necessity of an active presence on social media platforms. In contrast, pseudoarchaeological theories are spreading like wildfire in certain online communities. For example, the Hungarian Prehistory (Magyar Őstörténet) Facebook group, which has more than 26,000 members, and the Hungarian History III Youtube channel, which has more than four million views - which are great numbers in Hungarian terms. The situation is further aggravated by the fact that in recent decades, archaeology as a profession has significantly lost from its public appreciation. In Hungary, most people almost never encounter archaeology in their everyday lives, so the gap between researchers and the public is continuously increasing.

The solution for the above-mentioned problems might lie in engaging with communities, not only offline (e.g. public archaeological projects), but also online, adjusting to the digital era. In my presentation, I examine the role of the latter amongst Hungarian conditions, looking for answers to questions such as who and how can be addressed on social media? Is it possible to influence people's opinion about archaeology and its scientific results through online dissemination of knowledge and informal discourses? Is it important for the audience to see who the content creators are? Are online recommendations increasing the popularity of offline programs, e.g. exhibitions, educational events, public archaeology? Do these platforms help to 'fight' pseudoarchaeology? My search for answers was helped by the analysis of statistical data collected from the most popular Hungarian archaeological Facebook and Instagram pages, as well as by the evaluation of the results of a comprehensive questionnaire targeted on social media consumers.

### A. A BASQUE FARMHOUSE: PREVENTIVE ARCHAEOLOGY AND ARCHAEOLOGICAL HERITAGE AS AN EDUCATIONAL RESOURCE

**Abstract author(s):** Campos-Lopez, Teresa (University of the Basque Country - UPV/EHU)

**Abstract format:** Poster

Education in archaeological heritage is necessary to raise awareness of its meaning and importance, as well as to generate protection and conservation attitudes. We understand, therefore, that the best way to preserve our heritage is to valuing and by giving new meanings -(re)signification- through their knowledge. By working with these resources in the classroom – and outside it also- you become to promote critical and reflective capacity over the comprehension of our society and to understand the elements that define it.

So, the aim of this proposal is to present this project focused on a local research in Besoitaormatxea Baserria or farmhouse of Berriz (Vizcaya, Basque Country, Spain), in terms of valuing cultural heritage, where archaeological data and methodology can lead us through the occupation of the landscape and the several phases of the stone building 16th century until today. Moreover, how people lived and how can we investigate these processes thanks to archaeology.

It is a heritage education proposal that comes from a preventive archaeological and historical research; which results were displayed in a scientific illustration and in several divulgation activities. Is, therefore, a project of education and heritage sensitisation, in which possible and multiple lines are used to generate links, relations and provide value and meaning –based on historical knowledge- through the stakeholders involved, encouraging its conservation.

## SKYSCAPE, LANDSCAPE AND ARCHAEOLOGY. STUDY OF ANCIENT BUILDINGS FROM DIFFERENT PERSPECTIVES AND DISCIPLINES TO GIVE THEM A CULTURAL MEANING [SEAC-EAA]

**Theme:** 2. [Re]integration

**Organisers:** Balbi, Jose (Colchester Archaeological Group) - Iwaniszewski, Stanislaw (State Museum of Archaeology, Warsaw) - Martz de la Vega, Hans (Escuela Nacional de Antropología e Historia)

**Format:** Regular session

This session follows from the sessions presented in EAA 2020 and EAA 2021 and is the introduction and first year of the EAA-SEAC community. Our objectives are the same as those of the community of ethno and Archaeo astronomers. We intend to continue adding presentations, papers, and publications on the topics that guide our community of archaeological studies.

One of the aspects of the relationship between archaeology and cultural astronomy has been the interconnection between heavenly bodies and humans. The orientation of architectural structures at archaeological sites has been one of the most often recorded classes of evidence informing us about possible celestial relationships. By studying the

stars alignments with ancient constructions, we can learn about past human societies relationships with the celestial bodies and the phenomena. Understanding orientations is just one way to relate the human experience to the celestial landscape. From our point of view, places with cosmic connections could have generated new assemblages (term borrowed from Gilles Deleuze and Feliz Guattari) of objects, human and non-human, revealing sets of practices and materialities situated in time. We propose to study landscapes from different perspectives and to give them a cultural and ontological meaning.

Therefore, some of the issues that the papers in this session should address with the above criteria are: is it possible to understand how people lived in their environment by observing and studying the landscape with the sky or any other aspect of an archaeological site? How do technology and new techniques allow us to understand the known data? What is the ontological relationship between people and their environment? How can the construction of ancient buildings be understood from a skyscape or landscape point of view? The object of the session is to perform an archaeological study with multidisciplinary contributions. To get our aims, we complete archaeological data with those from other sciences.

## ABSTRACTS

### 1 **FORDHAM HALL ROMAN VILLA SITE. THE 3RD CENTURY BUILDING PHASE OF A ROMAN VILLA RUSTICA AND SOME ROMAN ASTRONOMY ELEMENTS**

**Abstract author(s):** Balbi, Jose (Colchester Archaeological Group)

**Abstract format:** Oral

Our presentation will describe the first five years of the excavation at Fordham, Essex, England and the relation between material archaeology and Roman Astronomy.

Fordham is a village built around a Norman church, the church was first mentioned in history in 1087, it is situated north west of Colchester (Camulodunum) which was, in the 1st Century the Roman Capital of Britain.

The site was first recognised as an archaeological site of interest by the discovery of a Roman lead lined coffin in 1984 by metal detectorist. Extensive field walking and recording was undertaken of the area and in later years Geophysics established the probable location of the Roman Villa site.

Excavation began in 2015 by the Fordham Historic Society and the Colchester Archaeological Group and continues to this day. The archaeology so far found justifies this as a possible long term project that could go on for many years.

Bibliography:

- Black, E. W.(1987). The Roman villas of south-east England (British Archaeological Report series N° 171). Oxford: B.A.R. Archaeopress, pag 187-223.
- Clarke, C. (1998). Excavations to the south of Chignall Roman Villa, Essex, 1977-81 (East Anglian Archaeology report no. 83). Chelmsford: Archaeology Section, Essex County Council.
- Crummy, Phillip, (1997) City of Victory, Colchester Archaeological Trust, Ipswich, pags29-119.
- Hawkes, C., & Hull, M. (1947). Camulodunum: First report on the excavations at Colchester, 1930-1939 (Reports of the Research Committee of the Society of Antiquaries of London ; no. 14). Oxford: Printed at the University Press by C. Batey for the Society of Antiquaries, London.
- Johnston, D. (1979). Roman villas (Shire archaeology). Aylesbury Bucks: Shire Publications
- Key John, Fordham Local History Society. (2000). Fordham, Essex : A photograph album. Millrind Press.

### 2 **TIKAL AS A MESHWORKSCAPE. THE ORIENTATIONS OF ITS ARCHITECTURE**

**Abstract author(s):** Martz de la Vega, Hans (National School of Anthropology and History) - Pérez Negrete, Miguel (Instituto Nacional de Antropología e Historia, México)

**Abstract format:** Oral

It has been shown that the Mayan cities of the Classic Period (250-900 AD), in Mesoamerica, had a spatial configuration based on fundamental and symbolic classification systems, physiognomic properties of the landscape and cyclical and regular movements of celestial bodies. One of the ways to investigate these aspects is through Archaeoastronomy, a branch of Cultural Astronomy. Through field measurements of architecture and landscape and the analysis of planimetric plans, we can learn the reasons that led their builders to orient them in a certain way and to choose specific places for their emplacements.

In this oral presentation, we will show orientations of the architecture of a city that was the heart of one of the two most powerful socio-political spheres of its time, Tikal, in Guatemala.

One of the proposals related to the architecture of Tikal says that archetypal builder rulers have been identified due to the influence they had on the general layout. That the layout and distribution of its main structures could be based on a single family of rulers. The above will be part of the analysis that we will show based on archaeoastronomical field measurements. This has allowed us to see Tikal as a mesh in terms of Tim Ingold's life of lines theory. We propose



that it is a meshworkscape in which the construction epochs stand out. We understand that an epoch begins when a sociopolitical panorama has ended. Tikal allowed some of its rulers to leave their mark in an outstanding way compared to the totality of the rulers. This phenomenon is best explained by Jan Vasiņa's methodological tool, telescoping time. We show how orientations are related to power decisions; how they are part of the construction projects of the great Mayan rulers.

### 3 THE MEANING OF THE SOUTHWEST ALIGNMENTS OF FBC UNCHAMBERED LONG BARROWS AT SARNOWO, KUYAVIA, POLAND

**Abstract author(s):** Iwaniszewski, Stanislaw (Posgrado en Arqueologia Escuela Nacional de Antropologia e Historia - Instituto)

**Abstract format:** Oral

Contrasting with the site of Wietrzychowice examined at the EAA Kiel meeting, most FBC unchambered long barrows from Sarnowo display solar alignments. Situated on a slightly undulating moraine on the edge of the higher terrace above the valley of the Zgłowięcza River, these stone-and-earth monuments constitute a significant concentration of survived and excavated long barrows in the southern Kuyavia region in central-northern Poland. Except for the long barrow no. 7, all structures display a tendency to orient themselves long the ENE-WSW axis, suggesting that they were directed towards the sunset positions on the horizon during the autumn and winter months. Furthermore, since most graves follow the same orientation, we find that the head orientation of the male deceased also pointed to the southwest. Like the long barrows from the Izbica Kujawska microregion, Sarnowo long barrows are located on drier and higher elevations in a relatively flat environment and nearby water resources.

The paper will present the results of an archaeoastronomical analysis of the FBC long barrows at Sarnowo.

### 4 SYMBOLS, MEANING, AND SKYSCAPE IN GOLD AND STONE IN BRONZE AGE NORWEST IBERIA

**Abstract author(s):** González-García, Antonio César - Cabrejas, Elena (Institute of Heritage Sciences, Incipit-CSIC) - Comendador, Beatriz (University of Vigo)

**Abstract format:** Oral

In the present communication we propose an interdisciplinary analysis of three items of the late Bronze age located in a narrow area close to the central coast of Galicia: the 'casco de Leiro', the 'As Silgadas' hoard and 'Laxe dos Bolos' rock art site.

The 'casco de Leiro' (Rianxo, A Coruña, Spain) presents several bands with geometric decoration mostly formed by concentric circles by embossment that has been interpreted as an astral decoration. 'As Silgadas', (Caldas de Reis, Pontevedra, Spain) is a gold deposit of nearly 27 kg formed by different pieces including massive annular ring ingots, three handled cups, a comb, and fragments of a cylindrical collar with parallel bands cut in gold. It is interesting that two of the handled cups display decoration that has been interpreted as solar symbols. Finally, the rock art site of 'Laxe dos Bolos' is located near the summit of Xiabre hill, displaying a large visibility. It holds a large number of different engraved motifs with a rich iconography. Laxe dos Bolos is considered as a possible long-lasting sanctuary throughout recent Prehistory.

Besides the possible astral motifs engraved in the metal hoards and the rock art site, the three sites display a number of visibility and mobility relations and possible skyscape connections. Notably, the location of Leiro's cache faces the high parts of the Sierra, where Laxe dos Bolos is located. Such area coincides with winter solstice sunrise (or the southern rising of the moon). Conversely, from As Silgadas such area coincides with summer solstice sunset. Finally, the wide visibility from Laxe dos Bolos appears somewhat focused towards the summit of Mount Xesteiras, the highest peak in the area, where summer solstice sunrise happens as seen from Laxe dos Bolos. A possible interpretation of such relations and the astral decoration is provided.

### 5 CONVERGING CONCEPTUALISATIONS OF TIME IN HISTORY AND ANTHROPOLOGY AND IMPLICATIONS FOR SKYSCAPE ARCHAEOLOGY

**Abstract author(s):** Silva, Fabio (Bournemouth University)

**Abstract format:** Oral

The origins, function and meaning of calendars have been explored separately by historians and anthropologists for well over a century. On the one hand, historians have largely focused on the calendars of early civilisations, especially their role in the religious, social and political domains (e.g. Stern 2012). On the other hand, anthropologists have noted alternative conceptualisations of time and have been trying to make sense of the time-reckoning strategies of traditional societies. In particular, two modes of time-reckoning – ecological/cyclical time and structural/linear – have been invariably proposed (e.g. Aveni 2002, Gell 1992). Any links between the distinct anthropological and historical understandings of time remain unexplored since the two fields have worked in isolation.

This paper aims to bridge this gap by looking at anthropological and historical data together, with relationality and the ontological turn in mind. Borrowing the ontological model of classical Chinese philosophy as a theoretical and illustrative device (e.g. Sterckx 2019), it will be argued that any society's conceptualisation of time must come to terms with two facts: the cyclicity of the rhythms of nature (Heaven in Chinese thought) and the finality of death (associated with Earth in Chinese thought). It is from these that ecological/cyclical and structural/linear conceptualisations of time emerge. A new model for understanding the complementarity of the two anthropological modes will be proposed, with calendrical time understood as a third mode that contains, and yet fundamentally disrupts, the other two. Furthermore, the political origins of calendrical time will be highlighted as one of the few points of convergence between historical and anthropological data. Finally, the implications of this for the archaeological interpretation of time-reckoning devices and calendars in pre- and protohistory, including the role of structural alignments to celestial objects, will be discussed in some depth.

## 6 THE ORIENTATION OF MINOAN PALACES AND PEAK SANCTUARIES TOWARD NAVIGATIONAL STARS

**Abstract author(s):** Berio, Alessandro (Cultural Astronomy, University of Wales Trinity St. David)

**Abstract format:** Oral

Mentioned as early as Homer's 8th BCE "Odyssey", Arcturus (a Boötis), part of the constellation of Boötes, was often cited as a fundamental navigational star utilized by Bronze Age Mediterranean sailors. Since our understanding of Minoan sailing techniques and maritime technology remains underdeveloped, this article proposes a novel exploratory methodology for analyzing hypothetical celestial-nautical orientations of archaeological sites, through virtual and in situ fieldwork. Through the use of a professional clinometer, archaeoastronomical measurements will validate previous proposals that the peak sanctuaries of Petsophas and Traostalos along with other Minoan sites contain alignments toward the heliacal rising of Arcturus. The analysis will then cross reference sea currents, wind patterns, axial precession, and the material record to determine the viability of Arcturus as a navigational star within the Minoan maritime network. The research attempts to provide a new perspective on how these orientations unified skyscape, landscape and seascape into singular architectural syntaxes.

## 7 ARCHAEOASTRONOMY AND CONFLICT: ON THE ORIENTATION OF PRE-ISLAMIC TOMBS IN THE WESTERN SAHARA

**Abstract author(s):** Rodríguez-Antón, Andrea (Incipit - Institute of Heritage Sciences) - Urrutia-Aparicio, Maitane (Instituto de Astrofísica de Canarias) - Perera Betancor, María Antonia (Dirección General de Patrimonio Cultural. Gobierno de Canarias)

**Abstract format:** Oral

Western Sahara has been the subject of a territorial dispute between Morocco and the indigenous Frente Polisario independence movement since the withdrawal of Spain in 1975. Although some archeological studies have been undertaken in the last years, the still active political conflict caused that little research has been conducted in both the zone occupied by Morocco and the Sahrawi Arab Democratic Republic (SADR), due to different access and logistical difficulties, now increased with the break of the ceasefire in 2020.

In this presentation we show the preliminary results of an archaeoastronomical study of more than 200 Prehistoric tombs in the Western Sahara, mostly in the southern region of Dakhla-Oued Ed-Dahab. In particular, the orientation of engravings from different types have been measured during two fieldwork campaigns in the occupied Sahara in 2018 and 2019. The orientation patterns suggest a possible role of astronomy and key features of the surrounding landscape in the funerary architecture. Certain variations have been spotted by analyzing the architectural buildings by their morphology, but lunar standstills could be a common target. These results seem to be in agreement with previous studies made in the northern regions of Africa, in particular the skylight tumuli of Foum al Rjam in Morocco and the crescent monuments, found not only in the Central and Western Sahara, but also in Messak Settafet (Lybia).

This is the most complete archaeoastronomical research on these monuments made with data obtained in situ, where little material remains on surface have been found. In addition to this, the accordance of the present results with further astronomical traditions in the Maghreb, stresses the necessity of a continuation of the fieldwork in future campaigns in order to preserve this highly threatened cultural heritage of the so-called 'last colony of Africa'.

## 8 INTERRUPTED DITCHES FROM PIT-GRAVE BARROWS OF CENTRAL UKRAINE AS CALENDAR & RITUAL OBJECTS

**Abstract author(s):** Syvolap, Mykhaylo (Cherkasy City Archaeological Museum)

**Abstract format:** Oral

The subject of the paper are 3 interrupted ditches under the barrows of Pit-Grave culture (IV-III mil. B.C.) near the village of Les'ky outside Cherkasy City in Middle Dnieper Area. The best preserved circular ditch with 8 interruptions under the barrow "Vitriakova Mohyla" had the 15,8-15,9m outer diameter. The ditch profile was trapezoid, the filling

of the ditch was stratified and consisted of two blocks of alternate light congestive and dark wind streaks that must be the evidence of short-term functioning. Along the perimeter the ditch was surrounded by the two-ply loess-chernozem outer concentric and inner horseshoe-shaped out-throws, which resembled the solar circle and moon crescent. Among other objects of this barrow the lower parts of two wooden posts (view finders?) and two fire-places ("fire posts"?) must be mentioned. All the burials of the barrow belonged to Pit-Grave culture. Another two ditch barrows, situated some 1.7 km to the SW, had formed a triangle system.

Possibly, the interrupted underbarrow ditch was the peculiar negative cromlech which marked the significant directions, e.g. the solar-lunar azimuths between the interruptions and posts. Thus, the interrupted ditches could be astronomic non-permanent instruments (may be valid for one occasion only) used to adjust calendar countdown by means of ritual Sun and Moon observation.

There are many analogies to these objects on the territory of Ukraine, Central and Western Europe ("rondels" and "henges") from the British Isles (Stonehenge) to the Urals (Savin), dated back to IV-III mil. B.C.

Based on archaeological, astronomic and linguistic data it is suggested that the Les'ky underbarrow interrupted ditches could be the "sacred fences" – the sanctuaries of solar-lunar cycle of ancient Indo-Europeans with astronomic, calendar and ritual functions (Syvolap, 1998).

## 9 THE PRE-HISPANIC BALLCOURT COURTS IN THE STATE OF GUERRERO, MEXICO, AS RITUAL SCENARIOS FOR REQUESTING RAIN: THE CASE OF TEHUACALCO

**Abstract author(s):** Martz de la Vega, Hans (National School of Anthropology and History) - Pérez Negrete, Miguel (Instituto Nacional de Antropología e Historia, México)

**Abstract format:** Oral

One of the most outstanding elements of the Mesoamerican worldview is the ballcourt, which was held in a space designated for that purpose, with certain architectural characteristics fully identified. Regarding its function, the historical sources and archaeological studies highlight the fact that it is associated with rituals referring to the transit of the stars to the firmament, the solar cult and in some cases, recreational activities were carried out on its fields too, like performances.

One of the hypotheses is that, since the concept of the ballcourt is related to the stars, there must be a relationship between the points on the local horizon, where the Sun and the planets mark their transit. In turn, the conformation of the surrounding relief and the choice of the place where the courts were built, were transcendent to fill the structure with a ritual meaning in accordance with the Skyscape.

In the case of Guerrero, México, with more than 100 ballcourts registered in various archaeological sites, it can be identified that there are some oriented parallel, approximately, to the ecliptic, but others are rotated about 90 degrees, oriented from north to south, regions, as in the case of Tehuacalco (650 to 1000 AD), which is decorate on its walls with engravings related to aquatic worship.

Thus, through this oral presentation, we will study the archaeoastronomical values of Tehuacalco and his ballcourt court, and we will consider other data that lead to reinforce the proposal that the ballcourt is also linked to rain request ceremonies, analyzing the orientations, the features of the landscape and enriching the analysis with offering objects, with other courts and representations of court in caves with rock art.

## 10 ARCHAEOLOGICAL MONUMENTS OF KAZAKHSTAN AS OBJECTS OF SACRED GEOGRAPHY

**Abstract author(s):** Zhuniskhanov, Aidyn (Department of Archaeology, L.N. Gumilyov ENU) - Raissova, Aikumis (Department of Anthropology, Durham University)

**Abstract format:** Oral

In April 2017, an article was published by the then President of Kazakhstan, N. A. Nazarbayev, entitled "Looking into the future: modernization of public consciousness". This article proposed a project called "Spiritual Shrines of Kazakhstan" or in more popular parlance the "Sacred Geography of Kazakhstan" which was aimed at raising public awareness of Kazakhstan's heritage of archaeological artefacts dating from the pre-Islamic and Islamic periods in order to rejuvenate a sense of the nation's historical identity and culture.

Pre-Islamic archaeological monuments refer to those older sites earlier than the 8th-9th centuries, which were left behind by the nomadic and semi-nomadic tribes who lived within the terrain now constituting modern Kazakhstan for a millennium, which, according to the generally accepted opinion of Kazakhstani historians and archaeologists, played a significant role in the formation and origins of the Kazakh people. According to the "Sacral Kazakhstan Center", which was created specifically for the implementation of current project archaeological sites dating to the pre-Islamic period, forms the foundation of the sacred objects of Kazakhstan.

The main objective of the project is to create a review of these artefacts and to gauge how these archaeological sites were revered before the Islamic period and how they are viewed today by people in modern Kazakhstan. In fact, many of these monuments are places of pilgrimage. People come to these shrines to satisfy their spiritual needs

and for their spiritual enrichment, as well as to seek healing for their illnesses. Some of these shrines have now become mosques, particularly in the western region such as Shopan-Ata, Karaman-Ata, Esen-Ata, Beket-Ata (in the village of Sary Beyneu) and the Beket-Ata mosque (in the Oglandy area, western chink of Ustyurt).

## 11 NEOLITHIC MEGAXYLON-TYPE TOMBS IN THE CONTEXT OF LIGHT, LANDSCAPE, AND FASCINATION WITH BRILLIANCE

**Abstract author(s):** Gralak, Tomasz (University of Wrocław)

**Abstract format:** Oral

Last year were discovered two "megaxylons" (mega – big, xylos – wood/tree) in Nowa Huta Zestawice in Poland. Primary they were long trapezoidal buildings with few graves within. Such constructions might be treated as houses of the dead. Similar objects are known in southern Poland and are associated with the Funnel Beaker culture (TRB). Their location seems to be related to the fascination with sunlight. They were founded on hills - in well-sunny places. Probably the buildings were a small permanently open entrance - located on the eastern side. These buildings probably had a permanently open entrance - located on the eastern side. As a result, the sun's rays illuminated the entire interior at dawn and in the morning. Additionally, the tombs inside were made of white limestone - glistening in the sun. So it was the light that had a fundamental influence on the location and layout of the entire structure. The fascination with radiance is also visible through other products of material culture. Probably for these reasons, body ornaments were made of white shells - with shiny mother of pearl. Stone tools, on the other hand, have carefully polished shiny surfaces. The first copper items also appeared at this time. It seems that both the color and the glow of this metal meant that it was associated with the sun. This is also how the form of ornaments made of it can be understood. Circular and spiral motifs were used. As it seems, the shape and movement of celestial bodies were alluded to in this way. It is worth adding that in the oldest surviving languages, words referring to brilliance and light are also associated with the sacred and power.

## A. THE INTERACTION BETWEEN NEOLITHIC MAN AND THE SKY

**Abstract author(s):** de Oliveira Teixeira, Luisa (Universidade Autónoma de Lisboa)

**Abstract format:** Poster

The connection of the Human Being with the landscape and with the Celestial dynamics was fundamental for its survival and organisation. With sedentarisation, time becomes cyclical and ritualised, the landscape gains importance and is sacralised. The influence and astral conditioning (Sun and Moon) in the life of prehistoric communities was registered at various levels, from religion, to the prediction of events, in hunting, fishing, agriculture (sowing and harvesting), time marking systems, calendars, among others. It led to the creation of myths, beliefs and rituals. Several ethnographic studies show the interaction between landscape elements and astronomical events (eclipses, comets, meteors, meteorites) of various indigenous cultures, past and present. Interdisciplinary research on megalith-building civilisations indicates a perception in the selection of the site with astronomical phenomena (equinoxes, solstices, orientation with the rising sun and with various constellations). In certain cases, the axis of the funerary megalithic structures is orientated towards imposing mountains and the orientation of the chamber towards the rising sun, as well as possible alignments of menhirs, the conjugation between terrestrial and celestial landscape elements being visible. Solar and lunar representations are inscribed in megalithic art and material culture, referring to the connection of Man with the cosmos. Since ancient times, different cultures have had their own vision of the world, as well as countless ways of representing and identifying it in celestial observations.

---

## 35 WHERE'S MY TRIBE? DEVELOPING NEW APPROACHES TO CONNECTIVITY, MOBILITY AND COMMUNITY IN EARLY MEDIEVAL EUROPE AFTER THE ETHNIC PARADIGM

**Theme:** 2. [Re]integration

**Organisers:** Brownlee, Emma (University of Cambridge) - Klevnäs, Alison (Stockholm University) - Noterman, Astrid (Stockholm University; CESC)

**Format:** Regular session

Similarities and differences in burial practices across Europe in the 5th to 8th centuries have traditionally been understood through a paradigm centering origin and ethnicity. Distributions of different material culture types in graves were interpreted as distinctive of particular ethnic groups. These in turn were linked to names in written sources, such as Saxons, Franks, or Gepids, and traces of their historically attested migrations were sought in cemeteries, fueling the creation of ethno-nationalist origin myths.

Questioning of historically based frameworks and chronologies is now well-established and widespread in western and central Europe, from both theoretical and empirical directions. Most recently, results from new scientific methods, especially stable isotope and aDNA analyses, are allowing us to distinguish individual mobility from group movements and significantly disrupting previous migration models. Meanwhile studies of burials as assemblages or ritual

processes have brought greater recognition of both variability and connectivity at a wider variety of scales. Local creativity has become more visible as the search for the regionally typical has declined. Simultaneously there is a return to large-scale comparative studies, aimed at understanding mortuary material in its broader European context. This links to criticism that in many areas the ethnic labels by which we have traditionally separated burials have created artificial boundaries between generations as well as sites and regions.

We welcome papers which take comparative approaches to mortuary remains and funerary practices from across Europe in the Early Middle Ages - including connections to Late Roman practices. Papers might consider how we trace and understand shared and distinct burial rites at different scales, or what paradigms we can now use to conceptualize group identities from local to large. What is the impact of new scientific approaches? Do ethnic interpretations have any continuing role, and how do we keep them free of ethno-nationalist connotations?

## ABSTRACTS

### 1 INTRODUCTION

**Abstract author(s):** Brownlee, Emma (University of Cambridge) - Klevnäs, Alison (Stockholm University) - Noterman, Astrid (Stockholm University; CESC)

**Abstract format:** Oral

The study of burial practices in early medieval Europe has long been dominated by ethnic interpretations, either attempting to identify historically recorded groups in the archaeological record, or critiquing such interpretations, often based around the styles of objects deposited in graves. Our research has focused on multiple different topics within funerary archaeology including the decline in grave good use and grave reopening practices. This revealed shared practices extending across broad geographical areas, crossing traditional 'ethnic' boundaries, and raises new questions about how group identity was conceived in a highly mobile and connected world.

This introduction will use case studies from our own research to question the ethnic paradigm, and discuss how regional variations across early medieval Europe might be understood in terms of broader shared practices and connectivity. It will touch on the potentials of new scientific methods to further the understanding of mobility and connectivity, as a means of laying the groundwork for the papers to follow.

### 2 TELL ME WHAT YOU EAT AND I'LL TELL YOU WHO YOU ARE: NUTRITION AND IDENTITY IN EARLY MEDIEVAL ITALY

**Abstract author(s):** Barbiera, Irene (University of Padova)

**Abstract format:** Oral

In the traditional narrative, Lombards migrating to Italy in 568 AD were taller than local populations. Since they were coming from the north, they had Nordic genes determining their taller stature. This idea was supported by skeletal remains found in Lombard times cemeteries, indicating that buried individuals have been indeed quite tall. More recent research has indicated that stature is closely linked to an individual's nutritional regime when they were young and, to a lesser extent, to pathologies experienced during the early years of life (Steckel 2004; Moradi and Baten 2005; Koepke and Baten 2008; Stekel 2019). Following this paradigm, can we say that Lombards were taller because they ate better than local populations? But were the Lombards really taller than the locals? And what about women?

In this presentation I will investigate height of man and women and sexual dimorphism in early medieval Italy juxtaposing areas that were occupied by the Lombards and areas that were not. I will try to show that the increasing statures visible in the early middle ages are typical of all the peninsula – and not only of Lombard areas – and are connected to the changing nutritional regimes and standards of living that characterized the end of the Roman World.

### 3 LOOKING FOR ARCHAEOLOGICAL IDENTITY MARKERS IN THE NECROPOLIS OF EL CORTIJO DEL CHOPO (GRANADA)

**Abstract author(s):** vallejo casas, elena (Universidad de Granada)

**Abstract format:** Oral

Within the study of burial archaeology in the Early Middle Ages, one of the main frameworks of analysis has traditionally been the ethnic perspective, but it is one that we need to look beyond. We can agree that it is important to analyse a site from different perspectives and to take into account all the elements that form part of it, if we want to obtain information from the population we are analysing especially if we want to focus on the different types of identity that we can observe.

For this reason, I have used different perspectives to analyse in depth a necropolis that was excavated in the 1980s, and which is partially unpublished. This is the necropolis of El Cortijo del Chopo, located in the southeast of the Iberian Peninsula, the study of which opens the possibility to observe different types of identities within the same cemetery

space, such as gender, age or class, among others. Different identities from which the members of a group of people can differentiate themselves from each other and, in turn, allow them to define together as a group.

To this end, I have carried out a double study that covers different levels of analysis. Firstly, from the general aspect of the necropolis, such as the distribution of the graves in the territory, their typology, the presence or not of grave goods and the information that the human remains can provide us by carrying out a study of topochronology. And, secondly, the study of specific aspects of the grave goods, paying special attention to the pieces of personal ornament, of which we have taken into account both their external appearance and their composition. For this I have used pXRF and FTIR analyses to provide us a more detailed knowledge of some of the objects.

#### **4 A NEW APPROACH TO THE RESEARCH ON EARLY MEDIEVAL POPULATIONS IN EAST-CENTRAL EUROPE: COLLECTIVE ACTION AND CULTURAL TRANSMISSION**

**Abstract author(s): Machacek, Jiri (Masaryk University, Brno)**

**Abstract format: Oral**

This paper will discuss the transition from Late Antique or Great Migration period to Middle Ages in the East-Central Europe, where Slavic populations are thought to have arrived from the East after the Germanic tribes had left. The question of whether the Slavs did physically migrate from east to west has remained the subject of scientific arguments. According to some anthropologists and genetics corroboration of a mass migration is not found in palaeodemographic research aiming at determining the biological condition and dynamics of the Slav population. On the other hand, it is an indisputable fact that at the end of the first millennium AD the Slav language was spoken from the Elbe to the Volga and from the Baltic to the Peloponnese, whereby in many territories Slavic speakers overlaid the older Germanic, Roman or Greek language substrate. While the change of language could have been related to the arrival of a new population, it could have as well been a result of a language shift, during which one ethnolinguistic group persuades others to switch languages through force or prestige. I will present important archaeological discoveries, such as famous runic inscription from Láňy (CZ), burial mounds in Bernhardtsthal (AT) or Bavarian "princess" from Pušanky (CZ), which opens up a new door to studying the continuity or migrations of historical populations in Europe, challenges the notions of societies as closed units and makes more relative the sharp (pseudo)dichotomy between the Germanic and the Slavic part of Europe as presented by historians, archaeologists or linguists and abused by politicians throughout the 19th and a greater part of the 20th century. We believe in an empirical and theoretical shift in European archaeology, where the application of new approaches like collective action theory or genetics is still rare and cultural epidemiology is virtually absent.

#### **5 THINK OUTSIDE THE ROW! THE EMERGENCE OF ROW-GRAVE CEMETERIES IN TRANSYLVANIA IN THE CONTEXT OF POST-HUNNIC TRANSITIONS: AN ARCHAEOLOGICAL PERSPECTIVE**

**Abstract author(s): Dobos, Alpár (National Museum of Transylvanian History - Cluj-Napoca)**

**Abstract format: Oral**

After the middle of the 5th century, the Carpathian Basin witnessed significant political changes which resulted in the emergence of new, competing political powers trying to fill the vacuum left by the collapse of the Hun Empire. The eastern half of the Carpathian Basin had come under the rule of the Gepidic Kingdom that persisted until 567. According to Jordanes, as a consequence of the battle of Nedao, the Gepids occupied "the extent of all Dacia", suggesting an expansion in Transylvania in the second half of the 5th century. Correspondingly, the interpretation of the archaeological record was strongly influenced by the abovementioned passage by Jordanes, proposing a west-east Gepidic expansion. This also determined the ethnic interpretation of the archaeological finds. While the small grave groups from the second half of the 5th century were assigned either to the Ostrogoths or to the Gepids, who in this period would have held only the political and military power, the large row-grave cemeteries (Reihengräberfelder), generally dated after the turn of the 5th and 6th centuries were considered the hallmark of the Gepidic population. Nonetheless, the context of the emergence of the row-grave cemeteries in Transylvania has never been analysed thoroughly. Recent field research (even if mostly still unpublished), correlated with the already known archaeological data suggests that the situation was much more complex than a linear, west-east migration. Transylvania in the second half of the 5th century, as elsewhere, was a dynamically changing world, where different traditions and group identities coexisted. The emergence of the row-grave cemeteries suggests larger, settled communities and could only happen in a more stable economic and social context. Leaving aside the Gepidic migration, the presentation will attempt to sketch the changes in the funerary practices, highlighting the possible coexistent traditions.

## 6 CHALLENGING NARRATIVES OF CONTINUITY: EAST-CENTRAL EUROPE DURING THE AGE OF MIGRATIONS

**Abstract author(s):** Hanscam, Emily (Department of Cultural Sciences, Linnaeus University)

**Abstract format:** Oral

Since the late nineteenth century, archaeological research in East-Central Europe has been impacted by the hunt for peoples assumed to be the one true ancestral population, continuously occupying the territory of the modern nation-state. This especially affects research on the Age of Migrations (comprising Late Antiquity and the Early Medieval Period), during which peoples moved westwards from the Steppe to encounter the remnants of the waning Roman Empire. Archaeologically visible through differing funerary practices and associated material culture, this evidence has frequently been interpreted through a cultural-historical ethnic lens; peoples are seen as either the founders of the nation (Hungary, Bulgaria), or potentially interrupting the continuity of the earlier ancestral population (Romania). In this way, these national myths and the study of the past form a symbiotic relationship, creating and sustaining each other. Given this, is it possible to develop a new critical understanding of the archaeological evidence for the Age of Migrations in East-Central Europe?

This paper focuses on Romania to illustrate how a regionally diverse past has been co-opted into a narrative supporting one nation's myth of origin. Using the same funerary archaeological evidence from the Age of Migrations in the region of modern Romania, I consider how we might construct archaeological narratives that give a similar sense of 'deep' belonging without supporting narratives of mythical autochthonous continuity.

## 7 ANGLO-SAXON, ROMANO-BRITISH, OR BOTH: A RE-EXAMINATION OF IDENTITY AND MOBILITY THROUGH A MULTIPROXY ISOTOPIC ANALYSIS OF THREE SOUTHERN BRITISH CEMETERIES

**Abstract author(s):** Miller, Katherine (University of Bristol)

**Abstract format:** Oral

Debates are continually had concerning the social and cultural mechanisms that drove change during the fourth to seventh centuries AD in southern Britain. Mortuary practices have been one of the primary pieces of evidence to discuss this topic. The differences in the corpus presentation and objects placed alongside are seen as markers that distinguish the Romano-British and Anglo-Saxon traditions and peoples. Conversely, isotopic data has begun to reveal the impact of population intermixture and mobility and the nuanced expression of regional and local social and cultural identities.

This paper will present the final data and conclusions from a multi-proxy isotope study of three southern British cemetery sites to evaluate identity and individual mobility across regions and time. The sites in question were located in three regions of southern Britain: Apple Down (Compton, Sussex), Droxford (Droxford, Hampshire), and Pilgrim's Way (Wrotham, Kent). The material culture and burial practices utilized at these sites are currently classified as Anglo-Saxon, with the sub-categorizations of Saxon and Jutish. With new  $^{14}\text{C}$ ,  $\text{d}^{13}\text{C}$  and  $\text{d}^{15}\text{N}$ , and  $^{87}/^{86}\text{Sr}$  measurements analyzed from 41 individuals, this project has begun to examine how these communities may have used mortuary practices to express local and regional identities, in addition to questioning the social and cultural impact of lingering Romano-British influences with immigrating Anglo-Saxon populations through the centuries. This project suggests that critical interdisciplinary methods utilizing archaeological and isotopic data can reveal the intricacies of mortuary practices and contemporary ideas concerning identity during the fourth to seventh centuries AD. The conclusions made here will also debate whether the strict dichotomy and separation of the Romano-British and Anglo-Saxon periods and peoples in southern Britain is true, false, or somewhere in between.

## 8 CATCHMENTS OF CLIENTSHIP AND COMMUNITY: EXPLORING LIFETIME MOBILITY AND CONNECTIVITY IN EARLY MEDIEVAL SCOTLAND

**Abstract author(s):** Britton, Kate - Czére, Orsolya - Fawcett, Jovita - Noble, Gordon (University of Aberdeen)

**Abstract format:** Oral

Despite a rich corpus of eponymous symbol stones that adorn the Scottish landscape to the present day, 'Pictish' populations remain amongst the enigmatic early medieval peoples of northern Europe. Isotope analyses are a powerful means of accessing personal dietary and movement histories as well as of connections between communities on the scale of individual lifetimes. Working with a large network of collaborators and method specialists across zooarchaeology, osteoarchaeology, archaeology, (art) history and genetics, we aim to explore the movement histories of humans and animals living in north-east Scotland between the 3rd and 7th centuries using multi-isotope approaches to better understand contemporary connectivity, trade and exchange, and mobility. Samples include tooth and bone samples from multiple sites, including domestic sites and fort sites (in the case of faunal remains), and burial sites (in the case of human remains).

Sulphur isotope data from bone collagen indicate that in some instances animals (or animal products) were being moved to sites for consumption, particularly at the fort site of Burghead. At Burghead, strontium isotope analysis of cattle teeth, coupled with Sr concentration determinations, provide corroborative evidence of animals being moved to the site, possibly from as far a field as Orkney or Shetland. These data may evidence catchments of clientship and connectivity, reflecting both the coastal location and high status of the site. Strontium and oxygen isotope ratios determined in tooth enamel from the human burials were, for the most part, consistent with individuals spending their childhoods local to the areas in which they were eventually buried, incomers (including from the west coast of Scotland, or even Ireland) were also identified, including both males and females. The implications of these data for our understanding of early medieval communities in Scotland, and indeed for our understanding of 'Pictish' individual and group identities will be explored.

## A. FORMAL AND SPATIAL DYNAMICS OF THE BURIAL RITE – ETHNICITY, RELIGION, OR SOCIO-ECONOMIC DEVELOPMENT?

**Abstract author(s):** Hladikova, Katarina (Comenius University, Faculty of Arts, Bratislava) - Hladík, Marek (Institute of Archaeology Czech Academy of Sciences, Brno)

**Abstract format:** Poster

The geographical area of the middle and lower course of the Morava River, which produced archaeological sources that are discussed in the poster and used to demonstrate some aspects of changes in the burial rite, developed dynamically in the 1st millennium AD. Since the start of the 1st century, events in the studied area of the middle and lower course of the Morava River were accompanied by processes resulting in the origin and stabilization of medieval state units. This trend may be observed across Europe in regions originally located on the border of the Roman Empire. Our objectives are to analyse the relationship between changes in the burial rite and geographical space (using spatial analysis in GIS, spatial statistical analysis, and comparative studying of significant elements of burial rite). During the 1st millennium, settlement activities of several "ethnic" ("tribal") groups were documented in the studied area, which left traces of their presence in archaeological sources. Therefore, it is possible to analyse changes in the burial rite in relation to the ethnic and geopolitical situation. Of course, our considerations, aimed primarily at causes of the formal and spatial dynamics of the burial rite, constantly reflect on the relationship between archaeological sources and specific ethnic groups. We discuss important phenomena associated with the burial rite of Germans and Slavs, such as the change from cremation to inhumation, coexistence or continuity of these rites, and continuity or discontinuity of burial sites during the 1st millennium AD. We conclude that the primary determinant of changes in the burial rite in the studied area during the 1st millennium was ethnicity, but in synergy with religion and socio-economic development.

---

## 38 CHARACTERIZATION OF LITHIC MATERIAL IN PREHISTORY, METHODS, PROBLEMS, RESULTS

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Surmely, Fred (CNRS UMR 6042) - Civilyte, Agne (Lithuanian Institute of History)

**Format:** Regular session

The study of the circulation of lithic raw materials is an important component of prehistoric studies today. But the determination of the origins and supply circuits requires a good characterization of the materials: flint, hard rocks, quartz, soapstone, etc. This characterization can be done in several ways: macroscopic examination, microscopic examination, geochemistry of trace elements, X-ray diffraction, spectro-radiometry.

The aim of the session is to take stock of the methodology, the problems and the results of the various researches carried out to date. A focus will be made on the geochemistry of trace elements, which is a discipline of fairly recent use, and the results of which are sometimes controversial.

## ABSTRACTS

### 1 CHARACTERIZATION OF TERTIARY FLINTS BY GEOCHEMISTRY

**Abstract author(s):** Surmely, Fred (DRAC ARA)

**Abstract format:** Oral

In present-day France, tertiary flints have played an important part in the supply of prehistoric populations, due to their abundance, quality and presence in areas without marine flint. From the Upper Paleolithic until the end of the Neolithic period they were transported over far distances. Flints are found in carbonate levels belonging to palustre or lake sedimentary basins whose ages range from the Middle Eocene (Lutetian) to the Upper Oligocene. These basins are numerous on French territory and are found in many regions.



The variability of color and structure is great. The diversity of facies within the same sedimentary series, combined with the diagenetic similarity of the different tertiary sedimentary basins, are obstacles to determining the precise geographical origin of flints. Macroscopic and microscopic examinations are insufficient to attribute a precise geographical origin to an archaeological artifact. This is why the geochemical method is preferred. To form the geological repository, we have taken a very large geographical field, encompassing a large part of France, from the Marne to the Gard, and most of the major French sedimentary basins (Parisien Basin, Cantal, Gard). The archaeological corpus includes pieces from sites of the Upper Paleolithic and the Epipaleolithic of Auvergne. The geochemical study does not provide a comprehensive answer to the question of the geographical origin of tertiary flints, but nevertheless allows for certain and significant advances in knowledge. A sequel is planned, with an expansion of the reference geological corpus, incorporating other basins or portions of tertiary sedimentary basins not considered and complementing the range of samples taken in each sedimentary basin.

## 2 THE USE OF FLINT AND NON-FLINT ROCKS IN LITHUANIAN COASTAL AREA DURING THE FINAL PALAEOOLITHIC

**Abstract author(s):** Rimkus, Tomas (Centre for Baltic and Scandinavian Archaeology - ZBSA)

**Abstract format:** Oral

Baltic erratic flint outcrops in the territory of Lithuania are mainly situated in the southern part of the country. Sporadic nodules can also be found in the morainic landscape in western Lithuania, while the coastal lowlands are considered as the territory without good quality natural flint deposits. Evidence of the first human settlers during the Final Palaeolithic in the Lithuanian coastal area is scarce. The human subsistence economy and the use of lithic raw materials in this particular territory is still poorly investigated due to the lack of archaeological material. Currently, only one area contains the Final Palaeolithic settling site with lithic finds and their processing evidence. It is located in the southern part of the Lithuanian coast, in the eastern part of Aukštumala Highmoor. Three sites were located there close to each other in 2004 and 2018-2019. The sites are situated on the fluvio-glacial hill and according to the lithic technology they must be ascribed to the Final Palaeolithic Swiderian culture.

Over 350 lithic finds were obtained during the course of three excavation seasons. The lithic material revealed that good quality Baltic erratic flint raw materials were used at the sites for tools production. However, flint finds constitutes 51% of the entire lithic finds, whereas the rest of the 49% constitutes of various non-flint tools and knapping wastes. Site 3 contained possible non-flint rocks processing site with a characteristic hammerstone, cores, flake concentration and a possible knapping plate. This paper will present lithic raw material use and availability in the Aukštumala sites during the Final Palaeolithic. The presented results will shed light on the raw material imports, occurrence and preferences by the prehistoric societies in the coastal part of Lithuania.

## 3 RARE EARTH ELEMENTS GEOCHEMISTRY FINGERPRINTING EASTERN IBERIA CHERT PROVENANCE

**Abstract author(s):** Ramacciotti, Mirco (Department of Prehistory, Archaeology and Ancient History, University of Valencia; Department of Analytical Chemistry, University of Valencia) - García-Puchol, Oreto - Gallelo, Gianni (PRE-MEDOC, Department of Prehistory, Archaeology and Ancient History, University of Valencia) - Cortell-Nicolau, Alfredo (Department of Archaeology, McDonald Institute for Archaeological Research, University of Cambridge) - Juan Cabanilles, Joaquín (Prehistory Research Service, Prehistory Museum of Valencia) - Pastor, Agustín (Department of Analytical Chemistry, University of Valencia)

**Abstract format:** Oral

Cueva de la Cocina is a pivotal site for the study of the last hunter-gatherer inhabitants and neolithisation of the eastern Iberian Peninsula [1]. In recent works [2-3], cherts from potential non-local and local outcrops exploited by the cave inhabitants were chemically characterised developing a database of different raw materials deposits based on major, minor and trace elements. In particular, the analytical data statistically processed pointed out the effectiveness of rare earth elements as raw material provenance markers.

In this research, several Cueva de la Cocina artefacts unearthed from well documented Mesolithic and Neolithic levels were analysed by X-ray fluorescence spectroscopy and inductively coupled plasma mass spectrometry in order to compare their chemical profiles with those of the potential exploited outcrops. The developed approach to investigate the supply strategies for siliceous raw materials, focused in rare earth elements and multivariate statistics, provides complementary information on the mobility and occupational dynamics of Cueva de la Cocina inhabitants.

References

1. García-Puchol, O., McClure, S.B., Juan-Cabanilles, J., Diez-Castillo, A.A., Bernabeu-Aubán, J., Martí-Oliver, B., Pardo-Gordó, S., Pascual-Benito, J.L., Pérez-Ripoll, M., Molina-Balaguer, Ll., & Kennett, D.J. (2018). Cocina cave revisited: Bayesian radiocarbon chronology for the last hunter-gatherers and first farmers in Eastern Iberia. *Quaternary International*, 472, 259-271.

2. Ramacciotti, M., Gallelo, G., Pastor, A., Diez Castillo, A., & García Puchol, O. (2019). Chert nucleus and cortex characterization for archaeological provenance study tested in the Prebaetic system region (Valencian community, Spain). *Lithic Technology*, 44(3), 166-180.
3. Ramacciotti, M., García-Puchol, O., Cortell-Nicolau, A., Gallelo, G., Morales-Rubio, A., & Pastor, A. (2022). Moving to the land: First archaeometric study of chert procurement at Cueva de la Cocina (Eastern Iberia). *Geoarchaeology*, in press.

#### 4 FLINT, OBSIDIAN AND STONE ASSEMBLAGES FROM THE LINEAR POTTERY CULTURE SETTLEMENT MODRYCHI-I

**Abstract author(s):** Telishenko, Serhii - Silaiev, Oleksandr (Institute of Archaeology, National Academy of Sciences of Ukraine)

**Abstract format:** Oral

A total of 145 flint items, as well as 4 obsidian and 7 stone-made artifacts, were collected during the excavations on the Linear Pottery culture settlement Modrychi-1 in the Lviv region (Ukraine). Most of them were discovered at the central part of the classical LBC longhouse and outside its eastern wall. The assemblage of flint and obsidian items has been analyzed as an integral complex that characterizes the material culture of the Neolithic settlement. The prevailing number of flint items such as cores, flakes, and blades reflect on-site production. However, the starting phase of the core trimming could have taken place beyond the site, and afterward cores and blades arrived at the settlement already conditioned for further processing. There is also a high ratio of tools and retouched blade fragments. As for the obsidian artifacts, an attempt was made to establish the origin of raw materials. Deposits in the Carpathian basin are considered to be the most territorially closest. These are located in Hungary (Tokaj Mountains), Slovakia (Lower Zemplín), and Ukraine (Vihorlat-Gutinian ridge) – respectively chemical groups C1, C2, and C3. The collection of stone-made tools includes a distinctive item – an adze, made on the bar of fine-grained sandstone, and also knapping stone, grinders, and grindstones.

In general, the assortment of flint, obsidian, and stone artifacts is typical for most LBC sites. To a greater or lesser extent, all categories of tools are represented inherent to this culture.

#### 5 OBSIDIAN IN THE MEDITERRANEAN FROM CARPATHIAN SOURCES

**Abstract author(s):** Tykoł, Robert (-)

**Abstract format:** Oral

Obsidian from Carpathian sources in Hungary, Slovakia, and the Ukraine have been widely studied, with analyses done for archaeological artifacts from sites in Hungary and elsewhere in Central Europe showing widespread distribution. Analyses have now been conducted for many sites in Croatia and Italy, indicating the significant distances southward that obsidian traveled during the Neolithic. In southern Croatia and throughout the Adriatic, a distance of at least 750 km, obsidian from both Carpathian and Italian sources has been identified at a number of sites.

In this study, elemental analyses were conducted on a new collection of geological samples from sites in Hungary, Slovakia, and the Ukraine. The trace elements measured using a portable X-ray fluorescence (pXRF) spectrometer, including Rb, Sr, Y, Zr, and Nb, easily distinguishes at least six different groups, including Viničky, Cejkov, Tokaj, and the Ukraine. Also tested were archaeological sites in northern Croatia, where all of the obsidian artifacts tested come from these sources, while obsidian also reached as far south as the coast of the Adriatic but in lesser quantities.

The Croatian sites near the northern half of the Adriatic are about the same distance from the Carpathian Sources as from Lipari, just north of Sicily, more than 700 km, both illustrating the long-distance travel and exchange going on during the Neolithic and Copper Age (ca. 7000-3000 BCE). The initial use of obsidian began with the introduction of agriculture, most likely traveling in the same routes within the Cardial Impressed Ware network. The land-based distribution of obsidian from the Carpathian sources, including over the mountainous Dinaric Alps, is compared with the maritime routes taken by Lipari and Palmarola obsidian along and across the Adriatic. The combined data are integrated with the data available for chronology, early village sites, domesticated plants and animals, and ceramics.

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Pastor Pérez, Ana (University of Barcelona; Complutense University of Madrid) - Ayán, Xurxo (Universidade Nova de Lisboa) - Hattori, Marcia (Incipit-CSIC. Institute of Heritage Sciences) - Millán Pascual, Rafael (Incipit-CSIC. Institute of Heritage Sciences)

**Format:** Regular session

This Session aims to be a space for exchanging ideas and experiences from the increasing number of archaeological researchers of recent times, including Archaeology of the Contemporary Past, Industrial Heritage and Heritage Management. Archaeology offers concrete and situated knowledge about the plurality of temporal tensions in our current contested present. It helps to articulate different approaches when the historical discourse is not enough against epistemological populism. However, in this scenario, seasoned by a pandemic, understanding its challenges is more interesting than debating its labels.

Which are the historical conditions of our present? The Great Recession of 2008 extended and intensified the coercive nature of capitalism in different parts of the world. The neoliberal policies already displayed in the 70s were reinforced and doubled through austerity plans, implying the accelerated end of the so-called "slow cancellation of the future". Since then, it has been said that we live in a new historical regime called presentism, where the past and the future melts into the present. At the same time this "broad present" coexists with the negationism of history which can lead to anti-democratic regimes. How can we make diagnostics and propositions to combat the reification of the present in such a context? We propose to answer this question through practices from shared

interdisciplinary scenarios, where there is room for exchanges of perspectives and areas of work between different stakeholders. This session proposes an open forum to co-create knowledge on the subject of:

1. Interdisciplinary projects committed to the socio-economic challenges of the territories and actions for change.
2. Archaeological projects on deep economic and industrial landscape transformations, whether in rural or urban areas.
3. Different research on the process of expansion of inequalities and alternative forms of resistance by communities.
4. Studies on contemporary heritage sites or assemblages.

## ABSTRACTS

### 1 THE SUPERMODERN CITY: ARCHAEOLOGY AND ARCHITECTURE IN THE TIME OF PRESENTISM

**Abstract author(s):** Incio-del-Río, Cristina (Incipit-CSIC) - Falquina-Aparicio, Álvaro (Independent researcher)

**Abstract format:** Oral

Presentism implies to a large extent a dematerialization of time, which undermines the main epistemological bases of archaeology. In contemporary archaeology there are tendencies that can endanger these same epistemological keys, as well as the historicity of materiality, by proposing a symmetrical and non-conflicting vision of the relations between things in the present.

Supermodernity as an ideology, in which the present is its only temporal reality, sometimes marginalizes and annihilates this historical materiality: in the -political- process of reality production, the destruction of architectures from different periods generates architectural pastiches and amalgamations of rubble in which temporality is blurred, by making disappear the assemblages and stratigraphy that allow us to understand the temporal and dialectical tensions of the materiality of the past with respect to the constructed present .

Our proposal tries to give perspectives and methodological tools to confront the study of contemporary materiality, confronting the presentist visions of it. We focus specifically on built space, in this case on the architecture and urbanism of cities, since we consider that they are elements that by themselves have the capacity to deny the reification of the present: through the analysis of contemporary built space, we can see how elements of the past survive and act, thus shaping a present with history and emancipatory potentialities in the face of the policies of spatial construction of presentism in the everyday life of the cities of turbo-capitalism.

### 2 CONTESTING LANDSCAPES: A STUDY ON THE SETTING OF A CONTRACT ARCHAEOLOGICAL EXCAVATION IN A STOCKHOLM SUBURB

**Abstract author(s):** Nelson, Matthew (Linnaeus University)

**Abstract format:** Oral

In this presentation I will investigate what happens when a major contract archaeological excavation is dropped into an urban context of contested values and interests in a northern suburb of Stockholm, Sweden. New legislation has

put further demands on contract archaeology that the production of knowledge should be relevant for society and accessible to the public. What happens when these goals are applied in reality?

My study will take a landscape centered approach, applying the concept of contested landscapes to analysis. The study will show how the process of a professional temporal space formed by the notion of cultural environment together with the process of contract archaeology, (- what I call the archaeological heritage landscape), must compete with other contesting forms of landscapes sharing the same location, and the agendas tied to these.

I will also address how the formation of economic, cultural, and social capital in society, affects the position of actors and stakeholders. How do the capital and values associated with different actors and stakeholders relate to these contesting landscapes, what are the reasons for this, and how does it affect contract archaeology?

The study will focus on outreach efforts on behalf of contract archaeology and on the relationship between the archaeological contractors, other actors in the process, and the rest of society on a local level who are affected by the excavation site and process. Who is included and excluded in the archaeological process and the outreach program? In this I will evaluate the role of an archaeological heritage in a contested landscape.

### 3 CONFLICTS, ARCHAEOLOGICAL HERITAGE MANAGEMENT AND URBAN CHANGE

**Abstract author(s): Corpas, Nekbet (Independent researcher)**

**Abstract format: Oral**

This communication addresses disputes in archaeological heritage management: their analysis and resolution in a creative way so as to create governance models of heritage and urban change that take into account city's inhabitants. Drawing on the field of conflict resolution and analysis, conflicts or disputes involving archaeological heritage reveal a relationship that in its current form is not satisfactory for at least one of the stakeholders taking part. Different societies have developed various ways to manage people's disputes: rights-based approaches (e.g. judicial system), power-based ones (e.g. demonstrations) and interests-based approaches (e.g. mediation). This last means, and particularly mediation, deals with the interests of all stakeholders involved (local and state governments, NGOs, developers, ...), which may include: economic interests, social recognition and acceptance, a role in urban decision-making procedures, etc. Resolving disputes requires analysing values (e.g. the significance of nature over development) and considering power differentials as well. According to theory, there are three main elements of a dispute: people, process and problem. Disputes always have a time component: there has been a past history between the parties of the dispute and this history explains the conflict and how it has been dealt with. Simultaneously, interest-based approaches to disputes like mediation are future-oriented: the past of the dispute is addressed but it does not become the focus of the intervention to resolve it. The future is the key: how the dispute involving archaeological heritage can open a window to create new dynamics where stakeholders can deal with their differences in a more fulfilling way. This approach is consistent with developments in heritage management (Faro Convention and the Recommendation on Historic Urban Landscape) as to how address change in our increasingly under-pressured cities. As such, it is an opportunity to pursue the human right to the city: to shape and live it.

### 4 THE URBAN HERITAGE IN THE CASE OF THE "HOUSES FOR 1 EURO" PROJECT OF THE MUNICIPALITY OF TARANTO (ITALY)

**Abstract author(s): Frascella, Selene (University of Barcelona)**

**Abstract format: Oral**

The value of the urban heritage cannot be crystallised in one form or time. Its changes can be illustrated by the official decisions taken about preserving some structures or, on the contrary, letting them disappear. These decisions are the result of different and diachronic power dynamics, interests and uses. In the Recommendation for Historic Urban Landscapes UNESCO defined the historic urban landscape as "the urban area understood as the result of a historic layering of cultural and natural values and attributes, extending beyond the notion of 'historic centre' or 'ensemble'" (2011:3). In light of this interpretation, this contribution analyses the case of the "Houses for 1 euro" (Case ad 1 euro, in Italian) campaign of the Municipality of Taranto, southern Italy, from an archaeological perspective. The campaign promotes the sale of abandoned and degraded buildings in the historic centre. Interested parties pay a symbolic amount on the sole condition of taking care of their urban restoration. This project is the result of a top-down urban regeneration policy. Thus, from a static and material perspective, heritage is seen an opportunity for investment and economic growth, although, we will argue, may also lead to a gentrification of the area. In this paper a critical analysis of this case study will be undertaken through a transversal conception of time and space, not limited to the material sphere, and considering all the elements acting on urban transformations. The paper aims to explore whether this approach can lead to a conversation between all the multiple values and narratives that configure the urban heritage ecosystem in Taranto. We will seek to assess whether consensual dialogues applied to urban planning, understood as mediated and respectful of community identity may act as an alternative to unidirectional, neo-liberal dynamics, implemented by municipal policies.

## 5 DEVELOPMENT-LED ARCHAEOLOGY AS ARCHAEOLOGY OF THE PRESENT

**Abstract author(s): Beck, Anna (Museum Southeast Denmark)**

**Abstract format: Oral**

Rather than being regarded as the documentation and rescue of remains of the past, development-led archaeology should be regarded as an archaeology of the present: it is caused by events in the present, it takes place in the present and it investigates archaeological remains, not in their original form, but as they appear in the present. As such, the overall aim of development-led archaeology would not be to uncover the past but rather to add new temporal dimensions to the present.

In the paper, this argument will be unfolded and the practical consequences of such an approach discussed. The paper is based on the preliminary experiences and reflections from a new research- and dissemination project processing the extensive archaeological record from a large development project north of the city of Køge, Denmark. Here, the building of a new neighbourhood will add a large number of new inhabitants and new workplaces to the existing settlement. However, it will also lead to radical transformations that will remove the historical characteristics of the landscape and challenge the existing communities in the area.

Rather than describing the development of the area from the Late Mesolithic to the present, we will let the processing of the archaeological record focus on exploring and discussing themes related to the challenges created by the current development in a long-term perspective. To supplement and mirror the results of the traditional archaeological excavations, additional archaeological investigations will be made in the present settlement in collaboration with its inhabitants. As such the project makes a good starting point for discussing how development-led archaeology more generally can exploit its privileged position as a concrete link between past, present and future.

## 6 A BAUHAUS WASTE DEPOSIT – 20TH CENTURY WORKING-CLASS CONSUMPTION AND SYSTEM CHANGE THROUGH THE MAGNIFYING GLASS

**Abstract author(s): Rösch, Felix (University of Göttingen, Seminar für UFG)**

**Abstract format: Oral**

In 1930 a total of five Laubenganghäuser (tenement houses with galley access) were built in Dessau (Germany), on the initiative of the second Bauhaus director Hannes Meyer. The houses were designed to meet the needs of working-class families, while providing maximum comfort for low rent. The concept of the Laubenganghäuser also included external facilities such as allotment gardens, a washhouse and a playground.

As the use and appearance of the facilities have changed considerably over the years, the site underwent excavations in 2018 in order to reveal the original setting. A number of features dating to the construction period were brought to light. The archaeologists also unexpectedly came across a large waste disposal pit dating to 1945, which had been dug into a pre-existing sandbox. Besides militaria, the feature contained household interior and debris of several apartments that had been destroyed by World War II-bombing. The analysis of the material evidence allowed for precious insights into everyday life and consumption of working-class families. The discovery of military equipment, as well as objects related to Nazi propaganda and even self-made Jewish ceramics informs us further to which extent the political change in the 1930s and the following war had affected the life of the Laubenganghaus inhabitants.

In this paper, I will argue that the fill of the waste deposit can function as magnifying glass to reveal aspects of the impact of major societal changes and events of the first half of the 20th century – socialism, Nazi rule and the World War II – on the working-class. This case study demonstrates that even small archaeological investigations on material evidence can significantly improve our knowledge of the modern period.

## 7 SCARS OF THE FILM INDUSTRY IN MADRID. THE GOLDEN CITY MOVIE SET

**Abstract author(s): Martín, Jesus (Universiteit van Amsterdam)**

**Abstract format: Oral**

In 1960 Franco's regime significantly reduced the costs charged for filming in Spain, stimulating the growth of a new film industry as film directors sought locations in rural areas close to major cities. The arrival of big Hollywood productions such as *Spartacus* (Kubrik, 1960) or *55 Days at Peking* (Ray, 1963) led to the construction of gigantic film sets. This initial wave of Hollywood films significantly impacted the later development of European Westerns and peplum as hundreds of Spanish technicians, and professional actors gained experience working on these mega-productions.

The film industry also significantly boosted the local economy. Many inhabitants of villages to the north of Madrid were employed as extras or were paid to take care of the catering, transport, and site security. However, within a decade, the industry was in decline and eventually disappeared. This left a substantial economic void in the region and scars on the landscape of ruined sets that can still be seen today.

This paper will explore evidence from the "Golden City" set, the first permanent set built in the vicinity of the village of Hoyo de Manzanares in 1962 and the recovering and documenting tasks carried out by the local citizens' associ-

ation "Hoyo Cine". More than sixty movies were filmed in this location, including the acclaimed *For a Fistful of Dollars* (Leone, 1964). The Golden City set was abandoned by its promoter in 1975 but remained standing for several years and was finally demolished in 2010. The methods proposed by "fake archaeology" will be used to understand the landscape transformation in this rural area.

## 8 ON THE ANACHRONISM OF THINGS: ARCHAEOLOGY AND THE NON-CONTEMPORANEITY OF THE PRESENT (THREE CASES FROM RURAL SPAIN)

**Abstract author(s):** Millan-Pascual, Rafael (CSIC - Spanish National Research Council, Institute of Heritage Sciences)

**Abstract format:** Oral

'Presentism' is generally assumed (and felt) as our new historical regime. The past is no longer one distinctive historical category distant from us, but one among the many and varied dimensions of the present. Without a clear expectation about the future, it is the way our accelerated societies deal with time, and, to some extent, how capitalism consumes the past (or any time). In this sense, nostalgic consumerism is one uncanny echo from the past, so much as one social reaction towards acceleration. We all need to ground somewhere, even if this feeling implies the idealization of the past. For any reactionary movement, this context is one opportunity for their ideal cancellation of time, as they dream to get the definitive one (their one).

Rural lands and specially depopulated rural areas fluctuate between such idealization and reaction. It is presumed that some authenticity remains in the alleged simple rural way of life. At the same time, the ruin of the rural is considered one painful catastrophe under some nostalgic stances. These ideas create the other-ness of the rural, and its anachronism. To explore this question we need to move on from one static sense of 'presentism' towards the more decisive problem of the articulation of past, present, and future. That is the active production of the past in the present. For this reason, in this contribution, I propose to rethink this articulation through the Gramscian notion of non-contemporaneity instead of the most extended idea of multi-temporality. It is neither about the negation of the contemporaneity of the rural, nor just the phenomenon of 'allochronism', but its 'imposed anachronism' precisely because we depart from one homogeneous notion of the present (their one). Why if the present is not contemporaneous with itself? Is this non-contemporaneity the condition of any emancipatory politics?

## 9 MAGNETS ON MY FRIDGE: CONSTRUCTING SELF-IDENTITY AND SOCIAL NETWORKS THROUGH MOBILITY NARRATIVES IN DOMESTIC SPACES

**Abstract author(s):** Albero Santacreu, Daniel (Universitat de les Illes Balears)

**Abstract format:** Oral

Mobility is essential for human experience and everyday life. The emergence and development of mass tourism and globalization in the second half of the 20th century changed our physical mobility but also the way we construct our identity and define our social status through mobility. Mobility can be unaffordable for many people, since it takes money, knowledge and time. In this sense, the magnets that we purchase on our trips and we put on the door of our fridges are displaced objects that become a symbol of "being there". Magnets are mundane objects, but they are different from other everyday objects in the sense that they are made to be shown and to exhibit their exogenous origin.

In this presentation we are going to reflect on how fridge magnets are much more than mere decorative elements and constitute biographical objects loaded with narratives that are actively used in the construction of our self-identity. In addition, we will explore how this "technology of the imagination" is also used to strengthen our social bonds and define group's social status through mobility. Therefore, our research addresses how the presence of magnets inside our homes -closely associated with the mobility of people and things- can be related to a wide range of political, economic, ideological and social factors.

Finally, following some principles of the Actor-Network Theory, we will consider the role that the very physicality of magnets plays in these phenomena and how make magnets perfect people's allies in the definition of their social and economic capital.

## 10 CYCLICAL RUINS: A VIDEOPOEM ON 'SUN AND SAND' TOURISM SPACES IN THE LOW SEASON

**Abstract author(s):** Arboleda, Pablo (Incipit - Institute of Heritage Sciences)

**Abstract format:** Oral

Attracted by low-cost 'sun and sand' destinations, an increasing number of tourists visit the Spanish Mediterranean regions every summer – a fact that, within the 2008 post-crisis scenario, the authorities and general opinion have assumed to be a positive trend due to the growth that tourism represents in national macroeconomic data. However, such a development model has an evident side effect in terms of urban space. When summer ends, thousands of hotels, restaurants, leisure resorts, residential complexes, promenades, shops, etc. remain empty, merely awaiting the next year whilst leaving a series of obsolete materialities behind. Considering that a ruin is an abandoned place

where there was once an activity, it is suggested that their state of desertion during winter allows us to regard these seasonal archaeologies as 'cyclical ruins', representing a critical metaphor of the country's tourism model at present. In December 2019, I conducted a three-day road trip through 500km to explore the main 'sun and sand' tourism destinations in Southern Spain. The object was to reflect on a de-contextualized sense of place affected by the presentism of being-in, raising intimate feelings and impressions such as solitude, melancholia and sadness that resulted just the opposite of those for which these spaces are originally conceived. Deploying the notions of 'temporal liminality' and 'spectral ethnography', the goal is to contribute to interdisciplinary literatures on modern ruination – including cultural geography, contemporary archaeology, critical heritage, and urban studies. Also, the aim is to highlight the capacity of urban ambiances and the aesthetics of discomfort to contest the socio-economic challenges deriving from the unlimited development and aggressive shaping of the seafront landscape. Through the elaboration of a collaborative, 8-minute length videopoem, this presentation advances the potential, credibility and appeal of engaged, art-led practices and methodologies towards creative scientific writing.

Link to videopoem: <https://vimeo.com/644278107>

## 11 THE CARDBOARD HOSPITAL OF CAPDELLA: INTERDISCIPLINARY CHALLENGES FOR THE ARCHEOLOGY OF THE PRESENT

**Abstract author(s):** Pastor Pérez, Ana (Institute of Archaeology of the University of Barcelona - IAUB; Norwegian Institute for Cultural Heritage Research - NIKU; Research Group of Cultural Heritage Management. Complutense University of Madrid - UCM) - Remacha Acebrón, Sigríð (University of Barcelona, Culture and Society Program - UB; National Museum of Science and Technology of Catalonia - MNACTEC)

**Abstract format:** Oral

In this work, we explore the interdisciplinary challenges surrounding the "Cardboard Hospital" renovation project in the mountain village of Capdella (Vall Fosca, Catalonia). Built in 1912, this prefabricated building of German origin is mainly made of wood and cardboard. The Cardboard Hospital functioned as a field hospital for the first large hydroelectric power plant construction in Catalonia (1911-1914). Originally intended only for the most immediate medical needs during the hydroelectric plant construction, the hospital was never dismantled and relocated. It became a multifunctional space until its gradual abandonment and deterioration until today. Due to a series of disturbances caused by the automation of the Hydroelectric Power Plant during the 1990's, much of the documentation was lost forever.

In 2020 the electric power company (Endesa) sold the hospital's land to the local authorities under the condition of starting a process of valorisation of the building and surroundings. The renovation project wants to preserve the hospital materiality and the oral stories and memories which grow up around the heritage space. The National Museum of Science and Technology of Catalonia (MNACTEC) is leading this interdisciplinary and participatory project that seeks to involve the local community in every step of scientific research. Through different instances of community archaeology and ethnographic research, we pursue to reveal how the numerous narratives linked to the hospital are entangled with each other and with its contemporary buildings. By sharing our incipient findings, we want to open a debate to discuss effective conservation strategies encompassing multivocal discourses to avoid muting local perspectives and to respond to the current challenges related to this site.

## 12 AGAINST THE NORMALITY OF EVERYDAY STATE VIOLENCE: A HISTORICAL ANALYSIS FROM THE BRAZILIAN CONTEXT

**Abstract author(s):** Hattori, Márcia (Institute of Heritage Sciences - Incipit)

**Abstract format:** Oral

This paper explores how different bodies, individuals and populations are variously categorized as undesirable, dangerous, and deviant, through the different forms of treatment they have received throughout their lives and deaths. It is argued that, if during life these populations are over-controlled by the State through its institutions and forms of policing, they are then also neglected and abandoned in the construction of their citizenship in death. A major approach of this work is to observe how material elements linked to individuality, a fundamental concept in the identification process, were lost on the way to burial. It is argued that institutional omission is one of the techniques of making people, whose bodies are not considered important, disappear. Further, when racism, sexism and classism essentially crossed paths, in the form of negligence and omission by officers and the State itself in the treatment of those people who are deprived of their status as political subjects, such people can only attain a socially acknowledged status of 'disappeared' when their fate is exposed by the mass media, social movements and/or family groups. The aim of this paper is to reflect on the idea that the normality of state violence is, in fact, the normality of a broad process of genocide and of annihilation of entire groups, reaffirming these groups' status of subalternity.

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Tereso, João (CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos; BIOPOLIS Program in Genomics, Biodiversity and Land Planning; Centre for Archaeology. UNIARQ. School of Arts and Humanities. University of Lisbon; MHNC - UP - Natural History and Science Museum of the University of Porto; B-ROMAN Project PTDC/HAR-ARQ/4909/2020; Centre of Interdisciplinary Studies, University of Coimbra) - Detry, Cleia (Centre for Archaeology. UNIARQ. School of Arts and Humanities. University of Lisbon; B-ROMAN Project PTDC/HAR-ARQ/4909/2020) - Vaz, Filipe (CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos; BIOPOLIS Program in Genomics, Biodiversity and Land Planning; B-ROMAN Project PTDC/HAR-ARQ/4909/2020) - Peña-Chocarro, Leonor (Spanish National Research Council-Consejo Superior de Investigaciones Científicas - CSIC; GI Paleoeconomía y Subsistencia de las Sociedades Preindustriales, Instituto de Historia - IH-CSIC; B-ROMAN Project PTDC/HAR-ARQ/4909/2020) - Valenzuela-Lamas, Sílvia (Spanish National Research Council-Consejo Superior de Investigaciones Científicas - CSIC; Archaeology of Social Dynamics, Milà i Fontanals Research Institute - ASD, IMF-CSIC; Centre for Archaeology. UNIARQ. School of Arts and Humanities. University of Lisbon; B-ROMAN Project PTDC/HAR-ARQ/4909/2020)

**Format:** Regular session

The expansion of the Roman Empire was a gradual process and far more encompassing than a mere military conquest: it also corresponded to the dissemination of novel cultural, religious and economic models. The introduction of new agricultural and husbandry practices, foodstuffs and other biological resources were fundamental steps of this process.

However, the de facto implementation of the *modus romanus* throughout a vast and diverse territory, inhabited by a wide variety of communities with distinct backgrounds and identities, was particularly complex and varied. Thus, understanding the regional or provincial specificities is crucial to properly assess and characterize the impacts of the Roman administration among the everyday life of indigenous communities.

In this session, we aim to explore how biological resources were exploited by indigenous communities, at local and regional levels, and to understand their role within the framework of the new economical and territorial exploration model imposed by the Roman Empire from the 2nd century BC to the 5th century AD. A wide variety of studies are thus welcomed, namely archaeobotanical, zooarchaeological, ancient DNA and isotopic analysis, as well as other proxy directly associated with biological resources.

Papers should focus all themes associated with plant and animal remains such as subsistence strategies, agricultural technical aspects, trade, species distribution, introduction, improvement/selection and their role in rituals and other cultural/social activities. Approaches addressing other rarer biological products such as honey, fungi, wild animals and plants, as well as these activities impacts in the perceivable environment are also welcomed. Regional or broader synthesis are preferred but interdisciplinary and highly informative site-studies will also be accepted.

## ABSTRACTS

### 1 BIOLOGICAL RESOURCES AND THE EXPANSION OF NEW ECONOMIC AND CULTURAL MODELS THROUGHOUT THE ROMAN EMPIRE: AN INTRODUCTION TO THE SESSION

**Abstract author(s):** Tereso, João (Associação BIOPOLIS; CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos; Centre for Archaeology. UNIARQ. School of Arts and Humanities. University of Lisbon; MHNC - UP - Natural History and Science Museum of the University of Porto; B-ROMAN Project PTDC/HAR-ARQ/4909/2020; Centre of Interdisciplinary Studies, University of Coimbra) - Detry, Cleia (Centre for Archaeology. UNIARQ. School of Arts and Humanities. University of Lisbon; B-ROMAN Project PTDC/HAR-ARQ/4909/2020) - Vaz, Filipe (Associação BIOPOLIS; CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos; B-ROMAN Project PTDC/HAR-ARQ/4909/2020) - Valenzuela-Lamas, Sílvia (Spanish National Research Council-Consejo Superior de Investigaciones Científicas - CSIC; Archaeology of Social Dynamics, Milà i Fontanals Research Institute - ASD, IMF-CSIC; Centre for Archaeology. UNIARQ. School of Arts and Humanities. University of Lisbon; B-ROMAN Project PTDC/HAR-ARQ/4909/2020) - Peña-Chocarro, Leonor (Spanish National Research Council-Consejo Superior de Investigaciones Científicas - CSIC; GI Paleoeconomía y Subsistencia de las Sociedades Preindustriales, Instituto de Historia - IH-CSIC; B-ROMAN Project PTDC/HAR-ARQ/4909/2020)

**Abstract format:** Oral

The expansion of the Roman Empire and the implementation of new socioeconomic models in the occupied territories were complex processes and varied greatly depending on the characteristics of indigenous communities and how its conquest took place. As such, despite having a strong common background, painstakingly established by Roman administration, trade, armies and religion, Roman society was in fact diverse.



The study of plant and animal remains in articulation with other archaeological evidences and written sources has the potential to shed some light on this diversity. By providing evidence on the exploitation, production, trade and consumption of biological resources in different chronological, environmental and social contexts, these approaches may help us clarify the powerful role such resources had in the introduction of new social and economic models and in the shaping of landscapes during Roman Times.

In this paper we will explore the role of zooarchaeological and archaeobotanical investigation in the study of the Romanization process, with a particular emphasis in the western empire, and present the research lines that stand in this session's core.

## 2 APPROACHING WOODLAND MANAGEMENT DURING ANTIQUITY IN NE OF THE IBERIAN PENINSULA

**Abstract author(s):** López Castillo, Eva María - López-Bulló, Oriol - Berrocal Barberà, Anna - Piqué Huerta, Raquel (Department of Prehistory, UAB) - Castanyer, Pere (Archaeological Museum of Catalonia-Empúries) - Pera, Joaquim (Department of Antiquities and Middle Age Studies) - Rodrigo, Esther (Department of Antiquities and Middle Age Studies) - Tremoleda Trilla, Joaquim (Department of History and History of Art from Universitat de Girona) - Frigola Torrent, Joan (Museu Arqueològic de Banyoles)

**Abstract format:** Oral

Woodland management, i.e. pollarding, coppicing or pruning, are documented through written sources and iconography from the Roman period onwards. These practices could affect different species and with different purposes: improving the production of fruits, procuring fodder or obtaining timber or wood with specific shape and size. However, direct evidences of these practices are scarce or difficult to identify in the archaeological record. The application of the measuring of the diameter and the number of tree rings of wood remains have recently been applied to identify woodland management practices with promising results for prehistoric cases (Out et al 2013). This paper aims to present the results of the application of this method to the exceptionally well preserved waterlogged wooden materials from Roman and Late Antiquity wells of North-East Iberia in order to determine practices of woodland management and pruning. The Roman archaeological site of Ileso (Guissona, Spain), dated s. III d C and Vilauba (Camòs, Spain), dated s. VI-VII dC has provided a significant amount of branches of different taxa that allow such an approach. Moreover, the wide variety of archaeobotanical studies developed on these sites, of both waterlogged and charred wooden and carpological remains, allow the contextualization of the results with respect to other evidences of tree cultivation or plant management.

## 3 COMBINED TRADITIONS: ARCHAEOZOOLOGY OF THE ROMAN-PERIOD-BURIALS IN POTZNEUSIEDL (BURGENLAND-AUSTRIA, 1ST-3RD CENTURIES AD)

**Abstract author(s):** Saliari, Konstantina (Naturhistorisches Museum Wien) - Formato, Lucia (Österreichische Akademie der Wissenschaften)

**Abstract format:** Oral

The archaeological and archaeozoological record from present-day Austria offers evidence about significant socio-political and economic changes that took place during the Roman period. Faunal remains from settlements indicate changes in husbandry practices and livestock management, whereas material from graves shows that the mortuary behavior of the local communities was also affected by the Roman presence. The current work investigates animal bones from the inhumations (1st century) and cremations (1st-3rd) found in Potzneusiedl (Burgenland, Austria) and discusses how people dealt with loss and death in a time of great novelties but also challenges. In order to better understand the impact of the Roman influence, a comparative study was conducted between funerary contexts of the Iron Age and Roman period, but also between faunal assemblages from settlements deriving from these periods. Our results suggest cultural mixing of local and newly imported traditions as early as the 1st century AD, additionally supported by archaeological finds. A final aspect of the analysis concerns the examination of the cremated animal bones, which can provide vital information on the pyre and the ritual itself.

- 4** **BIOLOGICAL RESOURCES (CROPS, WOOD AND ANIMALS) IN SANTARÉM (PORTUGAL) IN THE ROMANIZATION OF IBERIA'S SOUTH-WESTERN FAÇADE**
- Abstract author(s):** Costa Vaz, Filipe (CIBIO - University of Porto) - Detry, Cleia (UNIARQ - Centre for Archaeology University of Lisbon; School of Arts and Humanities - University of Lisbon) - Davis, Simon (DGPC - Directorate-General for Cultural Heritage; CIBIO - University of Porto) - Arruda, Ana - Viegas, Catarina (UNIARQ - Centre for Archaeology University of Lisbon; School of Arts and Humanities - University of Lisbon) - Tereso, João (CIBIO - University of Porto; UNIARQ - Centre for Archaeology University of Lisbon; Natural History and Science Museum - Univ. of Porto)
- Abstract format:** Oral
- For 20 years, excavations in Alcáçova de Santarém (Portugal) revealed a variety of contexts, spanning over 1500 years, from the Bronze Age to Medieval Times. A large number of biological remains, mostly encompassing animal bones and charred plant macroremains were recovered, but only the former have been published.
- Here, we will present novel archaeobotanical data from the Late Iron Age and Roman period, which will be integrated with the available zooarchaeological data, to provide a combined narrative on environmental dynamics, food consumption, agriculture and animal husbandry, in the framework of the Romanization of South-western Iberia. Although there is some continuity in the exploitation of major domestic animals such as sheep, goat, cattle and pig, there is a decrease in the presence of red deer and an increase of chicken and oyster, which may reflect changes in food consumption, economy and landscape. Charcoal data doesn't suggest major changes in vegetation, since firewood was gathered in different scrubland and woodland formations in both periods. Offsite pollen analysis, however, document the expansion of cultivated areas. Grains of barley and naked wheat are present throughout the whole sequence of Alcáçova de Santarém, but grapevine and other domestic and wild taxa were also recovered.
- 5** **LANGUAGE AND DIET CHANGE DURING THE IRON AGE-ROMAN TRANSITION NE IBERIA: AN INTEGRATED STUDY OF CABRERA VALLEY (CATALONIA, SPAIN)**
- Abstract author(s):** Valenzuela-Lamas, Silvia (ArchaeologyHub.CSIC) - Nieto-Espinet, Ariadna (University of Lleida) - Sinner, Alejandro (University of Victoria)
- Abstract format:** Oral
- Meat diet is often used as a reflection of cultural and socio-economic changes. Here we provide an interdisciplinary study combining zooarchaeological, funerary and epigraphic data as proxies for understanding complex processes and dynamics of cultural change between the late Iron Age and early Roman times NE Iberia. The faunal remains indicate the existence of significant dietary changes before and after the Roman conquest (starting in 318 BCE), while the epigraphic evidence implies that language changed at a slower pace, as shown by the use of indigenous onomastics and the continued use of the Iberian script, coin legends included until the 1st. c. BCE. Funerary practices changed before the predominance of Latin names attested in the 1st. c. CE, thus showing that cultural change may take place at different levels and according to different rhythms depending on the aspect involved (cooking, funerary practices, language). In addition, differences may occur between sites and even households at a given location.
- 6** **COPING WITH THE PAX ROMANA. THE SUNKEN BYRE AND CHANGES IN THE AGRICULTURAL SYSTEM OF GERMANIA INFERIOR AND GALLIA BELGICA**
- Abstract author(s):** Van der Velde, Henk (ADC ArcheoProjecten)
- Abstract format:** Oral
- At the beginning of the 1st century AD the northwestern parts of the Roman Empire (modern day Belgium and the Netherlands) became integrated in the Roman Empire. The process leading to the establishment of the Roman provinces of Germania Inferior and Gallia Belgica took almost a century resulting in the building of the limes infrastructure, administrative centres and road networks. By then a period of economic and population growth started resulting in an increase of the number of settlements. In this contribution we will focus on the Pleistocene parts of the study area. During the 2nd century AD almost all settlements witnessed the introduction of the sunken byre. This indicates the introduction of a new agricultural system. Funded by the Flemish Heritage Agency a multidisciplinary team of archaeologist and palaeo-botanists researched this sunken byres in order to reconstruct the way the agricultural system changed order to feed a growing population.

## 7 THE FAUNAL REMAINS FROM CALLE ALMENDARALEJO AND DOMUS MITREO (MÉRIDA, SPAIN): ONE MORE PIECE IN THE PUZZLE

**Abstract author(s):** Detry, Cleia (UNIARQ/FLUL) - Heras Mora, Javier (Junta de Extremadura) - Bustamante-Álvarez, Macarena (Universidad de Granada)

**Abstract format:** Oral

During the last 10 years we have been accumulating data concerning animal management in Roman Lusitania. We now understand a little better about what was being consumed and used during the roman period in Southwestern Iberia.

We have found clear differences between, on the one hand, cities founded by the Romans, such as Mérida and Ammaia, and on the other, cities with previous occupation such as Lisbon (Olisipo), Santarém and Conimbriga. The first group preferred the consumption of cattle and the second group favoured smaller animals such as sheep, goat and pig. Moreover, larger cattle were only found in the first group and in villas also of founded by Romans. This pattern is also observed in other parts of the Iberian Peninsula. However, in other parts of the Roman empire these zooarchaeological indicators do not always seems to apply once more data are available. This emphasizes the importance of large amounts of data.

An aspect that is common throughout Lusitania is a preference for hunting big game and consumption of oysters. This pattern appears at the sites of Casa del Mitreo, Domus Mitreo and Calle Almendralejo.

In Mérida we only had the results of a study of the fauna of Casa del Mitreo, but we have now studied the remains from Calle Almendralejo and Domus Mitreo. These remains date from the 1st Century BC until the 4th century AD. The pattern seems to confirm the ones already observed in Mérida including the finds of exotic animals such as camel which confirms the Roman introduction of exotic animals and new ways of managing them. Cattle also appear to have been the preferred animal both eaten and used for traction.

## 8 ZOOARCHAEOLOGICAL INSIGHTS ON THE INTEGRATION OF THE BALEARIC ISLANDS INTO THE ROMAN WORLD

**Abstract author(s):** Valenzuela, Alejandro (Department of Historical Sciences & Art Theory. University of the Balearic Islands - UIB)

**Abstract format:** Oral

The integration of the Balearic Islands within the Roman world entailed a series of important changes in the socio-economic and socio-political organization of the indigenous communities of the islands. These changes, however, did not occur simultaneously and their significance, character, and distribution have variably been interpreted and debated by historians and archaeologists alike. Some archaeological indicators, such as settlement patterns, ceramics and iconography, have been linked to issues of cultural and economic domination, resistance and syncretism.

Zooarchaeology has a critical role to play in the archaeological study of Roman colonization by providing new lines of evidence on fundamental questions such as changes in traditional foodways and political economy. Taking these considerations into account, this presentation aims to inform and discuss the numerous implications that occurred in the production, transformation and distribution of animal resources in Mallorca and Menorca during the late Republic and Empire. To do this, a variety of features of the zooarchaeological record will be explored (i.e., frequencies, metric and non-metric variations, and species translocation) and special attention will be given to characterize the time and rate of these changes.

## 9 EVALUATING ROMAN INFLUENCE AT THE EDGE OF THE EMPIRE BY ZOOARCHAEOLOGICAL META-ANALYSIS

**Abstract author(s):** Everett, Sarah (BioArCh, Department of Archaeology, University of York)

**Abstract format:** Oral

This talk presents PhD research that seeks to evaluate the extent of Roman influence at the edge of the Empire via the analysis of zooarchaeological data. It applies an approach that is well-established in the study of the Roman provinces to two regions at the furthest reaches of Roman control: one in southeast Europe, spanning the Danube limes, and the second in northern Britain, spanning the frontier along Hadrian's Wall. Roman imperial expansion led to a variety of changes in animal exploitation in occupied regions — in particular, livestock improvement and greater specialisation within husbandry practice. Zooarchaeological analysis has demonstrated the regional specificities of such changes and the extent to which they occurred across the varied territory of the Empire, providing an insight into the extent of Roman influence in the provinces. The current paper applies a similar zooarchaeological approach to two regions that span the imperial border, encompassing (a) long-standing provinces of the Empire, (b) territories only briefly subject to direct imperial control, and (c) regions beyond the furthest reaches of the Roman administration. The paper presents a synthesis of published zooarchaeological data aimed at evaluating the extent of Roman influence across this varied region through time. It will consider the role played by factors such as site type and loca-

tion, proximity to communication routes, and local pre-Roman husbandry practices in influencing the trajectory of change in animal resource exploitation during the Roman imperial period.

## 10 BETWEEN LIFE AND DEATH. INVESTIGATING FOOD AND FUEL IN THE EARLY IMPERIAL NECROPOLIS OF ST. ANTONI MARKET (BARCELONA, SPAIN)

**Abstract author(s):** Tarongi, Miguel (Universitat de Lleida. Facultat de Lletres) - Bianco, Sabrina (Catalan Institute of Human Paleoecology and Social Evolution - IPHES-CERCA; University of Barcelona, Faculty of Geography and History) - Alonso, Natàlia (Universitat de Lleida. Facultat de Lletres) - Allué, Ethel (Catalan Institute of Human Paleoecology and Social Evolution - IPHES-CERCA; University Rovira and Virgili, Department of History and Art History) - Riera Mora, Santiago (University of Barcelona, Faculty of Geography and History) - Hinojo, Emiliano (Freelance archaeologist) - Miró i Alaix, Carme (Archaeological Service of Barcelona, responsible of Pla Bàrcino, Direcció de Memòria, Història i Patrimoni – Institut de Cultura - ICUB)

**Abstract format:** Oral

Excavations carried out recently (2011-2017) at the St. Antoni covered market, located in the western part of the Barcelona city, have provided a wealth of information to understand the functionality of this area since the Roman times. In fact, below the structure of this building, a 50-metre-long section of a main Roman road (called Via Augusta) has been discovered. This branch of the road was built at the end of the 1st century BC to link the ex-novo founded colony of Bàrcino (Barcelona) with neighbouring cities, as for example Tarraco (Tarragona), Iluro (Mataró) and Baetulo (Badalona). In association with this road, part of a necropolis with several funerary enclosures have been identified on both sides, including burials and cremations, dating the 1st century AD.

In this framework, the aim of this work is to provide new information on the selection of plant resources in the necropolis, based on symbolic, functional or convenience criteria. Furthermore, the investigation sheds light on the economy of food and wood management for supplying Roman funerary rituals in Barcelona.

In fact, archaeobotanical macroremains (seeds and wood-charcoals) have been systematically sampled from different cremation areas of the necropolis, and their analysis is providing valuable information about the use of food and fuel in funerary practices. On one hand, charred seeds and fruits remains recovered on the site, can shed light on the composition of funerary banquets or food offered to the deceased. On the other hand, charcoal analysis provides evidences of the woody species used to build the funerary pyres, the enclosure structures or as fuel for cooking oblation.

Results of this investigation constitute the first systematic study of archaeobotanical remains in a roman funerary context of Barcelona, up to now very limited to a few samples.

## 11 ROMAN FARMERS IN EASTERN IBERIA. SPATIAL, GEOARCHAEOLOGICAL AND BIOARCHAEOLOGICAL APPROACH TO AGRARIAN STRATEGIES

**Abstract author(s):** Grau, Ignasi (University of Alicante) - Gutiérrez, Mario (University of Jaén) - Portillo, Marta (IMF-CSIC) - López-Sáez, Jose Antonio (CCHS-CSIC) - Gallelo, Gianni (University of València) - Sarabia, Julia (University of Alicante)

**Abstract format:** Oral

Recent Archaeological landscape studies in the Valley of Alcoi (Eastern Iberia) have detected important settlement changes during the 1st c. BC related to Roman territorial organization. Rural settlement of previous Iberian Iron Age was confined to areas close to fortified oppida due to defensive strategies, but Roman pacification and dominion of the region created a context of political stability that allowed an increase of rural sites, with significant occupation of previously empty areas. The resulting rural landscape was composed by small farms connected to small plots of intensive uses, with manuring and terracing as agrarian strategies. This spatial organization characterized the later Roman Imperial Landscape.

The aim of this communication is to present the archaeological data that permits the characterization of this landscape of intensive farmers. We present an analytical strategy combining spatial analysis, microstratigraphic analysis by means of soil micromorphology and physical-chemical analyses of bulk soil samples, as well as archaeobotanical analyses including palynology, phytoliths and other calcitic microfossils. This high-resolution, multifiscal, and multi-analytical approach pursues to characterize these archaeological contexts to singularize these intensive agricultural practices. The creation of this peasant landscape is related to specific models of economic and social organization in the Roman period.

12

## THE ANIMAL REMAINS FROM ROMAN LISBON: FOUR SITE STUDIES FROM OLISIPO

**Abstract author(s):** Santos, Ana (UNIARQ - Centro de Arqueologia da Universidade de Lisboa, FLUL – Faculdade de Letras da Universidade de Lisboa)

**Abstract format:** Oral

We plan to study the remains of mammals, birds and molluscs recovered from sites in the Lisbon region and view them within the general context of Lusitanian zooarchaeology.

We aim, among other things, to discover which animals were a source of food for Roman Lisbon.

We shall present what is already known and then discuss the studies of four sites: Rua dos Anjos nº 10; Rua de Santa Marta 25-25A; Antigos Armazéns Sommer and Banco of Portugal (now the Money Museum). We shall also discuss the lines of research that we plan to develop in the coming years.

A wide range of mammals was present, most of them domestic, such as sheep, goat, cattle and pig. However, wild animals such as red, roe deer and rabbit are also represented. With regard to birds, the remains are scarce being represented mostly by domestic chicken. In addition, we note the presence of various molluscs such as oysters, clams and terrestrial gastropods.

We will first examine the data from each archaeological site and then we shall undertake a more comprehensive study in order to identify patterns of food consumption, animal improvement, and the introduction of exotic animals.

13

## INVESTIGATING WOOD-FUEL USE IN BARCINO (BARCELONA, NE IBERIA): MULTI-SITES CHARCOAL ANALYSIS ALONG THE ROMAN CITY'S WALL AND MOAT (CC.1ST-4TH CE)

**Abstract author(s):** Bianco, Sabrina (Catalan Institute of Human Paleoecology and Social Evolution - IPHES-CERCA; University of Barcelona, Faculty of Geography and History) - Picornell-Gelabert, Llorenç (University of Balearic Islands, ArqueoUIB research group, Department of Historic Sciences and Theory of Arts) - Allué, Ethel (Catalan Institute of Human Paleoecology and Social Evolution - IPHES-CERCA; University Rovira and Virgili, Department of History and Art History) - Riera Mora, Santiago (University of Barcelona, Faculty of Geography and History) - Miró i Alaix, Carme (Archaeological Service of Barcelona, responsible of Pla Bàrcino, Direcció de Memòria, Història i Patrimoni – Institut de Cultura - ICUB)

**Abstract format:** Oral

Woodlands were very important spaces for fuel-supplying in the past. In particular, in a Roman city there was a frequent wood-energy requirement due to the presence of many activities and facilities: from domestic heating and kitchens, to the widespread *thermae*, as well as several workshops (i.e. pottery, metallurgical and glass productions), bakeries or other food processing installations. As consequence, woodland management and exploitation had to be well integrated into a precise urban Roman economic model.

The colony of Barcino (current Barcelona) was founded *ex-novo* at around 10 BCE in NE Hispania Citerior region, in a coastal plain providing diverse natural resources. Pollen analyses indicate that a limited transformation of the landscape occurred nearby the city at this time, evidencing a predominance of woodlands over crops.

Thence, through the analysis of charcoal remains sampled during 10 different preventive archaeological excavations in the proximities of the roman city perimeter-wall and the moat, the aim of this work is to evaluate the overall wood taxa used as fuel by the colony inhabitants between the 1st-4th centuries CE.

Valuable archaeobotanical information has been obtained from the moat's layers, localized in 5 different sectors of the urban limit and representing waste deposits produced by the settlement. Other samples have been obtained, among others, from circulation layers near the *intervallum*, from metallurgic combustion pits and from a run-down well.

All these different contexts seem to point to a targeted and standardized exploitation of holm oak (*Quercus ilex/coccifera*), tree heather (*Erica arborea*) and strawberry tree (*Arbutus unedo*).

Altogether, these anthracological data are relevant, as the results of a first systematic archaeobotanical study focusing on Roman urban contexts in Barcelona, very scarce until present. This allows, thus, to approach past woodland exploitation system of the city, its environmental impact and the landscape transformation of the surrounding area.

A.

## BIOLOGICAL RESOURCES IN THE PALEOECONOMY OF HALMYRIS - A ROMAN SETTLEMENT IN SOUTHEAST ROMANIA

**Abstract author(s):** Stanc, Simina Margareta (Alexandru Ioan Cuza University of Iași) - Nuțu, George (Eco-Museum Research Institute of Tulcea) - Danu, Mihaela - Bejenaru, Luminița (Alexandru Ioan Cuza University of Iași)

**Abstract format:** Poster

Halmyris (Murighiol, Tulcea County) is one of the most important Roman and Late Roman settlements located in the inferior sector of the Danube Delta, in the easternmost part of Scythia province during the Late Antiquity. The fort (2nd-4th century AD) and early Byzantine city (5th-early 7th century AD) experienced a long existence benefiting of

strategic position. Halmyris was the most easterly point of the Danubian border in Roman times and probably served as a supply centre for the fleet; early Roman inscriptions inform us of the existence of a 'mariner's village' – vicus clasicorum. In 2014, extensive research took place in the extramural area of the city. The bone assemblages presented were discovered in this area in contexts dating to the Late Roman and early Byzantine periods (4th-6th centuries AD).

Phytolith assemblages from the Halmyris site are composed mainly of grass phytoliths. We noticed important amounts of ELONGATE DENDRITIC forms and a high proportion of silica skeletons. Our results show that cereals (i.e., wheat, barley) were a relevant part of the subsistence economy of the site, phytolith analysis revealing an important signal of cereal processing. Flax fibers, which are the strongest natural fibers, were also identified in samples from Halmyris.

The exploited animal resources are varied, including molluscs, fish, birds and mammals. Most of the remains belong to the group of mammals.

Animal husbandry represented an important occupation. The identified domestic mammals are cattle, sheep, goat, pig, horse, donkey, dog. The predominant species are cattle and sheep/goat, both by the number of identified specimens and by the minimal number of individuals. Hunting has small importance for the settlement under study. The identified wild mammals are red deer, wild boar, roe deer, aurochs, hare, wolf, European badger. Red deer and wild boar have the highest proportion of wild mammals.

## **B. ARCHAEOZOOLOGICAL EVIDENCE ON EATING HABITS IN THE LIMES OUTPOSTS AT THE NORTH-WESTERN ROMAN FRONTIER OF DACIA POROLISSENSIS**

**Abstract author(s):** Malaxa, Daniel (Alexandru Ioan Cuza University of Iasi; Iași Institute of Archaeology) - Cociș, Horațiu (Zalău County Museum of History and Art) - Stanc, Simina (Alexandru Ioan Cuza University of Iasi)

**Abstract format:** Poster

A novelty within the Romanian historiography concerning the food supply and consumption habit of the soldiers garrisoned on the north-western Roman frontier of Dacia Porolissensis, the present study brings forward a series of recent analyses based on 18 faunal assemblages collected from earlier archaeological research carried by Nicolae Gudea.

The supply network of the minor fortifications (especially the watchtowers) is based on several operating parameters, including the limit (frequency and spatiality) on which these supply chains are operating. The main topic of this study is following such parameters, namely, where the official food supply chain ends and where the hunting begins.

The activities concerning the daily life of the garrisoned troops are revealed through the archaeozoological analysis, outlining for the first time the diet and the related eating habits of a series of limites outposts of Dacia Porolissensis.

From 18 minor fortifications, 1070 faunal remains were collected during several archeological campaigns; the faunal assemblages are represented by bone and dental fragments belonging exclusively to mammals (domestic and wild), representing remains of domestic origin.

Most of the fragments belong to domestic mammals (707) and five species have been identified: cattle, ovicaprids, pig and horse; cattle remains has the highest frequency. No dog remains have been identified, but its presence is indicated by bite marks (some bones are gnawed).

The wild mammals are less represented (95 remains), and six species have been identified: red deer, wild boar, roe deer, hare, aurochs and badger; for the group of wild mammals, red deer has the largest percentage.

---

## **51 CONQUEST, MIGRATION AND CULTURAL CHANGE IN THE MEDIEVAL MEDITERRANEAN**

**Theme:** 2. [Re]integration

**Organisers:** Pluskowski, Aleks (University of Reading) - García-Contreras, Guillermo (University of Granada) - Alexander, Michelle (University of York) - Banerjea, Rowena (University of Reading) - Mattei, Luca (University of Granada)

**Format:** Regular session

From the Levant to Iberia and north-western Africa, the medieval Mediterranean world was defined by multiple waves of conquest and regime change, accompanied by migration and variable encounters with resident populations, resulting in marked episodes of cultural transformation. These included the Arab conquests of the Levant and north Africa, the Arab-Berber conquests of Iberia and Sicily, the protracted Christian conquests of those regions, the crusader states of the Levant, their replacement by the Mamluk sultanate and later Ottoman expansion into south-eastern Europe. These resulted in a lasting frontier between the Christian and Islamic worlds, as well as a series of shifting borderlands between opposing polities where social identities became attached to religious, as well as political differences. The resulting palimpsest of cultural encounters defines the recent heritage of Mediterranean countries, elements of which have been politicised within the context of ongoing debates on European identity and migration.

The archaeological study of cultural change across the medieval Mediterranean world has intensified in recent decades, whilst environmental archaeology is increasingly used to understand these transformations at varying scales. This session, organised by the "Landscapes of (Re)Conquest" project, aims to capture the state-of-the-art from across

the Mediterranean and to showcase its own results from south-western Europe. Papers are invited on new research of cultural change in the medieval Mediterranean, with the aim of publishing a special issue drawn from the contributions.

## ABSTRACTS

### 1 DYNAMICS OF MEDIEVAL SETTLEMENT IN CENTRAL IBERIA: DISCUSSIONS BETWEEN MIGRATIONS, CULTURAL CHANGE AND ECOLOGY

**Abstract author(s):** Garcia-Contreras Ruiz, Guillermo (Universidad de Granada) - Banerjea, Rowena Y. (University of Reading) - García-García, Marcos (Universidad de Alicante) - Hernández-Casas, Yaiza (Universidad de Granada) - Ros, Jerome (Institut des sciences de l'évolution de Montpellier) - Alexander, Michelle (University of York) - Pluskowski, Aleks G. (University of Reading)

**Abstract format:** Oral

The province of Guadalajara in central Iberia represents a suitable territory for analyzing the dynamics of long-term settlement patterns during the Middle Ages, a period characterized by multiple waves of conquest and colonization processes. Since the Late Roman period and the organization of the Visigothic Kingdom, the settlement network was restructured with the creation of new cities and episcopates, and the maintenance of rural sites in the fertile river valleys. Starting in 711 CE with the Islamic conquest of Iberia and the formation of al-Andalus, a new picture of rural settlement emerges with small and medium-sized settlements. These are associated with irrigated fields and organized around fortifications (including single towers) that became more important during the centuries in which these lands functioned as political frontiers. From the 12th century, when this region was conquered and colonized by Christian societies, a new network of towns was consolidated that still exists today, structured around the great fortifications that were the capitals of the *comunidades de villa y tierra* (communities of "towns and lands"). This paper integrates all existing information on long-term population dynamics in this region, discussing the impact and role of settlers in each period, the economic and political changes that are reflected in the landscape, as well as the influence of local geology, hydrology and topography.

### 2 CONNECTING SITE TO LANDSCAPE: EXPLORING MIDDLE MARCH BORDER CASTLES TO UNDERSTAND THE DYNAMICS OF CULTURAL AND ECOLOGICAL CHANGES

**Abstract author(s):** Mattei, Luca - García-Contreras Ruiz, Guillermo (University of Granada) - García-García, Marcos (University of Alicante) - Banerjea, Rowena (University of Reading) - Hernández-Casas, Yaiza (University of Granada) - Ros, Jerome (CNRS, Université de Montpellier) - Alexander, Michelle (University of York) - Pluskowski, Aleks (University of Reading)

**Abstract format:** Oral

The dynamics that support the cultural and ecological changes that occur on a large scale in the border area of the Middle March in Iberia during the medieval period can be understood as a whole, by linking the regional environmental information of the landscape and territory with data from the detailed analysis of settlements. A connection between the micro and macro scale requires a continuous dialogue in both directions to generate knowledge.

The main aim of this paper is to present the micro-scale results of the studies carried out in the castles of Molina de Aragón and Atienza. The laboratory analyses and the material record from the excavations carried out in 2021 have enabled us to better understand not only the spatial and functional contexts of some of these structures, but also to refine their chronological framework and ultimately to develop an initial interpretation of their occupation within a broader historical context. These initial data enable us, for the first time, to present a narrative concerning daily life in these castles, the changing character of their occupation and use, and their associated long-distance connections including the exploitation of resources and the reach of their commercial networks. This new information will integrate and enrich the concept of 'castlescape', that in its definition tries to create synergies between the archaeological deposits of castles and the sediments in their surrounding landscape. This is essential for developing our understanding of these castles and their diachronic roles in the territory that surrounds them.

### GEOARCHAEOLOGICAL APPROACHES TO UNDERSTANDING THE DYNAMICS OF 'CASTLESCAPES' IN THE IBERIAN PENINSULA

**Abstract author(s):** Banerjea, Rowena (University of Reading) - García- García, Marcos (University of York; University of Alicante) - Ros, Jérôme (CNRS, University of Montpellier) - Mattei, Luca - Hernández Casas, Yaiza - García-Contreras Ruiz, Guillermo (University of Granada) - Alexander, Michelle (University of York) - Pluskowski, Aleks (University of Reading)

**Abstract format:** Oral

Soils and sediments are the backbone of the archaeological record and provide information about the changing form and function of spaces within castles and concerning the links between these spaces and activities in their hinterlands. In this paper, by applying a range of geoarchaeological techniques, the activities within the castle are revealed in the buried archaeological soils and sediments, and other related sites and features in the landscape, such as associated agricultural terraces and irrigation systems, from a range of frontier medieval castle sites in Spain in connection with the research project "Landscapes of (Re)Conquest: Dynamics of Multicultural Frontiers in Medieval South Western Europe", funded by AHRC.

The occupation of a castle site can be dynamic. At Molina de Aragón, Guadalajara, soil micromorphological data from profiles within the citadel and the church of Santa Catalina, or Cristo de las Murallas show alternating periods of habitation occupation, abandonment and post-abandonment occupation. These microstratigraphic data show the changing nature of the occupation from Islamic to Christian, and how the occupation within the castle is reflected in the use of terraces and irrigation systems around the castle.

Comparative geoarchaeological case studies show how the "Land of Aynadamar" in Nasrid Granada, was transformed following the Castilian conquest and the Christian colonization in the last peri-urban place of al-Andalus. At Cártama, Malaga, soil micromorphological analysis identified in situ corralling deposits with well-preserved dung of both larger herbivores (cattle or horses) and caprines, in an urban area during the Almohad period, which developed just below the hill where the castle is located. Remains of fodder are identifiable within the dung remains, which provides information concerning their alimentation and animal husbandry practices during the Almohad period. These strata are truncated by a pit, following the end of use of the area as a corral.

### ANIMALISING CULTURAL BOUNDARIES: IDENTITY, FOODWAYS AND SUBSISTENCE IN MEDIEVAL IBERIA

**Abstract author(s):** García, Marcos (University of Alicante; University of York) - García-Contreras Ruiz, Guillermo - Mattei, Luca - Hernández Casas, Yaiza (University of Granada) - Banerjea, Rowena Y. (University of Reading) - Ros, Jérôme (CNRS, University of Montpellier) - Alexander, Michelle (University of York) - Pluskowski, Aleks (University of Reading)

**Abstract format:** Oral

Foodways represent a sphere of action which, in the past as well as in the present, has been recurrently used in the field of everyday life as one of the main identity markers for producing, reproducing and expressing cultural affinity or otherness. In an historical context marked by profound differences derived from the cohabitation of diverse ethno-religious groups such as medieval Iberia, eating habits played an essential role in the demarcation of cultural boundaries between members of different communities that can be explored archaeologically.

This paper presents the results of the zooarchaeological study of a set of sites occupied during the medieval period and located in different frontier regions of the Iberian Peninsula. The results demonstrate the informative potential of archaeofaunal analysis to contribute to the recognition of the consumption patterns of animal food products, the identity of the groups responsible for the accumulation of the food debris and the systems of exploitation and management of the animals.

Project "Landscapes of (Re)Conquest: Dynamics of Multicultural Frontiers in Medieval South Western Europe" (AH/R013861/1), funded by AHRC.



## LIFE ON THE FRONTIER: EXPLORING ECONOMY AND SUBSISTENCE IN TRANSITIONAL MULTI-FAITH SOCIETIES OF MEDIEVAL SPAIN

**Abstract author(s):** Alexander, Michelle (BioArCh, Department of Archaeology, University of York) - García-Collado, Maite (BioArCh, Department of Archaeology, University of York; GIPYPAC, Department of Geography, Prehistory and Archaeology, University of the Basque Country - UPV/EHU) - García-García, Marcos (BioArCh, Department of Archaeology, University of York; Instituto de investigación en Arqueología y Patrimonio Histórico, University of Alicante) - Ros, Jérôme (Institut des Sciences de l'Evolution, CNRS, Université de Montpellier) - Mattei, Luca (Department of Medieval History and Historiographic Sciences and Techniques, University of Granada) - Banerjea, Rowena (Department of Archaeology, University of Reading) - García-Contreras Ruiz, Guillermo (Department of Medieval History and Historiographic Sciences and Techniques, University of Granada) - Pluskowski, Aleks (Department of Archaeology, University of Reading)

**Abstract format:** Oral

We present the results of interdisciplinary bioarchaeological research on the multicultural frontier context of the (Re) conquest of Islamic Iberia, focusing on human and animal subsistence as a proxy of political, social and economic changes from multiple sites in the province of Guadalajara between 10th and 15th c. CE.

Guadalajara, located in central Spain was defined by opposing Christian and Muslim frontier societies in the 11th and 12th centuries. We study sites dating to either side of the (Re)conquest to explore this frontier in transition, including the castle of Molina de Aragón, Prao de los Judíos, the Cathedral of Sigüenza, Alcázar Real de Guadalajara, Palacio de los Guzmán, castle of Zorita de los Canes, the cemetery of Guadalajara and the Campus de las Cristinas cemetery. These are mainly urban and military settlements which played a role as central places in the region and represent differing religious communities, including Muslim, Christian and Jewish contexts.

Biomolecular techniques were applied to these contexts in order to obtain a deeper understanding of animal husbandry strategies and food consumption patterns by both livestock and humans. Bulk carbon ( $\delta^{13}C$ ), nitrogen ( $\delta^{15}N$ ) and sulphur ( $\delta^{34}S$ ) stable isotope analyses were performed on the bone collagen of >300 samples, including humans, domestic mammals, birds and fish. A subsample of these were also analysed for oxygen ( $\delta^{16}O$ ) and strontium ( $^{87}/^{86}Sr$ ) isotopes to investigate mobility. Research questions to be addressed through these data include exploring differences in production strategies through time and between religious communities, differences between food supply networks to cities and castles and the consequences of changes in political rulership in animal husbandry management. Particular themes emerge, such as the use of C4 plants as fodder or the supply and consumption of fish at these inland settlements.

## EXPLORING PLANT RESOURCES AND VEGETAL LANDSCAPES EXPLOITED IN THE FRONTIERS OF MEDIEVAL IBERIA: ARCHAEOBOTANICAL CONTRIBUTION

**Abstract author(s):** Ros, Jerome (Institut des Sciences de l'Evolution, CNRS, Université de Montpellier) - Losilla, Nicolas (Department of Medieval History and Historiographic Sciences and Techniques, University of Granada) - Pastor, Thierry (Institut des Sciences de l'Evolution, CNRS, Université de Montpellier) - Mattei, Luca - García-Contreras Ruiz, Guillermo (Department of Medieval History and Historiographic Sciences and Techniques, University of Granada) - García-García, Marcos (Instituto de investigación en Arqueología y Patrimonio Histórico, University of Alicante) - Banerjea, Rowena (Department of Archaeology, University of Reading) - Hernández-Casas, Yaiza (Department of Medieval History and Historiographic Sciences and Techniques, University of Granada) - Alexander, Michelle (BioArCh, Department of Archaeology, University of York) - Pluskowski, Aleks (Department of Archaeology, University of Reading)

**Abstract format:** Oral

In recent decades, the development of archaeobotany in the Mediterranean has made it possible to document the main plant resources exploited, the agricultural practices implemented, as well as major phenomena of circulation and integration of new plant resources within historical societies. Concerning the medieval Western Mediterranean world, archaeobotanical studies have recently received a new impulse, allowing for a better characterization of Muslim agriculture, of its diffusion and of its effective implantation in the Iberian Peninsula, both in rural and urban contexts. This innovative work lays the foundations for a new reflection on the persistence and evolution of this agriculture in the face of the great political, social and economic changes occurring in this area during the Christian (Re)conquest.

The main goal of this paper is to present the results of new studies carried out in a range of frontier medieval sites in Spain, in connection with the research project "Landscapes of (Re)Conquest: Dynamics of Multicultural Frontiers in Medieval South Western Europe", funded by AHRC. The results, based on studies of seeds and charcoal fragments issued from archaeological samples dated from the 10th to the 15th c., make it possible to enlighten the main agro-horticultural productions and their evolution in the face of changing socio-economic dynamics. The question of changes in forest management and fuel economy is also raised.

## 7 **ARCHAEOMETALLURGY ON THE MEDIEVAL IBERIAN FRONTIER: THE USE AND EXPLOITATION OF METAL IN A FEUDAL CONTEXT**

**Abstract author(s):** Hernández-Casas, Yaiza - García-Contreras Ruíz, Guillermo - Murillo-Barroso, Mercedes (University of Granada) - García-García, Marcos (University of Alicante) - Banerjea, Rowena Y. (University of Reading) - Ros, Jérôme (CNRS, Université de Montpellier) - Mattei, Luca (University of Granada) - Brown, Alex D. (Wessex Archaeology) - Alexander, Michelle (University of York) - Pluskowski, Aleks G. (University of Reading)

**Abstract format:** Oral

In this work, we propose characterizing the metallurgical production of the feudal social formation in Medieval Iberia. Playing a leading role in the Middle Ages borders, we study the use and exploitation of metal developed in frontier settlements from an archaeometallurgical perspective.

Being part of the Project «Landscapes of (Re)Conquest: Dynamics of Multicultural Frontiers in Medieval South Western Europe» (AH/R013861/1), our interest lies in integrating the study of metal artefacts and slags from border sites by incorporating their archaeometallurgical analysis. So, we present the preliminary results of some of the feudal contexts that we are studying through Archaeometallurgy, using techniques such as pXRF, SEM, and metallography. All this will allow us to detect origin, technology or distribution of metal artefacts, as well as documenting the alloying practices and technology developed in some key settlements of feudal colonization.

Finally, this means to present new analytical, spatial and socio-cultural results of settlements whose archaeological metallic record has much to contribute to our knowledge of landscape, social dynamics and daily life in the Iberian medieval frontiers.

## 8 **SOCIAL, CULTURAL AND TERRITORIAL CHANGES IN THE EASTERN PYRENEES BETWEEN 9TH-14TH C. CE : WHAT ROLE FOR CLIMATE CHANGE ?**

**Abstract author(s):** Carozza, Jean-Michel (La Rochelle University) - Puig, Carole (FRAMESPA, UMR 5136, Toulouse)

**Abstract format:** Oral

During the period between the 9th century and the 14th century CE, the Eastern Pyrenees experienced a phase of unprecedented expansion and then retreat of settlements, which led to the disappearance of villages both in the lowland plains and in mountain areas (Carozza et al., 2009, 2011, 2012, 2013). Such "deserted villages" were successively interpreted as the consequence of political, economic and demographic changes linked to the plagues. This last hypothesis permeates the historiography of deserted villages, notably in mountainous areas.

In this work, we explore the possible contribution of the Little Ice Age, i.e. the progressive temperature cooling and rainfall increase starting locally from 1250 CE, as a factor that favoured this process. Based on previous the works carried out in the Roussillon lowlands (Carozza et al.,) we explored the potential transposition of this model to the highland areas in the Capcir and more specifically in Valserra valley, in the vicinity the deserted village. The historical and archaeological data show that the valley was initially populated during the last years of the 10th century CE. From the 14th century, the archives show signs of the impoverishment of the community, then of its decline, the number of fires falling from 15 to 3 during the second half of the 14th century CE, leading to its gradual abandonment in the 16th c. CE. The cross-referencing of historical, archaeological and palaeoenvironmental data makes it possible to produce an impact model that integrates the various socio-economic, political and environmental dimensions.

## 9 **THROUGH THE GLASS. CONQUEST, MIGRATION AND CULTURAL CHANGE IN MEDIEVAL SPAIN AND PORTUGAL**

**Abstract author(s):** De Juan, Jorge (UNIARQ, Centre of Archaeology of the University of Lisbon; Department of Prehistory, Ancient History and Archaeology, Universidad Complutense de Madrid)

**Abstract format:** Oral

The aim of this contribution is to provide an overview of the recent advances in glass research on the medieval Iberian Peninsula from the Visigothic Kingdom in the 6th to the Hispanic Monarchy of the 16th century. The presentation will expose on how the new research findings can be related to some of the political and cultural changes that took place along that period.

The comparative analysis of the variations in the typology, the technology and the origin of glass objects with a broad geographical and temporal view, provides some insights into the transfer of objects, how-know in glassmaking and of the raw materials to make glass. This is also helpful to detect processes of technological hybridization, diverse temporal and spatial patterns, supply routes, changes in decorative shapes, the diffusion of styles and the occurrence of different cultural and regional peculiarities in the ways in which glass was produced, distributed, and consumed.

## 10 WHAT ABOUT THE FOOD? MIGRATION AND AGRICULTURE IN AL-ANDALUS HISTORICAL TRADITIONS

**Abstract author(s):** Grisales, Daniel (Universidad de Antioquia)

**Abstract format:** Oral

Regardless the fact that medieval societies are deemed as primarily agrarian, agriculture technology and its social impact in the post-roman society seems to be a secondary topic in the historiographical tradition of a substantial part of the Mediterranean Sea. When migration is brought to the table, the absence of agricultural knowledge is even more evident due to the fact that the movement of the different groups to the provinces of the Western Roman Empire only possess a problem in ideological, political or religious terms. Thus, it appears to be that the food supply was not an issue even though the transition from the Antiquity to the Middle ages is characterised by a transformation of land tenure and the disappearance of long distance trade that made local supply way more important that it was in Roman times.

The Muslim occupation of mostly of the Iberian Peninsula represents an interesting case to understand the relationship between migration and agriculture. Not only because the expansion of the Umayyad Caliphate was swift overcoming older political units derived from the first migration wave, but also because the occupation encompassed different ecological niches within the Iberian Peninsula that in theory would require invention or adaptation of existing agrarian technologies. This paper, searches to summarize the existing historical approaches to migration and agriculture in Al-Andalus, from the early works of Pirenne and his disciples, to the latest theoretical revisions produced after Hodges and Whitehouse. Moreover, it intends to compile the results of the latest archaeological researches to see how they related to these models or how they set apart from them. All of this with the objective of setting a state of the art that allow us to think in new study directions.

## 11 LIFEWAYS AND MOBILITY OF THE CHRISTIAN CONQUERORS OF PALMELA: A 12TH-13TH CENTURY POPULATION IN PORTUGAL

**Abstract author(s):** MacRoberts, Rebecca (HERCULES laboratory- University of Evora) - Santos, Michele (Museu Municipal de Palmela) - Fernandes, Isabel (Museu Municipal de Palmela; IEM-NOVA FCSH; School of Social Sciences- CIDEHUS, University of Évora) - Dias, Cristina (HERCULES laboratory- University of Evora; School of Technology Sciences, Department of Chemistry, University of Évora) - Vilar, Herminia (School of Social Sciences- CIDEHUS, University of Évora) - Maurer, Anne-France (HERCULES laboratory- University of Evora)

**Abstract format:** Oral

The city of Palmela held an important strategic position in the newly-conquered Christian territories of Portugal from the 12th century onwards. With its visual dominion over the Tagus and Sado estuaries and the surrounding plains, and communication networks with other Christian strongholds, the Castle of Palmela was in a prime position to defend Lisbon from attacks from the south while simultaneously being on the frontier with the Almohad Empire. The castle, which had been under Islamic rule since the 8th century was captured in 1147 AD by D. Afonso Henriques (first king of Portugal) and donated to the friars of Santiago in 1186. Although Palmela fell back under Berber control for a brief period, it was recovered by Christians again by 1194 with significant participation by the knights of the Order of Santiago. Excavations within the castle walls in the late 1990s recovered a series of graves in the site of the former convent of the Order, dating to the 12th-13th century. Many of the skeletons uncovered belonged to males, of whom a number appeared to be quite tall and robust. A medal bearing the insignia of the Order of Santiago lends support to the hypothesis that at least some of these individuals belonged to this militia. The analysis of stable isotopes in these skeletons presents a rare opportunity to infer patterns of dietary and migratory behaviour directly in individuals who may have played an active role in the Christian conquest of Portugal or at the least were living through these transitional times. In this study, carbon and nitrogen stable isotopes have been measured in bone collagen to reconstruct plant choices and protein inputs in the diet, while stable oxygen and radiogenic strontium in tooth enamel have been analysed to elucidate mobility patterns among these individuals.

## 12 AFTER THE CONQUEST. THE BUILDING OF CASTLE NETWORK AND LANDSCAPE IN THE ALPUJARRA (SOUTHEAST SPAIN)

**Abstract author(s):** Rouco Collazo, Jorge (Universidad de Granada)

**Abstract format:** Oral

The Arab-Berber conquest of Iberian Peninsula marked the beginning of a cultural change. This is clearly visible in material culture, especially on the transformations in settlement patterns and the exploitation of natural resources, generating a new landscape. The aim of this paper is to analyse the transformation process in landscape after the conquest in Southeast Spain, in particular in the Alpujarra, the southern slope of Sierra Nevada, in the first centuries of al-Andalus (8th-10th centuries).

For this objective, given the lack of historical and archaeological data about the Alpujarra in Late Antiquity and Early Medieval times, we will focus on the several rural fortifications built on these centuries. They will be analysed through an interdisciplinary methodology that combines Building Archaeology and Landscape Archaeology to obtain the most data as possible about these sites and their role on territory. Through this analysis, we contribute with new data and interpretations about the conquest process of al-Andalus and the settlement of new human groups, breaking previous structures. Nevertheless, we also deepen into the resistance process to this change, either religious or political in nature, which took place in al-Andalus until the proclaiming of Cordoba's caliphate in 10th century.

### 13 **"ARCHAEOLOGY OF CHANGE AND CONTINUITY: TRANSFORMATIONS IN PRODUCTIVE SPACES IN THE SOUTH-EAST PENINSULAR AFTER THE FEUDAL CONQUEST (13TH CENTURY)"**

**Abstract author(s):** Molina-Campuzano, María Isabel - Eiroa-Rodríguez, Jorge Alejandro (University of Murcia) - González-Ballesteros, José Ángel (Archaeologist)

**Abstract format:** Oral

After the conquest of the south-eastern territories of the Iberian peninsula by the armies of Castile, in the middle decades of the 13th century, a profound process of social and cultural change began, which only culminated at the end of the 15th century. The biggest transformations in the social organisation of the space and productive processes are clearly perceptible through archaeological analysis. In this context, the study of artisanal and industrial production process makes it possible to define in a clear way the dimension of the cultural change that takes place.

Taking as an observatory the main cities of the kingdom of Murcia in the late Middle Ages, the information concerning the productive spaces related to the industries of the moment is analysed; mainly metallurgical workshops, textile production centres and pottery and glass workshops. It also characterises the ceramic and vitreous productions of those decades. Through this archaeological information, a complex situation of changes and continuities in craftsmanship during the years after the conquest is clearly traced, in the framework of a changing commercial circumstances, especially due to the presence of increasingly aggressive external agents.

To conclude, this paper presents the general characteristics of the different productive contexts after the conquest process, and it also presents the first results of the research project "The origins of the Italian presence in Murcia (12th to 13th centuries)" (20896/PI/18), supported by Fundación Séneca (2019-2022).

### 14 **ENCOUNTER, SUBSTITUTION, REPLACEMENT, AND TRANSFORMATION AT THE SITE OF TORRE D'EN GALMÉS, MENORCA, SPAIN**

**Abstract author(s):** Perez-Juez, Amalia (Boston University) - Smith, Alexander (SUNY Brockport) - Goldberg, Paul (Boston University; INA, University of Tübingen) - Forste, Kathleen (Boston University) - Wagner, Emma (North Carolina State University)

**Abstract format:** Oral

Conquest, frontiers, and cultural changes are familiar topics in Spanish Medieval archaeology. Other concepts are also vividly discussed, rejected, revisited, or nuanced, depending on the historiographic and political moment. Terms such as Muslim Spain or Reconquest carry an ideological weight that influence the representation of historical moments, particularly if those periods deal with the interaction between Muslims and Christians. Nevertheless, the archaeological and historical interpretation of Iberian realities have changed in the past few decades.

This paper presents the research conducted by an international team working at the site of Torre d'en Galmés, Menorca, Spain. The site is one of the many settlements on the island that were occupied for over two thousand years. In fact, the main features remaining at the site date from the Iron Age Talayotic period. That time period has been extensively studied and restored. However, later Islamic remains are lesser-known and generate less interest. The Christian conquest of the 13th century erased the evidence and memory of this Muslim presence, which is still largely overlooked today.

We will present how the different cultures that lived at the site marked episodes of cultural transformation, adapting buildings, spaces, and other archaeological features. Different people left their own imprint based on their own cultural identity. All these changes can be identified and interpreted at the site, which works as a laboratory for understanding some of the topics of the session: cultural interaction, encounter, substitution, replacement, and transformation.

### 15 **CULTURAL CHANGES IN CENTRAL SICILY IN THE MEDIEVAL AGE**

**Abstract author(s):** Patti, Daniela (University of Enna)

**Abstract format:** Oral

In Late Antiquity Sicily became a privileged place of religious changes in the Ancient Mediterranean: the South Eastern end of the Island is the last frontier of the Byzantine Empire, the place of the last resistance to Islamic domination. The Byzantine Empire organized the defence against the Islamic advance also in the North of central Sicily (EN),

which has a considerable archaeological potential, mainly linked to the impressive rocky habitat scenery, dating back to Antiquity.

The impact of the cult of Saints, who are named after rock churches and oratories, is particularly important because it regulates the profound transformations in the organization of sacred spaces and in the religious practice of local communities in the Byzantine world. Some examples of rock churches in the middle of Sicily, dedicated to the cult of Saints, can be explained in this way, many of which are of Greek heritage. The strategic importance of this area will be later confirmed when the area itself became the military stronghold of the Norman Conquest and of the military and ecclesiastic reorganization of the Christian Church promoted in Sicily from the Great Count Roger.

The archaeological and the documentary sources, become essential not only for the knowledge of the processing of the identity and the ideology of the single sites, but also for the important effects on the ideological concept of the territory and for the identification of the "Geography of power" between Late Antiquity and Early Medieval Age.

## 16 FROM ISLAMIC SETTLEMENT TO NORMAN HOSPITAL: ARCHAEOLOGICAL RESEARCH IN SAN GIOVANNI DEI LEBBROSI (PALERMO, SICILY, ITALY)

**Abstract author(s):** **Castrorao Barba, Angelo (The Polish Academy of Sciences, Institute of Archaeology and Ethnology, Centre for Late Antique and Early Medieval Studies) - Utrero Agudo, María de los Ángeles (CSIC, Española de Historia y Arqueología en Roma) - Battaglia, Giuseppina (Soprintendenza BB.CC.AA. of Palermo) - Mandalà, Giuseppe (University of Milan) - Murillo Fragero, Jose Ignacio (Urbe pro Orbe) - Aleo Nero, Carla (Soprintendenza BB.CC.AA. of Palermo) - Miccichè, Roberto - Canale, Alessandra (University of Palermo)**

**Abstract format:** Oral

Traditions handed down from ancient and modern written sources attribute the construction of the church of San Giovanni dei Lebbrosi (southern suburban area of Palermo, Sicily, Italy) to the early phase of Norman age (between 1071 and 1085 AD). This foundation would have been built on the top of the remains of an Arab-Islamic fortification, a castle called "de Jean" (perhaps a *ribāṭ*), presumably occupied by the Normans during their conquest of the city of Palermo in 1071-1072 AD. Faced with this traditional proposal, archaeological research campaigns (since 2014) have made it possible to provide new insights on the diachronic dynamics of this complex. First of all, the results of the archaeological analysis of the architecture have demonstrated that a unitary project was carried out for the construction in the mid 12th century of the hospital, dedicated to infectious diseases, with the church of San Giovanni as its inner chapel. Archaeological excavations have confirmed the pre-existing Islamic presence on the site by putting levels of life with ceramics from the 10th/11th century and an Islamic rite burial, right lateral decubitus deposition and east-west orientation, dated besides by radiocarbon analysis between the end of 10th and first half of the 11th century. Furthermore, the remains of an architectural structure of the Islamic period has been found, having been almost completely dismantled by the Normans during the mentioned construction of the hospital. At the moment, it is difficult to interpret with certainty the function of this Islamic structure, the identification of which however represents an important element that attests to a certain consistency of an Islamic settlement. The aim of this paper is to show the complex archaeological sequence of occupation of the site across the time as a case study of the transition from Islamic to Norman period in Palermo.

## 17 STEĆCI AND CULTURAL CHANGES IN THE LATE MEDIEVAL WESTERN BALKANS

**Abstract author(s):** **Caval, Saša (Scientific-research center of the SAZU)**

**Abstract format:** Oral

This paper aims to provide a general overview of the archaeology of cultural change in the Western Balkans, the region historically renowned for its social dynamics. The central object of this overview are *stećci*, the medieval tombstones found scattered in the landscapes of the Western Balkans, particularly in Bosnia and Herzegovina. They embody centuries of Bosnian tolerance that evolved from long-lasting cohabitation of local, diverse ethnicities, concurrently following different religions: Orthodox Christianity, Roman Catholicism, the Bosnian Church, and also Islam. *Stećci* synthesize the historical, cultural, and religious aspects of the medieval Western Balkans and offer an insight into the dynamic nature of the regional cultural traditions. As such, they are defining elements of a cultural change *per sé*: why they appeared in the twelfth century, what triggered their creation, and the presence of precursors are still unknown. However, *stećci* are the core features of a funerary phenomenon that has endured for more than four centuries (12th - 16th C) and serve as essential witnesses and markers of cultural changes occurring in the region.

## 18 THE LORDSHIP OF TRANSJORDAN: A FRONTIER OF THE CRUSADER LEVANT?

**Abstract author(s):** **Sinibaldi, Micaela (Cardiff University)**

**Abstract format:** Oral

This paper presents recent developments of an ongoing study on the Crusader Lordship of Transjordan (1100-1189), part of the Kingdom of Jerusalem. Largely underexplored in the past, the subject has also been long associated with several incorrect notions. One was that the Crusader period in Transjordan consisted of a phase of revival and deep

changes, following a period of settlement crisis and depopulation; another was that this region's main function was essentially to be a military and political frontier of the kingdom, from which it was rather isolated.

The new research presented here, however, has concluded that the Lordship was both very closely connected to the rest of the Kingdom of Jerusalem and of crucial importance to it, from the economic, social, political and strategic points of view, and that attributing to this region the traditional function of frontier is a limiting and incorrect concept. Settlement in Transjordan had complex and diverse patterns and was characterized by a variety of socio-economic aspects. Finally, the case study of Petra has clarified that the former understanding that the conquest and migration in the Crusader period had a deep impact on the local socio-economic landscape of Jordan needs revising. While there was certainly a clear, long-lasting impact on the landscape due the construction of Crusader castles, results have also highlighted many patterns of continuity and adaptation with the culture of the local populations, and have clarified that cultural influences have occurred mainly from the local inhabitants towards the Franks.

Characterizing specifically the Lordship of Transjordan was the relationship of the Franks with the local Christian and Bedouin populations, which was crucial to the survival of the Franks in the region, and is particularly interesting within the context of the definition of cultural frontiers during the Crusader period.

## 19 ENVIRONMENTAL ARCHAEOLOGIES OF CULTURAL CHANGE IN THE MEDIEVAL MEDITERRANEAN

**Abstract author(s):** Pluskowski, Aleks (University of Reading) - García-Contreras Ruiz, Guillermo (University of Granada) - Alexander, Michelle (University of York) - Banerjee, Rowena (University of Reading) - Mattei, Luca (University of Granada) - García Garcá, Marcos (University of Alicante) - Ros, Jérôme (CNRS) - Hernández-Casas, Yaiza (University of Granada)

**Abstract format:** Oral

The medieval Mediterranean world was defined by multiple waves of conquest and regime change, accompanied by migration and variable encounters with resident populations, resulting in marked episodes of cultural transformation. These are widely recognised as composite or hybrid societies, accommodating varying degrees of multiculturalism, even where secular and religious authorities strove for cultural homogeneity. Alongside the written record, the composite nature of these societies has been traditionally understood through monumental architecture, applied art and a range of portable material culture. Environmental and landscape archaeology also includes a powerful set of methodological tools that can potentially be used to understand the pluralist character of these societies at varying scales. This includes how plants, animals and landscapes were utilised before and after periods of conquest, within the shifting mosaic of heartland and frontier regions. Are the effects of political, territorial, demographic, and ideological reorganisation visible in these multi-scalar traces of environmental exploitation? Can we interpret trends in continuity and change in relation to the varied encounters between migrant and resident populations? Drawing on case studies from the "Landscapes of (Re)Conquest" project and related research, this paper will consider whether we can use environmental and landscape data to understand the impact of conquest, migration and cultural change across the medieval Mediterranean world.

## A. INTERDISCIPLINARY APPROACHES ON THE RURAL SETTLEMENT OF CONTRADA CASTRO (CORLEONE, SICILY, ITALY) DURING THE EARLY MIDDLE AGES

**Abstract author(s):** Castrorao Barba, Angelo (The Polish Academy of Sciences, Institute of Archaeology and Ethnology, Centre for Late Antique and Early Medieval Studies) - Micciché, Roberto (University of Palermo) - Pisciotta, Filippo (Aix-Marseille Université / University of Palermo) - Aleo Nero, Carla (Soprintendenza BB.CC.AA. of Palermo) - Speciale, Claudia (University of Gothenburg) - Montana, Giuseppe - Gasparo Morticelli, Maurizio (University of Palermo) - Marino, Pasquale (Bona Fortuna LLC) - Bazan, Giuseppe (University of Palermo)

**Abstract format:** Poster

In the Contrada Castro site (Corleone, Sicily, Italy), located in the area of the Sicani Mountains in central-western Sicily, a main sequence of occupation during the early Middle Ages – between the end of the Byzantine period and the Islamic period (late 8th-11th c. AD) – has been identified. The research has been carried out with an interdisciplinary approach to better understand human-environment interactions over the time. In fact, on the basis of the stratigraphic data it was possible to combine different types of analysis. The zooarchaeological study has been focused on the reconstruction of the economic dynamics of exploitation of animal resources which were also integrated with the data on seeds for a more complex interpretation of the agricultural economy of the settlement. The anthracological analysis, in addition to offering insights into the use of wood, was fundamental for a diachronic comparison with current phytosociological dynamics that have shown a long-term sustainability in the management of landscape resources. Finally, the discovery of a pottery kiln has allowed us to analyze the catchment area for clayey raw materials. These different approaches have been crucial for demonstrating the importance of an interdisciplinary dialogue aimed to propose, through archaeological data, new perspectives on the settlement, economic and environmental patterns of the Early Medieval Sicilian countryside.

**Theme: 5. Climate Change and Socioenvironmental Perspectives**

**Organisers: Meyer, Ann-Katrin (University of Hamburg) - Chaudesaigues-Clausen, Solveig (University of Bergen)**

**Format: Discussion session**

In recent years, the rise of detailed material culture studies, the refinement of chronologies and the focus on the diversity of subsistence practices have paved the way towards a dynamic narrative of heterogeneous hunter-gatherer groups of Mesolithic Europe. These narratives focus on foragers responding differently to local biotopes through their material culture and social and technological choices.

This applies especially to the late forager societies of the Baltic Sea region, but also to Western and Central European late Mesolithic groups. These hunter-gatherers often existed in close proximity to the established Neolithic and thus were not only confronted with diverse environments in an ecological sense, but also exposed to and in some cases actively engaged in various influences and exchange in regard to technological innovations and subsistence practices.

In this session, we would like to explore to what extent relationships between the environment, humans and things actually influenced patterns of regionality, trade, technological traditions and the spreading of innovations within hunter-gatherer societies between 7000 and 4000 BC in the regions mentioned above. Our focus is on thinking beyond environments as purely ecological but as social and cultural settings in which human relationships flourish. Specifically, we explore:

How do innovative technologies help societies adapt to their environment and influence social developments? Are technological developments prompted by specific environmental conditions or climatic changes, and at what scale? What is the connection between technological developments and social and cultural choices? Is the environment a determining factor for regionality, or is the latter instead prompted by strong human interconnectivity?

Through this session, we hope to foster new approaches in exploring the unique connections and mutual dependencies between humans, things and given social, cultural and ecological environments in forager societies of Europe and beyond.

## ABSTRACTS

### 1 THE NEW COOL THING - DIFFUSION OF A LITHIC TECHNOLOGY DURING THE MESOLITHIC IN NORTHERN EUROPE

**Abstract author(s): Söderlind, Sandra (Museum Lolland-Falster)**

**Abstract format: Oral**

A study of the Mesolithic handle core pressure concept (HCPC) technology in northern Europe has resulted in new knowledge regarding contacts, communication and transmission of knowledge. This lithic technology is focused on blade production from single-fronted cores using pressure technique, a technique that requires social learning and interaction between people to diffuse.

The HCPC has been thoroughly researched within Scandinavia during the past 100 years but it is only now that the possibility of a larger spatial distribution pattern for the concept, across northern Europe, has been investigated. The results indicate that the single-fronted cores found in northern Europe relate to two separate lithic traditions, that share some similarities but also differences. An older technology that includes single-fronted cores was found in western Russia, and was probably used alongside conical and subconical cores around 10500-7200 cal BC. A younger technology is found in Scandinavia (and northern Germany), which seemingly was invented in southern Scandinavia, seems to have been implemented between ca 6400-5200 cal BC. The chronologies of these concepts, however, come with some issues related to lacking radiocarbon dates that directly relate to the finds.

These patterns nonetheless provide indications for possible communication routes and the characteristics of social learning across large spatial scales. Furthermore, the character of the diffusion process within northern Europe, indicate that the innovation spread rapidly within certain areas, where knowledge and know-how relating to pressure technique was already existing.

The diffusion of the HCPC within southern Scandinavia and northern Germany seems to have occurred alongside drastic environmental and landscape-related changes, including the 8.2 event (BP), the creation of the Danish islands and local extinction events which may have played some role in the rapid spread of this newly invented technological concept.

## 2 REGIONAL FISHERIES IN LATE MESOLITHIC DENMARK: THE INTERPLAY OF FISH, PEOPLE, TECHNOLOGY, AND ENVIRONMENT

**Abstract author(s):** Ritchie, Kenneth - Astrup, Peter (Moesgaard Museum) - Robson, Harry (University of York) - Andersen, Søren (Moesgaard Museum)

**Abstract format:** Oral

The Late Mesolithic Ertebølle culture (ca. 5400-4000 BC) in Southern Scandinavia has been recognized as an example of marine-focused hunter-gatherers since investigations of the signature kitchen middens (køkkenmøddinger) began in the mid-19th century. With the advent of more refined excavation techniques in the 20th century (e.g., wet sieving), enormous numbers of fish remains have been recovered from numerous sites, especially in Denmark. Recently, analysis of this material has begun to identify regional and chronological variability in the Ertebølle fisheries. With investigations of new faunal assemblages from underwater Ertebølle sites near Hjørnø, a small island just off the eastern coast of Jutland near the mouth of Horsens Fjord, as a departure point, the way animal populations and behavior, environment, technology, and other aspects of society influenced cultural adaptations are examined. Differences in which fish (and other animals) appear to have been the focus of procurement for groups in various regions of Denmark during the Mesolithic suggest that rather than accepting a monomodal picture of these coastal hunter-gatherers, a more dynamic understanding is necessary that reflects the inherent complexity of how people interact with their surroundings.

## 3 IMPROVED AMS 14C-BASED CHRONOLOGY OF THE EARLY AND LATE HOLOCENE OSSEOUS IMPLEMENTS FROM BIRŽULIS LAKE AREA, WESTERN LITHUANIA

**Abstract author(s):** Iršenas, Marius - Rimkus, Tomas - Butrimas, Adomas (Vilnius Academy of Arts)

**Abstract format:** Oral

Biržulis Lake is one of the most significant areas in western Lithuania in order to study hunter-gatherer societies, their economy, technologies and changes in subsistence. More than 60 sites, dated from the Final Palaeolithic to the beginning of the Bronze Age are known from this area. This area also contains wetland sites with good preservation conditions for organics that revealed a significant number and a variety of osseous implements. The stray finds from Janapolė village, Rešketa River and a large collection of bone and antler tools from Daktariškė 5 site gave more information about hunter-gatherer's technologies and the use of raw materials in the area. These finds, however, have not been directly dated by radiocarbon, therefore, in most cases their true chronology has been only speculated. A new dating program of osseous implements from western Lithuania, primarily from the Biržulis Lake area, took place in 2021-2022. The results presented in this paper shows new radiocarbon-based chronology of various osseous tools (hunting and working implements, ornaments). Therefore, this allows to supplement on the chronology of a particular osseous technologies and their continuation throughout the Early and Late Holocene. Another aspect is the use of particular decoration type and its chronology, as some of the dated objects contain decoration on their surfaces. Finally, the paper also contributes on the cultural history in the area during the Stone Age.

## A. SEMIROM COUNTY (SOUTH OF IRAN) IN PREHISTORIC PERIODS, SETTLEMENTS AND POPULATION FLUCTUATIONS

**Abstract author(s):** Taheri, Mohammad Hossin (University of Tehran) - Khoshdast, Amir Hossein (Science and Research Branch Islamic Azad University)

**Abstract format:** Poster

Surveying and studying the plains and valleys of the southern Zagros basins leads to a deeper understanding of how its archaeological cultures are formed, explained, and expanded; these regions have their own distinct geographical and cultural basins. Including its southern regions to the Persian Gulf, eastern regions to Darab, Fasa, Jahrom counties, as well as northern regions to Abadeh, Eqlid, and Semirom; North Fars and Semirom region have a different ecosystem and specific geographical locations for the formation and development of archaeological cultures that are the subject of the present study and based on a season of archaeological survey of the central part of Semirom county, with the aim of identifying all archaeological works focusing on the prehistoric periods were carried out in October and November 2018, which resulted in the identification of 66 sites from the Paleolithic to the Islamic period. Paleolithic sites include scattered stone assemblages in three open sites, thereafter a Neolithic settlement from Shamsabad period was identified; from Bakun period 7 sites, Lapui 4 sites, and three sites from Banesh period were identified. According to the studies, the prehistoric period of this region was completely influenced by Fars archaeological cultures and there was no evidence of impact from the neighboring areas.



**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Silva, Filipa (Research Centre for Anthropology and Health - CIAS, Department of Life Sciences, University of Coimbra) - Masotti, Sabrina (Department of Neuroscience and Rehabilitation, University of Ferrara) - Grosskopf, Birgit (Historische Anthropologie und Humanökologie Johann-Friedrich-Blumenbach-Institut der Georg-August-Universität Göttingen)

**Format:** Regular session

In one of the greatest and most enduring Empires of antiquity, particularly until the first two centuries AD, cremation was the most dominant way of disposing of the dead. Trends of regional scope and/or according to the historical period were unveiled through the analysis of the characteristics of their graves. Moreover, the advances in the analysis of burned bone, have allowed to gather data on these individuals (biological profile, signs of diseases and geographic mobility) and related cremation funerary practices.

This session will take a multidisciplinary bioarchaeological approach regarding cremation usages across the Roman Empire between the 2nd century BD to the 4th century AD. Papers may explore issues related to the process of combustion (e.g. body position, temperatures achieved, bone's burning degree or cases of multiple cremations) and post-cremation funerary gestures (e.g. bone collected from the pyre; place of deposition and burial of the human remains). Another relevant contribution would be the diachronological analysis related to a specific city/region, or studies comparing cremation burial rites in distinct types of settlements (e.g. pre-Roman versus new, urban versus rural) in a given historical period. Atypical cremation cases are also considered. Interpretations of these data will be also based on information achieved from other disciplines (e.g. historical sources and archaeological and biochemical data) in order to have a sociocultural view of the cremation funerary practices across Roman Empire.

This session intends to bring together recent bioarchaeological studies of cremated human remains from different Roman provinces, and to update the knowledge and methodologies currently used.

## ABSTRACTS

### 1 **ATRI IGNES. RITUALS AND PRACTICES BEHIND THE CREMATION: THE CASE OF THE ROMAN NECROPOLIS OF GAZZO VERONESE (VERONA, ITALY)**

**Abstract author(s):** Mongillo, Jessica (Department of Environmental and Prevention Sciences, University of Ferrara) - Scalzeri, Marina (Department of Culture and Civilisation, University of Verona) - Zancan, Valentina (Department of Environmental and Prevention Sciences, University of Ferrara) - Masotti, Sabrina - Gualdi, Emanuela (Department of Neuroscience and Rehabilitation, University of Ferrara) - Basso, Patrizia - Grazioli, Valeria - Zentilini, Elisa (Department of Culture and Civilisation, University of Verona) - Bramanti, Barbara (Department of Environmental and Prevention Sciences, University of Ferrara)

**Abstract format:** Oral

In North-Eastern Italy, we know from archaeological evidence that cremation was a practice used since the prehistoric time, yet only with the process of Romanisation, the rite of incineration has become prevalent. As regards funeral practices during the Empire Age in the region, bioarchaeologists are observing that the rituality of cremation has assumed particular features which could be explained by a progressive and peaceful admixture with the indigenous society. Yet, the hypothesis needs to be addressed further.

The necropolis of Gazzo Veronese (Verona, Italy), represents a case of considerable interest for evaluating changes in rituality during the Empire Age, since it was located along the Via Claudia Augusta, one of the strategic roads of the Roman Empire, and since it is probably one of the largest burial sites of the Early Imperial Age in Northern Italy. The archaeological investigation carried out in Gazzo Veronese revealed a very extensive number of graves (approximately 1000-1100 over a time of about 150 years - from the 1st century BD to the middle of the 2nd century AD). We performed anthropological analyses on 68 burials containing cremated individuals to estimate their biological profile (sex, age at death, and minimum number of individuals), and considered ritual factors by examining variations in bone colour, fragmentation, skeletal completeness, and the presence of animal bones. Considering these indicators of the funeral treatment of the body before, during and after cremation, we were able to reconstruct the incineration rite in this area of the Empire and to highlight specific features of our sample by comparison with other necropolises. With this work, we demonstrated that traditional anthropological methods combined with archaeological and socio-cultural data may provide a more accurate picture of funerary behaviour in sites attributed to the Empire Age in Northern Italy.

## 2 CONTINUITY OR DISCONTINUITY IN CREMATION RITUAL? THE CASE OF THE ROMAN AGE NECROPOLIS OF BOLOGNA CENTRAL STATION (ITALY)

**Abstract author(s):** Masotti, Sabrina - Gualdi-Russo, Emanuela (Department of Neuroscience and Rehabilitation, University of Ferrara)

**Abstract format:** Oral

During the chronological period between the Late Republic and Early Imperial Ages, the picture of funerary rituals is not static and unitary but is marked by a continuous evolution of burial practices. In the Imperial Age (1st-3rd century AD) necropolis of Bologna Central Station, two ritual forms were represented: indirect incineration and inhumation. This duality that characterizes the necropolis during this historical period is linked to multiple factors: local influences, contacts with the Hellenistic and Central-Italic world, and the influence of religious cults. The ethnic-cultural factors and those imposed by the social system of the historical period can be reflected in different ways concerning sex, age or status, and socioeconomic rank. Furthermore, there are individual factors determined by perception and attitudes towards death. In this study, 144 cremation graves were analyzed through a bio-archeological approach to reconstruct the funerary behavior of the inhabitants of Bononia, through their burned skeletal remains. Several parameters were taken into account from the anthropological analyses: the biological profile, state of health, and pathologies. Information about coloration, fragmentation, skeletal areas representation, and presence of animal bones and botanical elements were considered in the funeral ritual analyses. The stratigraphic analysis of the multiple tombs showed different burial methods: contemporary and consecutive depositions with or without mixing bones between previous and successive cremation. This phenomenon attests to the practice of reopening the burial for the inclusion of a new deceased. The study of burials from Bologna Central Station necropolis can provide an important contribution to the knowledge of Roman funerary practices highlighting differences and continuity of rituals with previous periods in one of the most important areas in northern Italy.

## 3 CRUMBLED LIVES – ROMAN CREMATION BURIALS FROM LAURIACUM/ENNS, UPPER AUSTRIA

**Abstract author(s):** Stadlmayr, Andrea - Marschler, Maria (Department of Anthropology, Natural History Museum Vienna) - Böhm, Herbert (Institute of Egyptology, University of Vienna) - Huber, Lisa - Lang, Felix (Department of Classical Studies, Faculty of Cultural Sciences, Paris Lodron University Salzburg) - Traxler, Stefan (Department of Archaeology: Roman Period, Middle Ages, Modern Times, OÖ Landes-Kultur GmbH)

**Abstract format:** Oral

Lauriacum/Enns was the base of the legio II Italica from the late 2nd century into Late Antiquity and the most important military location in the Roman Provincia Noricum. The biritual cemetery at today's „Steinpaß" in Enns, Upper Austria, is located in the vicinity of the legionary camp and was already at the time of its discovery in the 1950s discussed as a cemetery of legionaries and military affiliates – an interpretation which is supported by modern anthropological analyses of the inhumation burials. The burial ground was in use from the 2nd to the 5th century, likely established just before the legionary camp. Housing a total of almost 400 burials, with a quarter of them being cremation burials, the cemetery provides insights into burial rites from the earliest roman military settlement phase until Late Antiquity.

In this paper, we focus on the results of the anthropological analysis of the cremated human remains which date to the 2nd and 3rd century. Basic demographic analyses will be provided as well as burning temperature estimations and data on the representation of the different skeletal regions of the cremains. Furthermore, we like to present a few – in terms of completeness or their combustion processes – exceptional burials, indicating a rather unusual treatment of the human remains. Despite some limitations of the analysis of cremains, our results offer, in context with the archaeological and archaeozoological findings, important insights into (post-)cremation funerary practices at the northern frontier of the Roman Empire.

## 4 WAS IT A BUSTUM TYPE GRAVE? ANALYSIS OF THE BURIALS FOUND NEAR THE ROMAN LEGIONARY FORTRESS AT NOVAE (LOWER MOESIA)

**Abstract author(s):** Jaskulska, Elzbieta - Tomas, Agnieszka (Faculty of Archaeology, University of Warsaw)

**Abstract format:** Oral

During the 2016-2019 seasons, a less intensely researched area to the east of the legionary fortress of Novae in Lower Moesia (nowadays Bulgaria) has been excavated. It shed new light on the function of this place before it was surrounded by new fortifications and became part of the Late Roman town. One of the unexpected discoveries was unearthing graves belonging to a type referred to in the literature as "alla cappuccina" or "tile graves" containing cremation burials. The careful exploration of the discovered cremations allowed for an interpretation that two of the findings should be classified as so-called bustum describing the practice of building the funeral pyre on top of the prepared grave pit, resulting in the rare type of primary cremation burial. There is an ongoing discussion in modern literature considering the validity of such interpretation based both on the experimental approach and theoretical considerations. The presentation explains the use of spatial analysis using the cremation analysis method established by one of the authors to confirm the character of the discovered cremation burial.

## 5 THE BIOARCHAEOLOGY OF CREMATION RITUALS IN ROMAN HISPANIA: AN OVERVIEW

**Abstract author(s):** Silva, Filipa (Research Centre for Anthropology and Health - CIAS, Department of Life Sciences, University of Coimbra; Archaeology Institute of Mérida-CSIC)

**Abstract format:** Oral

In recent years, studies of cremated human bone have generated further and further interest thanks to an in-depth understanding of the bone's fire action and the development of specific methodology. There has been a detailed analysis of different areas of the Roman Empire, such as Italia, Germania, Gallia or Britannia. In the case of Hispania (the Iberian Peninsula), the studies carried out are still scarce and limited to certain sites, although they provide quite interesting information. The present work aims to present a bioarchaeological overview of the cremation funerary practices in this territory.

The data examined comes from funerary areas associated with the cities included in three Roman provinces that belonged to Hispania in the High Empire: Lusitania (Augusta Emerita, Olisipo, Eborac and Salacia), Hispania Citerior Tarraconensis (Tongobriga, Bracara Augusta, Valentia, Saguntum, Barcino, Caesaraugusta and Segobriga) and Hispania Ulterior Baetica (Colonia Patricia Corduba, Carmo and Oripo).

Linear comparisons are prevented due to the analysis of different sample sizes, studied parameters and the methodology used. Nonetheless, it is possible to ascertain that the biological profile of the studied individuals corresponds, essentially, to adults of both sexes, with rare cases of non-adults, particularly infants under 1 year of age. Much of them would be cremated shortly after death. There are differences between sites regarding the cremation process, as well as the skeletal representation in the burial. Except the case of Augusta Emerita, most human remains were subjected to secondary burials, especially in ceramic urns.

For future research, it is crucial to standardize criteria and methodologies, and to expand the studied sites and samples. Multidisciplinary approaches are also needed to enhance the understanding about crematio in Hispania.

## 6 APPLICATION OF COMPUTATIONAL MORPHOMETRICS TO INTERPRET CREMATION FUNERARY PRACTICES: A ROMANO-BRITISH EXAMPLE

**Abstract author(s):** Monetti, Lisa (UCL Institute of Archaeology; Drew University)

**Abstract format:** Oral

This presentation will introduce the application of computational morphometrics of cremated bone to interpret funerary practices from geographically distinct Romano-British regions.

This project compared cremated remains of 82 individuals from Romano-British cemeteries. They represent 9 sites, 4 of which were countryside cemeteries while 5 were from within and around the city of Canterbury in the UK. Canterbury is notable for continental Roman influence on architecture and material culture. This project attempted to identify differences in cremation practices between these two geographically distinct regions, which perhaps had different levels of exposure to continental funerary traditions or different access to resources connected with cremation funerals.

The method for this investigation draws from forensic anthropology as well as ceramic petrographical analyses. Archaeological cremations tend to be more fully cremated or calcined than forensic cremations, making some of the advancements in forensic anthropology nonapplicable to archaeological bone. One example is employing differential burning when reconstructing the burn scenario. Forensic fires frequently leave the body partially burned, so differential burning, the juxtaposition of highly burned areas next to those of fewer heat-induced changes, can be utilised to infer directionality of the fire or body position. Archaeological cremations, however, tend to be more uniformly burned and present greater fragmentation. This project examined differential burning on a smaller scale by adapting computational 2D morphometric analysis previously utilised in the study of depositional histories of potsherds to recognize variation across the body and between individuals in the way heat affected the fragments' shape, size, and fracture patterns.

Results of the application of this method indicate statistically significant differences in burn pattern between the Canterbury individuals and those of the British countryside, broadly suggesting a more systematic and perhaps prescribed funerary tradition in the former, with greater variation and heat fluctuation in the latter.

## HOW DID ROMANS CREMATE? INVESTIGATING THE CREMATION CONDITIONS DURING THE ROMAN PERIOD IN BELGIUM

**Abstract author(s):** Stamataki, Elisavet (Vrije Universiteit Brussel) - Salessé, Kevin (Masaryk University) - McMillan, Rhy (Vrije Universiteit Brussel) - Kontopoulos, Ioannis (University of Copenhagen) - Veselka, Barbara (Vrije Universiteit Brussel) - Dalle, Sarah (Ghent University) - Hlad, Marta (Vrije Universiteit Brussel) - Sabaux, Charlotte - De Mulder, Guy (Ghent University) - Snoeck, Christophe (Vrije Universiteit Brussel)

**Abstract format:** Oral

Cremation was the main funerary practice in present-day Belgium during the Roman period (ca. 58 BCE- 425 AD). Until the end of the 20th century, researchers assumed that most biological, chronological, and environmental information recorded in bone was destroyed due to high temperatures (up to 1000°C) reached during combustion. The exposure to high temperatures leads to significant structural, chemical, and isotopic changes to the inorganic fraction of bone while destroying the organic components. Despite these limitations, recent developments in Infrared Spectroscopy and carbon and oxygen isotope analysis indicate that the study of cremated bones provides important information regarding pyre technology and body management in ancient societies in which cremation was the dominant funerary practice.

The aim of this study is to assess the intra- and inter-site variability in cremation conditions during the Roman period in Belgium, using Attenuated Total Reflectance-Fourier Transform Infrared Spectroscopy (ATR-FTIR) and carbon and oxygen isotope analysis on burnt human remains. For this reason, five sites from the Early and Middle Roman period (ca. 58 BCE-270 AD) were selected. The spectroscopic and isotopic results of the cremated remains indicate that there is a high degree of homogeneity in cremation conditions during the Roman period. However, statistically, significant differences can be observed when comparing the data of the Roman period to Late Bronze Age and Early Iron Age (ca. 1200–500/450 BCE) data, indicating that the way cremation was performed changed between the two chronological periods from the same area. The homogeneity in cremation settings in the Roman period compared to the variability in the Metal Ages adds to our understanding regarding the changes in cremation practices through time and space in ancient communities where cremation was the predominant funerary practice and provides useful insights regarding the pyre technology, body treatment, and pyre management during cremation.

## OSTEOLOGICAL MODIFICATION IN CREMATED BONES FROM ROMAN IMPERIAL NECROPOLIS OF MONTE CARRU (ALGHERO, SARDINIA, ITALY)

**Abstract author(s):** Serra, Rita (Department of Biomedical Sciences, University of Sassari; Center for Anthropological, Paleopathological and Historical Studies of the Sardinian and Mediterranean populations, Department of Biomedical Sciences, University of Sassari) - La Fragola, Alessandra - Rovina, Daniela (Superintendence for Archaeological Heritage for the provinces of Sassari and Nuoro) - Piana, Loredana (University of Sassari) - Sofgiu, Maria (Department of Biomedical Sciences, University of Sassari) - Mazzarello, Vittorio - Pirino, Alessio - Montella, Andrea - Bandiera, Pasquale (Department of Biomedical Sciences, University of Sassari; Center for Anthropological, Paleopathological and Historical Studies of the Sardinian and Mediterranean populations, Department of Biomedical Sciences, University of Sassari)

**Abstract format:** Oral

Sardinia became a Roman province in 238 BC; the empire introduced a ritual of cremation, present, in previous periods, just occasionally. Fire produces changes in bone tissue in colour, size of fragments, shrinkage, and microscopic structure that can be used to understand ritual and distinguish between voluntary and casual cremation.

In this study, we analyzed different heat-induced modifications of bone, starting from the standard temperature-colour classification of cremation. Our samples come from the Sardinian necropolis of Monte Carru-Alghero, a Roman imperial necropolis with 200 cremations, of which 10% were analyzed. By measuring macroscopic changes in colour, size, and shrinkage associated with the combustion temperature, we were able to better understand the body position during cremation; we divided the results into anatomical regions. Using SEM, we observed microscopic changes in the structure of the osteon and the step-by-step modification of the external edge to the internal edge of the bone.

The most calcined regions were located in the central part of the body (pelvis and lumbar spine); most bones were white or grey-white, except for the skull, which was largely brown-black. A greater variability was observed in size, weight, shrinkage, and fragment fracture patterns, which are related to the original shape of the bone. The bone organization destruction seems to be associated with a burning temperature; this is almost survived in the brown fragments and on the inner edge, mostly destroyed in the white or blue-white fragments and on the outer edge of the bone. Interesting, case T.27: a mother-newborn child cremation with a different degree of combustion among individuals.

Macroscopic and microscopic bone modifications seem to be related to the temperature of the fire in cremated remains. It would be interesting to investigate aDNA's survival in this kind of sample.

Acknowledgment: FAR-Uniss 2019-2020.

## HISTOLOGICAL EXAMINATION METHODS

**Abstract author(s):** Grosskopf, Birgit (Georg-August-Universität Göttingen)

**Abstract format:** Oral

A histological examination of bone cross-sections allows for the approximate estimation of individual age at death. This is an important aspect of anthropological diagnosis of highly fragmented cremated remains, where the determination of the age at death is much more difficult than for intact, unburned skeletons. In addition, this method allows for the differentiation between human and animal bones. If portions of joints are present or the shape of the bone is characteristic for a particular anatomical element, an identification based on morphology is possible. However, specification in small diaphysis fragments can be difficult or even impossible morphologically.

Cremations often show an admixture of animal bones, especially those from the Roman period. This can occur, for example, as a result of burning the corpse along with a cline that was decorated with carvings of animal bones. These carved bones are usually recognisable because of their distinct shape and artificially crafted features, in contrast to the difficult task of identifying bone remains originating from (meat) offerings commingled with human bones. Discerning between human and faunal remains can be accomplished histologically, however, mounting cross-section specimens on microscopic slides is time consuming. Through experience in histological diagnostics, it is often possible to assess the internal structure of fracture preparations, even at high magnification, using a reflected-light microscope to scan for characteristic elements that make it possible to identify the bone fragments as animal or human.

### A. HISTOMORPHOLOGICAL ANALYSIS OF CREMATED AND UNBURNED BONES: AGE-ESTIMATION OF ROMAN THESSALONIKIS' POPULATION

**Abstract author(s):** Bantavanou, Panagiota (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace) - Valakos, Eustratios (Department of Biology, National and Kapodistrian University of Athens) - Papageorgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace)

**Abstract format:** Poster

Age estimation on cremated and poorly preserved skeletons is a challenging task. Standard age estimation methods do not perform efficiently on skeletal material that has been taphonomically modified due to high temperatures (<300o C) or strong fragmentation. In such cases, histomorphological methods can estimate age-at-death with an estimation error of  $\pm 5$ -15 years. However, existing methods are not applicable on cremated bones and exhibit the highest estimation error (>10 years).

In this study, we present a new histomorphological age estimation method for cremated bones. For this, we used femur cross-sections of cremated (n=30) and unburned individuals (n=45) of the same archaeological and taphonomic context (Thessaloniki, Metro osteological material, Roman Period 1st-4th c. AD). As a blind-test sample we used modern left femurs (n=8) of known sex and age-at-death from the Human Skeletal Reference Collection of the University of Athens.

For histological sample preparation we developed two protocols one for cremated and modern bones and one for unburned bones. We generated four regression equations based on the densities of osteons and osteon fragments: a) osteon population density (OPD), b) osteon fragment population density (FPD), c) total population density (osteon and fragments) (TPD), d) multiple regression of osteon and osteon fragment population density (MPD). The regressions were tested for accuracy and reliability and compared with previous published methods.

The regressions based on FPD and TPD were the most accurate with a mean estimation error of three years, whereas the multiple regression MPD, followed by the OPD regression were the less accurate. Our method performs better than previously published methods which showed a mean estimation error of 6.71 and 7 years respectively.

**Acknowledgment:** This research has been co-financed by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH – CREATE – INNOVATE (project title: ECHOES-Development of a methodology for the digital reconstruction of ancient human biographies through the study of archaeo-anthropological material, project code:T2EDK-00152).

**Theme: 5. Climate Change and Socioenvironmental Perspectives**

**Organisers: Kerr, Sarah (Aarhus University) - Tisdall, Eileen (University of Stirling) - Sagrott, Stefan (Historic Environment Scotland)**

**Format: Regular session**

Anthropogenic climate change is affecting societies across the world. While impacts have varying degrees of severity, it is clear that more and larger areas will be impacted by climate change and the communities in those areas will have to adapt.

Adaptation to changing climates has emerged in archaeological discourse, balancing the former propensity for studying social collapse. While collapse brought wholesale impacts on all aspects of life, the over-arching narrative in human past is one of resilience. The perceptible increase in adaptation research has concentrated on prehistoric societies, despite identified climatic changes in the medieval world. In addition, much research has focused on resilience across longer time scales yet it has been argued that a better understanding of adaptation and resilience at a human, generational timescale is required for today's climate response.

Therefore this session creates a space for medieval archaeology to contribute to the adaptation and resilience narrative. It debates whether medieval resilience can be actively exploited as a bridge to reduce the psychological distance of climate change (a known barrier to climate action) especially in those geographical areas where climate change impacts have not yet been greatly felt, such as western Europe.

This session seeks papers on the human responses to climatic changes across the medieval world; particularly those detailing approaches to understanding the medieval environment and how adaptation and resilience may be detected. Papers may comprise paleoenvironmental records, material culture, or source-based approaches to known climatic trends such as the Medieval Warm Period (MWP) and Little Ice Age (LIA) or individual case studies. Discursive papers on the issues of linking adaptation at individual sites to the MWP or LIA are encouraged. In addition, this session welcomes papers on utilising medieval adaptation in anthropogenic climate change communication, or the challenges facing this inherently interdisciplinary research topic.

## ABSTRACTS

### 1 **STORMING CASTLES':THE TWO CASTLES AT CAERLAVEROCK AND MEDIEVAL CLIMATE CHANGE**

**Abstract author(s): Tisdall, Eileen - Tipping, Richard (University of Stirling) - French, Morvern - Sagrott, Stephan (Historic Environment Scotland) - Kinnaird, Tim - Srivastava, Aayush (University of St Andrews)**

**Abstract format: Oral**

Caerlaverock Castle is the most significant Medieval castle complex in Dumfriesshire, south west Scotland. There are two castles, the Old Castle built in c. AD 1229 on the northern shore of the Solway Firth and the famously shield-shaped triangle of the New Castle, built <50 years later, some 200m inland on higher and firmer ground. Archaeological and palaeoenvironmental research in 2004 suggested that abandonment of the Old Castle may have been because storm surge events impacted the Old Castle and its associated harbour.

Here we present new palaeoenvironmental research (2021-22) that further define the nature and timing of these storm surges. Sediment records from coastal landforms, barrier beaches and related lagoons that formed along the early Medieval coast indicate that a series of very large storm surges impacted the coastline, temporarily raising sea level by >2.5m. Here a combination of <sup>14</sup>C and OSL dating have been used to better constrain the chronology, resolving the timing of these events and linking these storm surges to changes in northern hemisphere atmospheric circulation and the North Atlantic Oscillation. It is thought that the coastline had experienced significant storminess several human generations before the Old Castle was planned or constructed and access to the harbour would at times have been very problematic. This new research provides more evidence for when and why the harbour went out of use, better defining its role and changing relationship with the two Castles. These findings will also enable us to better understand the use of the wider landscape at Caerlaverock, including Medieval responses and adaptations to climate change events and the changes in access to the coast for travel and trade.

### 2 **CLIMATE ADAPTATION IN PASTORAL SOCIETIES: TESTING CORRELATIONS BETWEEN CLIMATE AND LAND USE IN HIGHLAND SCOTLAND AND IRELAND, 1250-1750 AD**

**Abstract author(s): Costello, Eugene (Stockholm University; Uppsala University) - Kearney, Kevin - Gearey, Ben (University College Cork)**

**Abstract format: Oral**

The influence of climate change on late medieval and early modern agrarian society in Europe has been much discussed in the discipline of history. However, the most detailed historical research has had a bias towards regions that

were heavily involved in grain production, since these tend to contain the most detailed written records regarding land use. More pastoral regions where cattle, sheep and goat herding dominated have received less attention. This paper reviews the results of pollen records and archaeological fieldwork in different parts of Highland Scotland and Ireland in order to open up the question of how pastoral regions fared in the early and mid- 'Little Ice Age' (c.1250-1750). It discusses whether they can be described as vulnerable and highlights certain land-use changes in uplands which may, in part, may be a response to increased climate-related risks. However, Bayesian modelling shows that the chronological resolution of much field data is still too rough to establish firm correlations with specific climatic shifts during the Little Ice Age. What is more, decisions about land use were also influenced by socio-political and economic considerations. The presentation finishes with a discussion of how the influence of climate on pastoral regions might become more visible with future research.

### 3 RECONSTRUCTING PALAEOCLIMATE RECORDS FROM WELL-DATED MEDIEVAL PARCHMENT MANUSCRIPTS

**Abstract author(s):** Johns, Samuel - Maule, Charlie (Organic Geochemistry Unit, University of Bristol) - Angelova, Lora - Fitzgerald, Solange (The National Archives) - Collins, Sian - Johnson, Anna (Cambridge University Library) - Collins, Matthew (Section for Evolutionary Genomics, The GLOBE Institute, Faculty of Health and Medical Sciences, University of Copenhagen; McDonald Institute for Archaeological Research, University of Cambridge) - Roffet-Salque, Melanie (Organic Geochemistry Unit, University of Bristol)

**Abstract format:** Oral

Parchment is an ancient material used for the documentation of litigation art and societal information for over 2000 years. Formed from animal skins, its manufacture comprises repeated liming and scraping steps before drying under tension. Historical parchment represents a valuable record of cultural heritage but due to this, presents a considerable analytical challenge with many studies limited to non-invasive techniques.

In this paper, we recognise that (1) animal lipids within well-dated manuscripts provide an untapped record of historical climates and (2) highlight the need for high-resolution records that encompass the medieval period. We, therefore, report a novel, non-destructive lipid extraction technique for parchments. By employing this technique on well-dated manuscripts, we are able to determine the hydrogen stable isotopic composition of parchment lipids to reconstruct precipitation-driven climate records. We are thus able to probe past climatic events, such as The Great Famine period (1315 – 1317 CE) which saw heavy rains and lower temperatures across Europe leading to extreme food shortages felt by all levels of society.

### 4 ADAPTATION AND RESILIENCE IN LATE MEDIEVAL JUTLAND (DENMARK)

**Abstract author(s):** Kerr, Sarah (Aarhus University)

**Abstract format:** Oral

This paper examines the evidence for adaptation in the face of climatic anomalies in late medieval Jutland, central Denmark. It explores the case studies of Nørre Vosborg, a site comprising two late medieval manor houses, describing the architecture and archaeological remains from surveys and excavations. It is argued that Nørre Vosborg 1 was moved approximately 900m inland after it sustained considerable flooding and damage, likely at the end of the medieval to early modern period. In addition, Nørre Vosborg 2 was also moved either pre-emptively or after some damage from the same environmental events. The climatic events which drove these settlement changes appear to have been a series of storm surges in the sixteenth century, including a particularly violent event in c.1593. The combination of archaeological, architectural and environmental data at Nørre Vosborg 1 and 2 allows contemplation of the human response to climate disasters, that is resilience and adaptation, including analysis of the pace of these responses.

The paper turns to set the climatic anomalies in their wider context to argue they may be indicative of the impacts stemming from the onset of the Little Ice Age (LIA). It compares the Nørre Vosborg case studies with other similar examples in western Europe and postulates that there may be a wider trend detectable in the archaeological record during the shift from the Medieval Warm Period (WMP) to the LIA. Methods, and the associated challenges, of 'scaling up' these seemingly disparate case studies is discussed. Lastly, it is acknowledged that despite such challenges, awareness of human resilience in the recent-past is an important element of today's climate communication.

### 5 MITIGATING CLIMATE CHANGE. PEASANT DRIVEN SOCIO-ECOLOGICAL ADAPTATION STRATEGIES IN BOREAL INLAND SCANDINAVIA

**Abstract author(s):** Svensson, Eva (Karlstad University) - Petterson, Susanne (Norskt Maritimt Museum)

**Abstract format:** Oral

In boreal inland Scandinavia, the onset of the Little Ice Age was a game changer as cereal cultivation became (almost) impossible in some areas where the preceding Medieval Warm Period had allowed for expansion of settlement

and fields into places with otherwise unsuitable conditions. In some areas the colder climate was a major problem, in other areas the major challenge was rather the increasing precipitation.

Climate change, the onset of the Little Ice Age, was part of the Late Medieval Agrarian Crisis together with disasters such as the Black Death killing vast numbers of people. The Late Medieval Agrarian Crises caused settlement desertion and transformation of agrarian life. But the peasants were not just passive victims of external forces, they also developed strategies to mitigate the disasters.

In this paper archaeological and palaeobotanical evidence of strategies carried out by the peasants in boreal inland Scandinavia to mitigate climate change, and adopt to the new conditions will be discussed. The detected strategies, with geographical variations, were: Establishing settlements and fields in elevated and drier locations; Introducing autumn and spring crops for spreading risks; Increased cultivation of oats, being less sensitive to harsher and wetter cultivation conditions; Concentrating landowning on fewer hands for promotion of cattle breeding; Improving dwelling houses to better withstand colder climate. The major actors behind the strategies were the land-owning peasants, in some cases as individual initiatives and in other cases as communities.

## 6 RESILIENCE AND VULNERABILITY IN THE LITTLE ICE AGE: OSL AND MICROMORPHOLOGY IN RESEARCHING THE DESTRUCTION OF A SHETLAND FARMING COMMUNITY

**Abstract author(s):** McKenzie, Jo (Archaeological Sciences, University of Bradford) - Bigelow, Gerald (Archaeology Institute, University of the Highlands and Islands; Burroughs & Chapin Center for Marine and Wetland Studies, Coastal Carolina University) - Saunders, Kristen (Biological and Environmental Sciences, University of Stirling) - Simpson, Ian (Department of Archaeology, University of Durham) - Sanderson, David (Scottish Universities Environmental Research Centre, University of Glasgow) - Kinnaird, Tim (School of Earth and Environmental Sciences, University of St. Andrews)

**Abstract format:** Oral

In the late 17th century AD the 'Broo' community of four farms, on the southern end of the Shetland Islands, UK, was almost completely buried by sand blows from a nearby beach. The well-preserved Broo Site Complex, representing very likely the last abandoned farm, provides a unique opportunity to trace human-environmental interactions at a high chronological resolution, possessing historical documentation, a broad array of artefacts of known and often short periods of production, and extensive archaeological sequences comprising activity-related horizons and highly dateable sand strata. The environmental history is complex, with OSL dating suggesting that farms survived sand blow events in the 14th and mid-16th centuries, and records showing that the township was still a valuable property as late as 1650.

Such mobilisations of coastal sand deposits have been attributed to enhanced storminess embedded in periods of cooling climate, and medieval and post-medieval Little Ice Age conditions may have played a role in the Broo transgressions. However, over 15 years of multi- and inter-disciplinary research suggests a more complex story of human-environment interaction. Anthropogenic modifications of landscape and local ecology from cultivation, herding and/or introduction of new species may have been equally important catalysts in Broo's demise. This presentation discusses the specific contribution of soil micromorphology, with its ability to provide high-resolution analysis of both anthropogenic character and environmental context in archaeological horizons, alongside OSL dating evidence, in order to reconstruct potential causes for the Broo sand blows, and why the landscape restabilized in the medieval period but became a vast, permanent dunefield in the 17th century. The Broo story contributes valuable data on the causes of, and human adaptations to, a type of environmental extreme event that has occurred many times in many places on European coasts, but seems to have been particularly common during the Little Ice Age.

## 7 WATER MANAGEMENT AND RESILIENCE TO CLIMATIC CHANGE IN MEDIEVAL MIDDLE EASTERN CITIES - EVIDENCE FROM THE SOURCE OF LIFE PROJECT

**Abstract author(s):** Brown, Peter (Radboud University)

**Abstract format:** Oral

Compared to European medieval cities, those of the Middle East were larger and supported more numerous populations. Counterintuitively though, these cities were typically situated in zones in which water was considerably scarcer than contemporary European settlements. While social adaptations and sophisticated hydraulic infrastructure evidently permitted high concentrations of urbanised settlement at specific locations within these regions, the extent to which these populations were resilient to climatic fluctuations remains a matter of some debate. A plummet in precipitation could substantially impact crop yields, prevent the transportation of goods by waterways and even threaten a city's water supply. Anomalously high rainfall, on the other hand, could lead to destructive flooding with equally alarming consequences. The security of water supplies was not only threatened by environmental change however. Military action often targeted a city's hydraulic infrastructure while longer-term economic and political pressures could result in more gradual degradation to a city's water supply. While a number of the major early Islamic cities remain occupied to this day (such as Baghdad and Cairo), several (such as Samarra and Basra) were abandoned during the medieval period—with the water supply often cited as a factor in their depopulation. Drawing on evi-



dence collected through the ongoing Source of Life project, this paper explores the extent to which climate change may have influenced the urban populations of the medieval Middle East. In particular, strategies that enhanced resilience to environmental variation, such as using water from several different sources (including rivers, rainwater and groundwater), regular maintenance and improvement works to ensure waterways remained functional and the storage of water for extended periods in dedicated infrastructure, are evaluated. Whether or not they actively realised it, climatic variation undoubtedly affected medieval Middle Eastern populations and urban communities had to guard against its impacts alongside, perhaps more tangible, economic and geo-political concerns.

## 8 CLIMATE CHANGE VS WAR CONDITIONS

**Abstract author(s):** Lukacevic, Marijana (private company)

**Abstract format:** Oral

In this presentation, the results of *cribrae orbitaliae* analysis will be presented by comparing two populations that lived in the same geographical area, today's continental Croatia, surrounded by the Sava, Drava and Danube rivers in the central and eastern parts and the Žumberak mountain in the east. These populations lived in different historical periods. Population A lived from 11th to the 15th century. According to historical data, during the period from the 10th to the 14th century climate change happened in Central Europe and the average summer temperatures were one and a half degrees higher than today. Such changes, according to today's knowledge, can compromise seasonal agricultural production and thus endanger children's health and growth, but also the general health and working abilities of adults.

Population B lived from 15th to 18th century in the same geographical area. Significant political and historical changes happened in the historical period from 15th to 17th century. Croatian history in the second half of 15th century was marked by the war campaigns of the Ottoman Empire in order to conquer Western Europe. These military campaigns lasted for almost two and a half centuries and brought with them everything that the state of war brings, extremely poor conditions for normal life and long-term consequences for the population exposed to such conditions.

Bioarchaeological analysis of *cribrae orbitaliae* has shown that the population A have higher incidence of this pathology than population B. In this presentation we will try to explain what exactly is the reason for this results. Whether climate change has a more negative impact on the quality of life compared to war and which group of the population is most vulnerable in both conditions will be presented in this lecture.

## 9 CHANGING CLIMATE AND EMERGENCE OF THE OTTOMAN STATE: INTEGRATING ARCHAEOLOGY, HISTORY AND PALEOENVIRONMENTAL STUDIES

**Abstract author(s):** Dikkaya, Fahri (TED University)

**Abstract format:** Oral

The Medieval Warm Period, the Medieval Climate Anomaly, which lasted from c. 950 to c. 1250, can be defined as the beginning of the Turkish period in Anatolia. At the end of this period, adverse climatic conditions marked with dryness and cooler phases became prevalent in Anatolia and the Balkans, possibly in response to a volcanic eruption that occurred in 1257. Following this period, history demonstrates that the Byzantine socio-political system that was already weakened, encountered a new rival on its frontiers. The Ottomans emerged as a socio-political power in north-western Anatolia in the second part of the 12th century under the leaderships of Ertuğrul and Osman, while the Byzantine political and militaristic control over Anatolia collapsed. This paper aims to evaluate the climate change as an important contributing factor for Ottoman success against the Byzantine Empire along with militaristic and political factors. In other words, the ability of the newly arising Ottomans to operate in the changing environment of Anatolia contributed to their consolidation and emerge as regional power. This study will also be based on an interdisciplinary approach to this issue through historical textual, archaeological, environmental and climate data.

---

## 85 UNDERSTANDING NEANDERTHAL SYMBOLIC AND CULTURAL BEHAVIOUR AND THEIR COGNITIVE UNDERPINNINGS. WHERE DO WE STAND? [PAM]

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Leder, Dirk (Niedersächsisches Landesamt für Denkmalpflege) - Majkić, Ana (Department of Archaeology, University of Belgrade)

**Format:** Round table

In the last decade evidence of sophisticated symbolic and cultural behaviour among Neanderthals has accumulated substantially across Eurasia. This is exemplified by Neanderthal's usage of birds of prey feathers, talons, and phalanges at a number of European Mediterranean sites, by engraved rocks, lithics, and bone objects from a variety of places, the usage of spaces deep inside caves and colorants, by human burials, and potentially by cave paintings in Iberia, among further examples.

The very notion of sophisticated symbolic and cultural behaviour in Neanderthals pivotally bears implications in regard to human evolution and the cognitive abilities of one of our genetically closest relatives. Is *Homo sapiens* as special as we like to believe, or have there been other human species that – under yet unknown circumstances – disappeared in the past, but had strikingly similar abilities? What are the cognitive underpinnings of these recent discoveries and recognitions? Do we need more research on human cognitive evolution, neurosciences and past brain development connected to these particular questions?

The archaeological discoveries of objects with symbolically mediated behaviour lay the foundations for new possibilities to reconsider the very nature of Neanderthals – first regarded as primitives, later seen as capable of adapting to a variety of environments and climate changes, and now possibly as self-aware human beings that were able to communicate in abstract ways, displayed care for their deceased, and commanded imaginative means similar to us. Were these complex behaviours independent ‘inventions’ or the result of acculturation? Do we suffer from a historical legacy of seeing Neanderthals as ‘the others’?

Where do we stand today, and which direction does future research need to take in order to investigate such complex issues that ultimately aim to address one of the most essential questions humankind might have – what makes us human?

---

## 86 PREHISTORIC WARRIORHOOD IN TRANSITION

**Theme: 2. [Re]integration**

**Organisers: Dolfini, Andrea (Newcastle University) - Frieman, Catherine (Australian National University) - Harrison, Eleanor (Newcastle University) - Molloy, Barry (University College Dublin)**

**Format: Regular session**

The session invites theoretically-oriented papers exploring Neolithic to Late Bronze Age notions of martiality and warriorhood as laid out in individual ‘warrior graves’ and cognate evidence. In large swathes of Europe, the late 5th to 2nd millennia BC witnessed the emergence of a new funerary language centring on individual furnished burials. While all gender and age groups were interred in this way, male burials equipped with impressive panoplies of stone and metal weapons have drawn the keenest interest from scholars. For many, these burials are thought to embody a major transition to (a) individualising forms of prestige and sociopolitical ranking; (b) a binary gender ideology; (c) novel cosmological principles governing funerary behaviour and society; (d) a ‘heroic’ male persona defined, in life as much as in death, by martial valour; and (e) new migratory dynamics originating from the Pontic-Caspian steppes. While all these readings provide valuable insights into the social dimensions of warrior graves, none are conclusive due to a fractured theoretical landscape and oft-overheated debate. Consequently, even the definition of a ‘warrior grave’ and underlying social notions of warriorhood are contested.

The session discusses new perspectives on warrior burials from Neolithic, Chalcolithic, and Bronze Age Europe focusing on the relationship between martial ideology and martial practices; markers of received or inflicted violence and related bioarchaeological evidence; and the funerary and non-funerary dimensions of grave kits. Papers may also discuss the gender dynamics underlying warrior graves as well as meaningfully associated or comparative evidence, e.g., unfurnished or differently furnished burials. True to the session’s focus on transitions, papers are also welcomed, which investigate the shift from weapon-poor to weapon-rich burials in the Neolithic and the transformation of warrior burial and ideology during the Bronze Age. A parallel poster session will host narrower studies, e.g., those solely focusing on bone trauma.

## ABSTRACTS

### 1 FROM HUNTERS TO WARRIORS? QUESTIONING IMPLICIT MASCULINITIES FROM GRAVE GOODS FROM THE 6TH AND 5TH MILLENNIUM CAL BC, CENTRAL EUROPE

**Abstract author(s): Bickle, Penny (University of York)**

**Abstract format: Oral**

If the Bronze Age is characterized by the “Warrior burial”, conjuring images of heroic leaders, martial ideologies and idealised visions of masculinity, the Neolithic equivalent is “the hunter”. Yet, hunting occupies an uncertain place in narratives of the Neolithic, at once both seemingly highly valued in rich grave assemblages, while also playing perhaps a more muted role in food production. It can thus both be a prestige activity, or a supplement to the diet, when domesticated resources fail. Hunting remains, however, most frequently interpreted (explicitly or implicitly) as a male activity, wild and untamed, in comparison to the domestic sphere, which in turn is considered to mostly be populated with women. Such divisions seem influenced by modern gender expectations, and thus warrant further consideration and debate. In this paper, I explore the symbolism of hunting and masculinity in the 6th and 5th millenniums cal BC, drawing on the burial evidence, isotope data and use-wear analysis of stone tools. This evidence points to a strong division of labour, but with different value systems influencing grave good choice through time. As a contribution to

the sessions themes, the aim is consider sex and gender ideologies amongst early farmers, and to argue for dynamic relations between different genders through time.

## 2 LATE NEOLITHIC WARRIOR SYMBOLISM IN CENTRAL EUROPE

**Abstract author(s): Schultrich, Sebastian (Institut fuer Ur- und Fruehgeschichte Kiel)**

**Abstract format: Oral**

Battle-axes are central to understanding ideological changes in Central Europe during the Late Neolithic (LN 3300–2800 BC). The number of stone battle-axes in burials significantly increase during this period. They were made of stone, copper, antler and depicted on stone slabs. We know this specific pattern from Southern Europe, linked to daggers and halberds.

The occurrence of battle axes in collective graves has hitherto hindered the recognition of their importance, as collective burials often are equated with collectively oriented societies. However, if we look closely into the specific burial customs, huge regional differences occur. In gallery graves, the grave goods seem more “collective” than in rock-cut tombs or passage graves. In the latter, battle axes appear. Perhaps, in these graves, the societies expressed individuality and certain idealised social roles.

Also, different forms of single burials occur already in LN Central Europe. Generally, scholars assume that single graves, individuality and idealised social roles appear related to the Final Neolithic (2800–2200 BC) Corded Ware Culture (CWC). That is not true, as the LN situation shows. This observation is important as it limits the high importance that is (again) attributed to the CWC in recent research.

Scholars already related the developments in Southern Europe to Eastern Europe. Now we can also relate Central European developments to this. Accordingly, we face a pan-European network, in which certain symbols and ideas were shared. Thus, specific patterns which are attributed to FN Cultures rest on the LN patterns.

However, the meaning of the idealised warrior in diverse societies is uncertain. It is clear, however, that warriorhood is just one feature of complex symbolic system, which highlights human beings. Moreover, it is not certain if males were associated with the idealised warrior role. On the contrary, there is evidence that female individuals were.

## 3 NEOLITHIC WARRIORHOOD?: INTERPRETING LATER NEOLITHIC INDIVIDUAL BURIAL IN BRITAIN AND IRELAND

**Abstract author(s): Harrison, Eleanor (Newcastle University)**

**Abstract format: Oral**

When we think of a ‘warrior grave’, Neolithic burial practices may not be the first to spring to mind. This is particularly true for the Neolithic in Britain and Ireland, where burial practices are generally characterised as unfurnished and communal, and reflective of societal ideas of relational personhood as opposed to individual identity. There does appear to be, however, traditions of furnished individual burial in the Middle to Late Neolithic of Britain and Ireland. These burials are furnished with different assemblages of grave goods including pottery, ornamentation and stone tool, sometimes in significant numbers. Burials of this kind are then absent from Britain for centuries before a period of increased individual burial, associated with Beaker pottery in the Early Bronze Age. This paper will explore how these Neolithic individual graves compare to the notion of a ‘warrior grave’ and the implications of this to our broader understandings of the Later Neolithic and the transition to the Early Bronze Age in Britain and Ireland.

## 4 RETHINKING WARRIOR GRAVES: NEW PERSPECTIVES FROM COPPER AGE ITALY

**Abstract author(s): Dolfini, Andrea (Newcastle University)**

**Abstract format: Oral**

A new funerary language arose across Europe in the 4th and 3rd millennia BC, which centred on individual burial, gender diacritics, and metal-rich grave sets. Warrior graves arguably are the best studied manifestation of this language. Who was buried in these graves? And why were these dead afforded weapon-laden funerals? The paper addresses these questions from the vantage point of the ‘Rinaldone’ burial tradition from Copper Age central Italy, c.3650-2200 BC. After presenting Casetta Mistici, a recently excavated cemetery with warrior graves from the environs of Rome, the paper explores three cross-cultural concepts, viz. (1) the gendered life course; (2) life force, or ‘virtue’; and (3) violence, both inflicted and suffered. It is argued that a revolutionary new reading of warrior graves emerges at the nexus between these concepts. The reading, it is maintained, fits well the Italian evidence and might perhaps be extended to other early warrior grave ‘cultures’ from 4th and 3rd millennia Europe.

## 5 SODALITIES, SEXUALITIES, OR PERHAPS BOTH? RETHINKING LATE PREHISTORIC SAME-SEX DOUBLE-GRAVES

**Abstract author(s):** Walsh, Matthew - Reiter, Samantha (National Museum of Denmark) - Frieman, Catherine (Australian National University) - Kaul, Flemming - Frei, Karin (National Museum of Denmark)

**Abstract format:** Oral

Gender identities and categories are integral to social groups that are highly-performative and/or rigorously hierarchical. One example of such communities is martial fraternities. From a queer theory perspective, we ask whether the hierarchal 'elite' warrior class of late European prehistory may have embodied a distinctive gender- and/or sexuality-related category of its own based on dynamic fraternal relationships, such as those well-documented among the Greeks in the form of erastes-eromenos pairings. Drawing on ethnology and Classical sources, we re-interpret a subset of late prehistoric double graves to better understand this possibility in the archaeological record. We posit that in some cases the archaeological evidence reasonably suggests the possibility that martial identities and lifestyles could indeed have sanctioned intimate interpersonal relationships between men as part of shared 'warrior' ideologies and that this is reflected in the funerary assemblage of warriors' graves. Throughout the 19th and 20th centuries double graves have been interpreted differently in various contexts, namely as representing so-called 'blood-brother' or fosterage relationships, or as a reflection of Indo-European cosmological dualities, or even human sacrifices made in honour of a deceased individual. However, to date, interpretations of same-sex double-graves have ignored or at least left unspoken the possibility that they simply reflect the reality of intimate same-sex relationships in the past.

## 6 SHARED WARRIOR PRESTIGE: BEAKER MEN, WOMEN, CHILDREN AND THEIR WEAPONS

**Abstract author(s):** Turek, Jan (Center for Theoretical Study, Charles University, Prague)

**Abstract format:** Oral

The Copper Age funerary practices seem to be a symbolic reflection of the division of labour within the family and a reflection of the different social status of men, women, and children. The individuality expressed within the burial rites is indicative of an individual's association with a particular social category. Such concept is connecting the warrior prestige mainly with the male gender category, however, the symbolic meaning of weapons seems to have much more complex social context. The warrior's social status was not exclusively attached to men. It was rather shared within elite families demonstrating the social power of men, women and children. The male-gendered artefacts, such as weapons may have been 'delegated' also to women in order to reinforce social norms and rules of social differentiation. As such, the Bell Beaker female burials with archery equipment represent members of a social elite, possibly female warriors-'Amazons'.

In the 3rd millennium funerary assemblages in Central Europe stone/copper weapons accompany some of the children's burials, especially those with a male orientation. In the context of children's graves, these artefacts clearly were of symbolic importance and may have well have been anticipating their social roles as adults. In Corded Ware cemeteries, the bodies of very young boys are accompanied by stone battle-axes or mace-heads that may be interpreted as symbols of wealth and social status. Such weapons do not necessarily reflect prehistoric social relations simply because these children died so young. Because other child graves do not contain such symbolic artefacts, it can be assumed that this group of sub-adult burials may represent socially favoured individuals of some sort. They may have been firstborn sons/daughters, potential heirs of social status and wealth within a family or a community, suggesting the existence of a system of ascribed hereditary wealth.

## 7 ARGARIC WEAPONS: MARKERS OF VIOLENCE OR MARKERS OF NETWORKS?

**Abstract author(s):** Lackinger, Aaron - Ibarz-Navarro, Sergio - Murillo-Barroso, Mercedes (Departamento de Prehistoria y Arqueología- Universidad de Granada) - Montero-Ruiz, Ignacio (Instituto de Historia- CSIC)

**Abstract format:** Oral

The halberd is one of the most characteristic objects and one of the most solidly linked to the metallic productions of the Argaric communities. The type of 'argaric halberd' has even been applied to other halberds found outside the argaric region (eg. Brandherm, 2012; Lull et al. 2018). Halberds, which are considered a marker of male status for the Argaric elites, disappear from the funerary record around 1800 BC, being replaced by axes and swords (Lull et al. 2017; 2018). Functionally, the halberds have no other use than exercising violence, but are they actually weapons produced by the Argaric communities for that end?

Some previous works have pointed out the low use of halberds as an element of war, either because of their scarcity of use-wear marks, or because of the limited evidence of individuals with stab wounds (Brandherm, 2012; Aranda et al. 2009).

In this work we present the results of composition and lead isotopes analysis by MC-ICP-MS of a set of argaric halberds to explore the productive chain of these weapons and the exchange networks involved in their production and acquisition. In a reassessment of halberds as emblems of power rather than as objects to exert direct violence, the

exchanges and social relations established in their acquisition and elaboration must have played an important role defining their social value.

## 8 THE THINGS THEY CARRIED

**Abstract author(s):** Baca, Martin (Department of Archaeology, Comenius University in Bratislava) - Havlíková, Markéta (Department of Archaeology and Museology, Masaryk University in Brno)

**Abstract format:** Oral

Over the last decades, a lot has changed about our understanding of war, warfare, and warrior societies in prehistoric Europe. It is especially true about the Bronze Age which benefited greatly from the new scientific methods as well as from the introduction of more elaborated theoretical models. The beauty in this fact is that we finally start to realize how multi-layered the world of prehistoric warriorhood was and how much there is still to uncover/understand. In this paper, we would like to focus on two regions, Bohemia and Central Danube area, from the Early to the Late Bronze Age. We will shortly sum up the current state of research in terms of warfare/warriorhood evidence in the focus area, including the basic models as we understand them. This will provide the background for us, so we could tell stories. However, these stories will not be based solely on rich burials. There are other data that are often overlooked, even if they could provide us with excellent opportunities for interpretation. Therefore we will focus on weapons - mostly swords - lost or deposited in rivers, forests, fields, etc. With the help of metal wear analysis, experimental archaeology, and maybe even some metallography, we could tell stories that are not as much affected by the agenda of past or present. From the first look, one could almost say that some of them may even challenge our safe binary constructions.

## 9 RE-EXAMINING MOBILITY IN LATER EUROPEAN PREHISTORY: THE ULTIMATE GIFT THEOREM AND GENDERED MOBILITY PATTERNS VIS À VIS NEW MOBILITY DATA

**Abstract author(s):** Reiter, Samantha - Frei, Karin (National Museum of Denmark)

**Abstract format:** Oral

Anthropological and archaeological models of gendered mobility in Later European prehistory suggest that scholars have ascribed different capacities for movement to prehistoric people in relation to their gender. According to the model adopted from Lévi-Strauss, if women were mobile, researchers tend to assume that they migrated in a single instance on the occasion of their marriage within an exogamic, patrilocal system. Men, however, were thought to be tied to their local region while nonetheless possibly engaging in repeated movements for raiding, trading or guest-friendship visits. We will juxtapose the Ultimate Gift theorem and the gendered mobility model with data from various recent studies from Nordic Bronze Age contexts (the Skrydstrup Woman, the Egtved Girl, the Ølby Woman, the male from Jelling Øst A14 and the Jestrup warrior from Thy) as well as the various gendered mobility trends observable from diverse mobility studies conducted on later prehistoric material in recent years. We conclude that, while portions of the Ultimate Gift theorem seem to be valid, our study suggests that the patterns thereby encompassed do not represent the totality of kinds of mobility available in prehistory.

## 10 IDEOLOGY AND IDENTITY. DEPICTIONS OF WEAPONRY ON POMERANIAN FACE-URNS

**Abstract author(s):** Dziechciarz, Pawel (Uniwersytet Warszawski)

**Abstract format:** Oral

At the turn of the Late Bronze Age and the Early Iron Age in Eastern Pomerania (Pomorze Wschodnie, northern part of the present Polish lands) an essential change in a cultural model took place. It led to the emergence of a new, post-urnfield cultural phenomenon known as the Pomeranian culture. In addition to the funeral rite and the social structure, the mode of demonstrating social content related to the military aspects of the functioning of these communities has also shifted. The practice of hoarding of weapons has lost its importance due to the emerging warfare iconography, through the medium (very distinctive, so-called pomeranian face-urns) directly associated with funeral activities. The repertoire of depictions with unequivocally masculine, military and heroic connotations (weaponry, warriors, horses, riders and wagons) clearly contrasts with the 'female pattern' of the decoration of funeral vessels, functioning simultaneously within the same communities.

In this study, an attempt will be made to explain what mechanisms led to the creation of such a clearly internally systematized package of representations, and what was the impact of long-distance contacts, especially with the Hallstatt milieu, and the transmission of Mediterranean cultural patterns on the development of a warrior ideology within these peripheral communities. On the basis of the analysis of the weaponry representations the question of the usefulness of prehistoric iconography in the reconstruction of combat practices will also be raised.

## MILITARY CONFLICTS AT THE END OF 3D AND EARLY 2ND MILLENNIUM BC IN THE EASTERN EUROPEAN STEPPE – FOREST-STEPPE

**Abstract author(s):** Zagorodnia, Olga (Independent researcher) - Mimokhod, Roman (Institute of Archaeology Russian Academy of Sciences)

**Abstract format:** Oral

The period 2200-1800 cal. BC in Eastern Europe is a time of large-scale migrations and military conflicts. They are presented in archaeological sources, both burial and settlement. This confrontation is recorded at the burials of warriors of post-catacomb cultural formations (2200-2000 cal. BC), primarily individuals who are equipped with quiver sets of flint arrows, battle axes and maces. During this period military clashes are observed within the post-Catacomb world. They led to military territorial conflicts at the stage of its formation and eventually to the stabilization of the areas of cultures. The results of the military confrontation in the materials of funerary sites are also recorded according to evidence of injuries and murders. It can be traced by traumatic injuries of skeletons (traces on the skulls of percussion weapons) and arrowheads in the skeletons.

One of the most striking examples of the military confrontation in the post-Catacomb period in the Eastern Europe is the materials of the Liventsovsko-Karataevskaya fortress (2100-2000 cal. BC) located in the Don delta. It fell as a result of a raid by bearers of the southern sub-Caucasian traditions, as evidenced by chronology and the typology of arrowheads.

During the final phase of the post-Catacomb cultures (2000-1800 cal. BC) the peak of military tension is observed. Carriers of chariot cultures entered the historical arena, the expansion of which was directed from the Urals to the East. They can rightfully be called warrior burial cultures. In addition to the remnants of the chariots and chariot harness, they contain a wide range of weapons (bronze spears, axes, arrowheads, etc.). Before the onslaught of the super-military societies of that time, which moved from the Urals to the Dnieper, the scattered societies of the post-Catacomb world could not offer any serious resistance and lost their territories and cultural self-identification.

## MATERIAL EVIDENCE OF VIOLENT ARMED CONFLICTS IN BRONZE AGE LOWER MUREŞ VALLEY

**Abstract author(s):** Gogaltan, Florin (Institutul de Arheologie si Istoria Artei Cluj Napoca; Universitatea Babes-Bolyai Cluj Napoca) - Sava, Victor (Complexul Muzeal Arad)

**Abstract format:** Oral

To understand the context in which it was possible for such a big event as the siege of the Late Bronze Age mega-fort from Sântana-Cetatea Veche to take place, we have enlarged our area of research on violent conflicts both geographically and chronologically. Our area of study, the Lower Mureş Valley, is situated at the border connecting the Western Romanian Carpathians and the Pannonian Plain, nowadays between the borders of Romania, Serbia and Hungary. The time frame of choice is the Bronze Age as a whole, conventionally from 2700/2600 to 900/800 BC.

To attain a diachronic perspective on the violent conflicts, we cataloged, ranked and contextualized a series of discoveries, such as weapons, fortifications, or physical traumas. Through the analysis of such evidence, we argue that during the Bronze Age, our region of interest went through a series of significant changes in regard to the society perspective on warfare. These can be correlated with the deep social and economic changes of the European Bronze Age.

In order to obtain a comprehensive view of the material evidence of violent armed conflicts, all data were integrated into a complex analysis that took into account the quantity, dispersion and intensity of the various categories of evidence. Assessment of the quantity and dispersal of weapons, graves furnished with weapons, fortified sites and direct evidence of violent conflict (physical trauma, battlefields), was displayed by graphs and maps. Heatmaps have been used for displaying the intensity of each of the categories of finds already mentioned. Weapons and weapon-bearing graves were each given the value of one unit and then plotted out.

## NO COUNTRY FOR ARMED DEAD. MARTIAL PRACTICES AND IDEALS IN ABSENCE OF WARRIOR GRAVES

**Abstract author(s):** Gentile, Valerio (Leiden University)

**Abstract format:** Oral

During the Bronze Age in the Low Countries, rigid rules governed the deposition of weaponry. Since at least the second part of the Middle Bronze Age, weapons, and swords in particular, have been surrendered into main rivers for hundreds of years while systematically kept away from coeval burials. Only towards the beginning of the Iron Age, weapons gradually disappear from watery contexts and start being deposited in graves, but only after being intentionally destroyed.

The absence of so-called warrior graves for the majority of the Bronze Age poses substantial challenges to the identification and study of martial identities and practices. The rigorous exclusion of swords from burial contexts and their presence in structured depositions has often been portrayed as the proxy of a system revolving around warriorhood

as a temporary, context-based identity, which could be enacted and successively dismissed through the discard of specific paraphernalia. Nonetheless, exploring other models and interpretative avenues can contribute to better our understanding and stimulate debate around prehistoric martial practices and identities.

The research presented here focuses specifically on weaponry from non-funerary contexts. Through a combination of experimental archaeology and in-depth wear analysis, it is possible to partially reconstruct the events that preceded the depositions of these weapons. Piecing together the life-path of these items enables us to make inferences on the contexts of use as well as the owners of these items. Furthermore, it allows one to speculate on what governed the selection and treatment of these items prior to deposition.

## 14 FORTIFICATIONS, SWORDS AND WARRIORS – WEAPON DEPOSITION RITUAL, HOARDS AND WEAPON/METAL TABOO IN GRAVES IN LATE BRONZE AGE EASTERN CROATIA

**Abstract author(s):** Kalafatic, Hrvoje (Institute of Archaeology, Zagreb) - Šošić Klindžić, Rajna (University of Zagreb) - Šiljeg, Bartul (Institute of Archaeology, Zagreb)

**Abstract format:** Oral

One of most significant characteristics of LBA in Eastern Croatia is the lack / invisibility of warrior graves and the simultaneous appearance of numerous hoards, many of which contain whole or fragmented weapons. This kind of inverse proportionality always attracted the attention of the researchers. At first sight, these occurrences seem interrelated but deeper insights suggest that such an approach is too simplified and the actual level of correlation is yet to be determined.

The aim of this presentation is to discuss opposing Late Bronze Age rituals which came to light during rescue excavations of a Bronze Age settlement in Čepinski Martinci, Eastern Croatia. Everything we know about weapons and warriorhood in LBA Croatia, we know mostly from hoards or rare finds like the sword from Čepinski Martinci. Deposited swords are opposed to absence/taboo of weapons in early phases of LBA between Sava and Drava rivers.

This presentation analyses a sword that has been ritually deposited by the south entrance gate in fence ditch of the Čepinski Martinci settlement. We suggest the sword to be interpreted as a foundational votive offering. We understand this to be an object to which community assigns specific powers and significance. Thus, it is proposed that the sword find is to be interpreted as a symbolical „gift“ at the moment of the settlement's foundation. On the one hand, the sword could be seen as a pledge for community security but on the other hand it could be argued that it is a signal of the military nature of the LBA society.

The non-funerary context of the single sword deposition find from Čepinski Martinci suggests that weapons were active agents in non-conflict related rituals within the settlement and argues for symbolic values not necessarily connected to a specific person, but to but the entire community.

## 15 BEYOND BURIALS WITH WEAPONS: WHERE IS THE “RICHNESS” GONE?

**Abstract author(s):** Tarbay, János Gábor (Hungarian National Museum)

**Abstract format:** Oral

During the Late Bronze Age (1450–850 BC), only a handful of burials with weapons are known in Transdanubia, West Hungary. The weaponry set for these cremation burials is usually limited to intentionally broken swords, daggers, winged axes, or spearheads. Considering burials, this is a “weapon poor” region, which can be best illustrated by the fact that between 1450 BC and 1100 BC, only 16 burials with swords were known in the archaeological record, and this phenomenon became completely absent towards the end of the LBA.

Weapons may be rare among the grave kits of local Urnfield burials, but offensive weapons, armor, and symbolic weapons can be found in hoards. For over a half century, Hungarian research followed the “orthodox” idea that “bronze hoards are a collection of objects not related to settlements, nor to burials.” In recent decades, this concept has been tested by new discoveries and by the systematic revision of old ones. Currently, it seems that the burials and at least some of the hoards were part of a complex system of funerary behavior that dealt with the manipulation of the possessions of the deceased and objects destroyed in the pyre. Weapon sets resembling grave kits, melted weapons selected from pyres, and lavish “funerary hoards” are the missing links here between these phenomena.

The paper presents evidence for the selection of objects from pyres based on the re-examination of all LBA burials with weapons and hoards with weapons from the territory of Transdanubia by metalwork production and use-wear analysis. It also illustrates the connection between burials and hoards through examples and case studies. It ultimately seeks to give an explanation, or rather explanations, why hoards are “rich” in weapons in this region during the LBA.

## A. **AMBER MAN – AN UNPRECEDENTED LATE NEOLITHIC BURIAL AMONG HUNTER-GATHERERS IN NORTH-EASTERN POLAND**

**Abstract author(s):** Klecha, Aleksandra (Antiquity of Southeastern Europe Research Center, Faculty of Archaeology, University of Warsaw) - Manasterski, Dariusz (Faculty of Archaeology, University of Warsaw) - Borówka, Paulina (Faculty of Biology and Environmental Protection, University of Łódź)

**Abstract format:** Poster

In the Late Neolithic the Masurian Lake District was still dominated by hunter-gatherers belonging to the Neman cultural sphere, although from the 5th millennium BC groups with manufacturing economy entered the area. These included representatives of the Globular Amphora Culture, and later also the Corded Ware Culture and the Bell Beaker societies, which clearly influenced the natives, contributing to the formation of a syncretic cultural unit in this area, which was the Ząbzie-Szeszno Group. One of the most interesting contexts related to all them is the funeral and ritual site Ząbzie 10 location on the island of Łańskie Lake. It consisted of seven burials. Among them was one belonging to a man aged 40-45 years. During the excavation, 50 amber ornaments were discovered on the deceased. These were many various beads with W- and V-shaped holes and holes made straight through. A small fish, whose species could not be determined, and a flint tool were placed near the face. The examination of the skeleton revealed numerous traces of injuries on the skull and long bones, most probably inflicted by an axe. Since, many aspect of this burial are unique e.g. stylistic of amber ornaments and the burial itself, in depth study related to material studies (FTIR spectroscopy) and aDNA analysis were performed. They revealed foreign provenance of the adornments and widely local origin of the deceased. This paper aims to present issues related to research on this burial within hunter-gatherer context.

---

## 90 **THE TECHNOLOGY AND USE OF METALS IN THE PREHISTORIC EASTERN MEDITERRANEAN: RECENT ADVANCES THROUGH MICROSCALE ANALYSIS**

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Aulsebrook, Stephanie (University of Warsaw) - Ramé, Betty (ArScAn - Archéologie et Science de l'Antiquité - UMR 7041) - Martin, Valentine (University Paris 1 Panthéon-Sorbonne; ArScAn - Archéologie et Science de l'Antiquité - UMR 7041)

**Format:** Regular session

A recent development in the investigation of object biographies is the application of high-quality portable optical microscopes and scanning electron microscopy to uncover details about the individual life-histories of specific artefacts in unprecedented detail, especially metalwork. These devices have opened up a new realm of microscale analysis that has enabled the exploration of far more advanced research questions, concerning the manufacture and use of metal artefacts in ancient societies, than had been hitherto conceived. In particular, this technology has made it possible to investigate aspects of individual object biographies en masse, providing, in some cases for the very first time, a way to move beyond Appadurai's more generic 'social history of things' towards idiosyncratic narratives for artefacts other than the most heavily studied objets d'art. We would argue that this is an overlooked aspect of the 'Third Science Revolution in Archaeology', and demonstrates how the sciences and humanities can work together to generate new opportunities for archaeological research.

The principal aim of this session is to showcase how this technology has been utilised to study the engagement between people and metalwork during its production and use in ancient societies. We invite papers that cover any time between the Neolithic and the end of the Bronze Age across the area of the East Mediterranean basin (Greece, Turkey, the Levantine coast, Cyprus, Near East, Egypt and Libya). We also hope that this session will provide an important forum for the sharing of ideas about best practice, when using this type of equipment for the study of metal artefacts in particular.

## ABSTRACTS

### 1 **OF PEOPLE AND METALS: CROSS-MATERIAL MICROANALYSIS REVEALS USES OF PREHISTORIC DAGGERS**

**Abstract author(s):** Dolfini, Andrea - Caricola, Isabella (Newcastle University)

**Abstract format:** Oral

Daggers were widespread in early Mediterranean Europe. Alternatively made from either flint or copper alloy, daggers were frequently placed in Chalcolithic and Bronze Age warrior graves to mark out the gender, identity, social role, and perhaps elevated status of the deceased. Despite their undoubted salience to prehistoric society, it is yet unclear how daggers were utilized prior to funerals, and whether their lifetime uses were part of idiosyncratic object biographies explaining deployment in select individual burials. A recently concluded EU-funded project carried out



by the authors provides meaningful answers to these questions. The paper discusses results of (a) low- and high-magnification microwear analysis of a sample of copper-alloy daggers from Chalcolithic and Bronze Age Italy; (b) the first ever successful attempt to extract organic residues from the corroded surfaces of said daggers; and (c), for comparison, select data stemming from the microwear analysis of lithic daggers. This innovative cross-material, multi-method approach to microanalysis has permitted a holistic appraisal of the life-histories of early Italian daggers. The research suggests that daggers were multi-functional tools (and perhaps tool-weapons) whose social value was predicated upon widespread practices that might have been shared across the entire Mediterranean basin.

## 2 USING MICROSCOPY TO UNLOCK OBJECT BIOGRAPHIES: CASE STUDIES FROM LATE BRONZE AGE MYCENAE

**Abstract author(s):** Aulsebrook, Stephanie (University of Warsaw)

**Abstract format:** Oral

The importance of metal artefacts within the Late Bronze Age societies on the Greek mainland (1700–1200 BC), otherwise known as the Mycenaean culture, has been acknowledged since the earliest archaeological discoveries in the latter half of the 19th century. Research conducted since then has only strengthened that observation, with the economic, social and political role of metals evident through their use for tools essential to agricultural and industrial production, objects intended as insignia and to promote and legitimate social status, personal items used to create and perpetuate ideas concerning bodily appearance, identity and consumption practices, weaponry to extend and impose military power, and more widely as a driving force for trade and interaction across the contemporary East Mediterranean and beyond. Yet, for the most part, this picture remains rather generic with a macroscale focus; the specific or even unique characteristics of these cultural practices and meanings within Mycenaean societies remain comparatively unexplored. In particular, an understanding of the presumably differential integration of metal artefacts into the daily routine of people across the whole social spectrum of a typical Mycenaean community still eludes us.

The ongoing research project "Forging Society at Late Bronze Age Mycenae: the Relationships between People and Metals" aims to provide the foundations needed to address this question through a microscale analysis of a single site, Mycenae. Fundamental to this approach is the reconstruction of specific object biographies. A portable optical microscope has been used to examine a range of metal artefacts from Mycenae, in order to gather information concerning their production and use. This paper will present a small selection of these analyses to demonstrate how this extension of traditional artefact analysis has affected the quantity and quality of extractable information, and the impact this had on the reconstruction of object biographies and our wider interpretations.

## 3 MICROSCALE ANALYSIS ON THE FIRST METAL OF GREECE: A METHODOLOGICAL WAY TO RECONSTRUCT MANUFACTURING PROCESSES FOR NEOLITHIC METAL OBJECTS

**Abstract author(s):** Martin, Valentine (University Paris 1 Panthéon-Sorbonne; UMR 7041 ArScAn)

**Abstract format:** Oral

Metalwork emerged early in Greece, at the end of the Neolithic. During this period, the population started to work with gold, copper and even silver. At the end of the 6th millennium, the metal used was pure or native, without alloys. But we do not have much knowledge about their manufacturing processes: neither workshops nor tools have been discovered yet. However, we can make some hypotheses because during this period, it is quite possible that metal was worked like other more common materials of the Neolithic, such as stone or shell. These actions have left traces on the objects, still visible when the object is not too corroded. These can be observed on their surface with an optical camera, up to a magnification of 200. To interpret them, experimental archaeology is employed. One can then compare the archaeological and the experimental objects with the optical camera, after having tested different techniques (cold hammering, hot hammering, casting). This approach has been conducted on the neolithic metal objects from Dikili Tash, a prehistoric tell settlement in Eastern Macedonia. It allows us to understand the way in which the objects were made, from the obtaining of a workable raw material to the surface finishes. The particular characteristics of the traces identified on Neolithic metal objects is linked to the use of "simple" tools, mainly of stone. Several techniques are differentiated according to whether the maker sought to obtain hardness (weapons and tools) or a high level of aesthetics (ornaments). Changes occur between the end of the Neolithic and the beginning of the Bronze Age, with the use of alloys and the resulting decrease in fusion temperatures facilitating new techniques for metalworking.

#### 4 METAL OBJECTS FROM NORTHERN AEGEAN, GREECE: AN EBA HOARD FROM MESI GLYFADA SEA

**Abstract author(s):** Nikolopoulou, Athina (National and Kapodistrian University of Athens; INN NCSR DEMOKRITOS) - Filippaki, Eleni (INN NCSR DEMOKRITOS)

**Abstract format:** Oral

An accumulation of metal objects was found in the sea in the Rhodope Prefecture in northern Greece. The hoard of 134 metal objects came to light via the Ephorate of Underwater Antiquities after following information from an individual to the Archaeological Service in 2008. The hoard consisted mostly of axes (110), with the interesting presence of ingots (19), which are considered as the raw material for manufacturing the tools. Also, two bases of Early Helladic handmade vessels were found.

To determine the alloy type that was used for the manufacture of the axes, analyses were carried out with the non-destructive XRF method. The measurements took place at the Ephorate of Underwater Antiquities, where the portable XRF device of the Laboratory of Palaeoenvironmental and Ancient Metal Structures of the Institute of Nanoscience and Nanotechnology of the N.C.S.R. "Demokritos" was transferred. The data that have been obtained showed that all the axes are made of arsenical copper. It should be noted that arsenic is also present within the ingots. We sampled 32 items to conduct analyses under the Scanning Electron Microscope (SEM), in order to draw further conclusions about the proportion of the components and the manufacturing technology of these items.

This paper presents the preliminary analytical results of the SEM analyses as well as the metallographic examination. The main aim of this paper is to illuminate some aspects of the reconstruction of the metallurgical techniques that were practised in northern Greece during the 3rd millennium B.C.

#### 5 PRELIMINARY RESULTS OF METALS RESEARCH FROM IRON AGE ASHDOD-YAM

**Abstract author(s):** Mazis, Matasha (Technical University Darmstadt) - Fantalkin, Alexander (Tel Aviv University)

**Abstract format:** Oral

Ashdod-Yam is an ancient maritime site in the southern Levant. The site was occupied from the Bronze Age to the Crusader period and, throughout its history, has been a link between hinterland cities and the Eastern Mediterranean coast. The southern Levant played an important role in early metal production and distribution. Copper-based production is linked to the emergence of Early Bronze Age societies in the region, and features in the complex trade systems of the Late Bronze Age. After the collapse of Bronze Age societies, decentralised settlements emerged, accompanied by an increasing shift from copper-based technology to that of iron. At Ashdod-Yam, a deep anchorage and massive fortifications were constructed in the Iron Age II, the latter attesting to pressures from Neo-Assyrian incursions. Metal objects dating to this period are currently being investigated using various techniques of surface microscopy, radiography, chemical composition analysis, and metallography. The work in this area is ongoing; however, early analyses of individual pieces of jewellery, cultic items, and weaponry are showing surprising results concerning the site's society, culture, and technology. More broadly, the results are helping to bring to light new information about early Philistine metal technology and the transition from bronze to iron.

#### 6 SHEDDING LIGHT ON EGYPTIAN MIRRORS: NEW INSIGHT INTO THEIR MANUFACTURE

**Abstract author(s):** Thomas, Elizabeth (University of Liverpool; AHRC NWCDTP)

**Abstract format:** Oral

Ancient Egyptian mirrors have received a great deal of attention for their cultural significance and connections to religious beliefs. However, in-depth investigations into their production processes have been lacking with only a handful included in wider analyses. So how were mirrors manufactured and what kind of reflection did the metal produce? What colour and how clear were the images? Essentially, how did the Ancient Egyptian elite see themselves? The combination of metallurgical analysis and experimental work presented here aims to shed light on some of these questions.

With the use of a novel minimally destructive sampling method called flat edge abrasion, analysis of mirrors from a range of UK museum collections using SEM-EDX has revealed the chemical composition and microstructure of the metal. The mirrors' provenance spans from the Old Kingdom through to the Late Period, allowing the manufacturing techniques used to produce them to be characterised and then tracked over time, showing when various developments occurred. Additionally, different surface treatments have been identified which will have varying effects on the type of reflection created, ranging from a coppery through to a silvery appearance. Ongoing experimental work based on these analyses aims to re-create the manufacturing sequence alongside the visual characteristics of the mirrors which will aid our understanding of how they originally functioned.

## A. NON-DESTRUCTIVE AND NON-INVASIVE INVESTIGATIONS TO STUDY BRONZE AGE METALS FROM THE AEGEAN

**Abstract author(s):** Giardino, Claudio - Zappatore, Tiziana (University of Salento) - Dell'Aquila, Daniele (Department of Chemistry and Pharmacy, University of Sassari; NFN-Southern National Laboratories, Catania)

**Abstract format:** Poster

The progressively more widespread use of non-destructive methodologies offers new research opportunities to archaeometallurgical studies.

Microscopy investigations on traces of processing and use constitute a particularly significant research field, as they are a totally non-destructive method of investigation. Their use is very valuable when it is associated with another technique, such as X-Ray Fluorescence (XRF), in order to detect the chemical composition. The XRF fundamental characteristic is to be totally non-destructive, especially for investigations carried out on particularly rare and precious finds, such as the gold ornaments. Here are shown some examples conducted on some Late Bronze Age metal artifacts of Aegean origin, but found in southern Apulia.

Radiography can also provide otherwise undetectable information in a non-destructive manner, as in the case of a fragment of a Mycenaean sword from the Middle Bronze Age imported to the Italian island of Vivara.

The use of optical and electronic microscopy is the most effective tool to analyse metallurgical slag; microscopy can be carried out in a minimally invasive manner, taking samples of very small dimensions. We show here examples of such investigations conducted on smelting slag from the excavations of Pyrgos - Mavroraki, a Bronze Age settlement in Cyprus.

---

## 93 BEYOND THE CHRONOLOGY AND PATHWAYS OF DISPERSAL: REASONING THE USE AND ABANDONMENT OF BROOMCORN MILLET CULTIVATION ACROSS EURASIA

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Motuzaitė Matuzevičiūtė Keen, Giedre (Department of Archaeology, Vilnius University; Department of City Research, Lithuanian Institute of History) - Pospieszny, Łukasz (Institute of Archaeology and Ethnology of the Polish Academy of Sciences, Poznań; School of Earth Sciences, University of Bristol)

**Format:** Regular session

Broomcorn millet (*Panicum miliaceum*) is one of the most enigmatic crops of the ancient world. It was domesticated in northern China around 8000 years ago, becoming a dominant crop across Eurasian societies between 4000-3000 years ago. The ubiquitous use of this species led to crop diversification, which in turn heavily impacted the so called "third food revolution" in Bronze Age Europe and the subsequent rise of complex societies during the Early Iron Age of Central Asia and Mongolia. Nevertheless, the past spatial distribution of millet cultivation remains a puzzle, ranging from being a major crop among some societies to being completely absent in others.

Multiple research projects have addressed the timing and chronology of broomcorn millet dispersal across Eurasia by tracing the existence of millet processing and consumption by humans and animals, achieved by employing recent methodological advances in archaeobotany, radiocarbon dating, biomarker analysis in sediments and vessels, and stable isotope analysis. However, the reasons for the initial success and later decline of broomcorn millet across space and time is not fully understood. Why was millet first adopted and then later abandoned in some parts of Eurasia after centuries of thriving? Was the introduction of millet a response to growing food demands caused by rapid demographic growth, or tightly linked with climatic conditions? Or perhaps it was first an exotic novelty integrated in new territories by social elites and later adapted by commoners?

In this session we hope to discuss these and other hypotheses, and we therefore call for researchers who study the interplay between culture, agriculture and climate with a focus not only on broomcorn millet but also on other minor crops.

## ABSTRACTS

### 1 THE USE OF MILLET BY THE SCYTHIAN SOCIETIES OF EASTERN EUROPE FOREST-STEPPE ZONE: A MARKER OF CULTURAL MIXING?

**Abstract author(s):** Dobrovolskaya, Maria (-) - Nelubov, Sergey (-)

**Abstract format:** Oral

The formation of the "Scythian world" in the steppe and forest-steppe zones of Eurasia is one of the most striking cultural phenomena of the Early Iron Age. We are to note that the scientific knowledge of the economic system, culture of everyday life of the societies included in this huge cultural belt, is much poorer than the significant scientific knowledge of the Scythian material culture. As is known from archaeobotanical and isotopic studies, the Scythians commonly used millet. The northeastern borders of Scythia were located in the Middle Don region, according to

Herodotus. There were studied the skeletal remains from five burial mounds in the Middle Don region (Voronezh region). The analysis of the isotopic composition of collagen in the bone tissue of humans and animals from burial mounds demonstrates differences in the structure of human diet, associated with the use of C3 and C4 plants. Most of individuals belong to the "use of C4 plants" group. We consider millet as the dominant C4 food plant. At the same time, a part of individuals whose diet is deprived of this food resource, typical of the steppe nomads, was revealed. In collective burials there were found individuals who differ greatly in dietary traditions associated with the use of millet. Most individuals whose diet does not include millet are male. The results of cluster analysis indicate the statistical significance of the noted differences. The article discusses data on the isotopic composition of strontium, characterising the moderate mobility of the Early Iron Age population. The authors make assumptions about the possible reasons for the coexistence of different diets within the group of the local Scythian population.

## 2 **GRAINS AND SKELETONS: LIGHTS AND SHADOWS OF THE BROOMCORN MILLET CULTIVATION AND CONSUMPTION IN THE IBERIAN PENINSULA**

**Abstract author(s):** Teira-Brión, Andrés (University of Oxford) - López-Costas, Olalla (Universidade de Santiago de Compostela)

**Abstract format:** Oral

The framework of broomcorn millet farming in Iberia Peninsula highlights, at least, two different narratives. In the northern region this C4 crop invades the fields, reaching a mosaic of diverse peoples and becoming an essential food. However, in southernmost region belongs to Bronze Age communities that epitomise the emergence of social inequalities, this new crop was barely relevant during prehistoric and historical times. Between these lights and shadows, there was a broad half-light where millet has adapted to a secondary role in agricultural systems.

In order to understand the uneven adoption of broomcorn millet among the Iberian communities this presentation aims to decipher the probable causes that triggered its use as food or fodder, taking into account the data available in Northwestern Iberia and its comparison with other regions of the Iberian Peninsula. The intense consumption of millet in this region has suggested by the accumulation of surpluses in storage structures from the first millennium BC onwards. Here, *Panicum miliaceum* is the second-most ubiquitous crop (24.90%), right after *Triticum* spp. Moreover, the analysis of more than 600 human skeletons has revealed a high dependence of millet directly consumed as human food, especially in coastal settlements from Roman Period onwards. NW Spain one of the most humid regions in the Iberian Peninsula, and these humidity trends to concentrate in Winter-Spring seasons making cultivation of spring crops an alternative.

Broomcorn millet is a not well-balance crop leading to important vitamin deficiencies when became staple. Considering this fact, we hypothesise that millet became staple on these areas of the Iberian Peninsula where its cultivation constitutes a clear advantage regarding other crops. This work shows the advantage of combining archaeobotanical, osteoarchaeological and historical texts studies, as well as the need to consider environmental conditions when trying to explain increases in millet consumption.

## 3 **ENVIRONMENTAL AND CULTURAL FACTORS IN THE USE OF BROOMCORN MILLET IN THE WESTERN HIMALAYAS**

**Abstract author(s):** Spate, Michael - Betts, Alison (University of Sydney) - Yatoo, Mumtaz (University of Kashmir)

**Abstract format:** Oral

Archaeobotanical data from the Kashmir Valley now places the adoption of broomcorn millet in the Western Himalayas to around 4400 BP. Palaeoenvironmental records from this time indicate a protracted weakening of summer (monsoon) and winter (westerly) precipitation, that may have influenced the adoption and selection of crops across the region. While seldom cultivated in the valley today, until the 19th century broomcorn millet remained an important insurance crop, sown in years when lower water availability precluded the extensive cultivation of more water demanding rice. Examining long term archaeobotanical, environmental and historical records, this presentation considers the drivers of the adoption, expansion and abandonment of broomcorn millet in the Western Himalayas. While there are some correlations between climate shifts and the expansion of millet in the archaeobotanical record during drier climate phases, we argue that other cultural and historical factors may have also had an important role in the cultivation and consumption of millet in this region.

## SUBSISTENCE STRATEGIES FROM VALDARO (MANTUA, ITALY) DURING THE ITALIAN PROTOHISTORY

**Abstract author(s):** Cortese, Francesca (Department of History, Humanities and Society, University of Rome Tor Vergata) - De Angelis, Flavio (Centre of Molecular Anthropology for Ancient DNA Studies, University of Rome Tor Vergata) - Bontempo, Luana (Edmund Mach Foundation, Food Quality and Nutrition Department – Traceability Unit) - Hirose, Mari (Complesso Museale di Palazzo Ducale di Mantova) - Lamanna, Leonardo (Soprintendenza Archeologia, Belle Arti e Paesaggio per le province di Cremona, Lodi e Mantova) - Longhi, Cristina (Soprintendenza Archeologia, Belle Arti e Paesaggio per le province di Bergamo e Brescia) - Rickards, Olga (Centre of Molecular Anthropology for Ancient DNA Studies, University of Rome Tor Vergata) - Rolfo, Mario (Department of History, Humanities and Society, University of Rome Tor Vergata)

**Abstract format:** Oral

The arrival of the Broomcorn millet in Italy is a very debated theme, and scholars supposed that this plant spread in the Italian peninsula only during the Middle Bronze Age following a leap-frog pattern. In the first decade of the 21st century, stable isotope analysis revealed for the first time the consumption of millet in a Bronze Age community of northern Italy (Olmo di Nogara). Subsequently, only a few protohistoric sites showed a steady consumption of C4 plants, and they are located primarily in central and northern Italy. A recent genetic study shows how changes in the genetic pool of local communities during the Middle Bronze Age might be connected to the arrival of a steppe-related population in the Italian peninsula.

Thus, the paper aims at explaining further the complex dissemination routes for the C4 spread through carbon and nitrogen stable isotope analyses. Valdaro, a locality few kilometers North-East of the city of Mantua (Northern Italy, Lombardy), was chosen as a funerary area by local communities from the Copper Age to the Late Bronze Age. The chronological and spatial locations pave the way to consider the area an essential crossroad for the southwards dispersal of the C4 in the Italian Peninsula.

About 60 humans and 10 faunal remains from several necropolises excavated in Valdaro area have been analyzed. The wide archaeological span led us to hypothesize changes in dietary choices: during the Copper Age, there was a preference for C3; in the following period, the diet showed changes, suggesting the gradual introduction of new crops in the diet.

This study is crucial to support the current understanding of millet consumption in ancient Italian communities, also focusing on the social differentiation and climatic situation that could have underpinned the development of the new dietary pattern.

## RETHINKING GRAIN METRICS AS DOMESTICATION MEASURES: GRAIN SIZE VARIATIONS OF BROOMCORN AND FOXTAIL MILLET ACROSS ASIA, 5000-1500 BC

**Abstract author(s):** Sun, Yufeng - Liu, Xinyi (Washington University in St. Louis)

**Abstract format:** Oral

Archaeological and archaeogenetic research in recent decades have been challenging the prevailing narratives positioning domestication as linear, progressive, and localized processes, which calls for a more dynamic and explanatory framework to understand pathways to domestication. In this study, we combined over 2500 published and newly collected measurements of charred grains of broomcorn millet and foxtail millet (*Panicum miliaceum* and *Setaria italica*), two crop species first cultivated in North China dating back to at least 8000 years ago. Results of the meta-analysis show the grain metrics of the two millets displayed significant regional variations as those crops expanded beyond the home environment in north China reaching Central and South Asia between proximately the 4th and 1st millennium BC. A contrast can be drawn between millet's southbound and westbound journeys, namely, grain size reduction when two millets moved to the hilly environments in South China, and grain size increase when millet moved wester-wards along the Hexi-Tianshan and Inner Asian Mountain Corridors. These morphological differences could be explained by regional cultural preferences, including culinary choices and field management practices. Observations presented here resonate with recent discussions of the eastern expansion of wheat and barley and diminished grain size as the Fertile Crescent crops moved from their origin in southwestern Asia to China. Together, these studies call for a better understanding of the role of crop grain size in measuring domestication and inferring the transregional dimension of the domestication processes.

## 6 HOW THEY LIVED? A NOBLE GRAVE AT THE MIKULOV SITE.

**Abstract author(s):** Šabatová, Klára (Masaryk University) - Snoeck, Christophe (Vrije Universiteit Brussel) - Baldovič, Marian (Comenius University) - Hajnalová, Mária (Constantine the Philosopher University Nitra) - Parma, David (Institute for Archaeological Heritage Brno) - Pospieszny, Lukasz (University of Bristol) - Trampota, František (Regional Museum in Mikulov) - Vargová, Lenka - Vymazalová, Kateřina (Masaryk University) - Jarošová, Ivana (Freelancer in anthropology)

**Abstract format:** Oral

This paper aims to answer the question, how the millet was adopted in the society of Tumulus culture. On an example of a complex analysis of the burial from the site Mikulov, Moravia, dated to the Middle Bronze Age and other examples of millet finds from the settlement features in region we will ask the social position of this new crop in the diet.

During rescue archaeological excavation in 2018, a grave with stone chambers was found, in which two individuals were buried – a young male and a 13- to 14-year-old probably girl. We have realized a comprehensive analysis of the find, both the burial and typological context, analysis of radiocarbon data, anthropological, palaeopathological, and genetic analysis of these individuals, also analysis of their dietary habits and their local origin on the base of the stable isotope analysis. This is a possible starting point for our talk about the life of this couple. On the end we want to interpret their dietary habits in the context of other documented millet examples in Moravia and Slovakia. Findings of this cereal are documented by numerous archaeobotanical samples from layers and specific bulk finds as well as isotope analyses.

## 7 EXAMINING BROOMCORN MILLET CULTIVATION IN LITHUANIA IN THE 16TH–18TH CENTURIES

**Abstract author(s):** Lauzikas, Rimvydas (Vilnius University Faculty of Communication)

**Abstract format:** Oral

Broomcorn millet cultivation was not common in Lithuania in the 16th–18th centuries. At that time, rye, barley and oats dominated the manor and peasants' fields. Wheat, buckwheat, peas and beans were slightly less cultivated. Broomcorn millet is mentioned in few written sources. This paper analyses written sources on broomcorn millet cultivation in Lithuania in the 16th–18th centuries, addressing three issues:

1. The relationship between the broomcorn millet name and plant. In the Lithuanian and Latvian languages, broomcorn millet is called the specific word "sora". However, the same word is used for other cultivated and semi-cultivated cereals, such as different kinds of manna grass, foxtail millet, cockspear grass and large crabgrass.
2. The agricultural engineering of broomcorn millet. According to 16th–18th-century sources, millet was sown in the second half of May when the threat of frost was no longer dangerous. For broomcorn millet cultivation, fertile soil that was not too sandy or clayey was chosen. The cut of broomcorn millet was tied in sheaves, dried in hayricks and immediately threshed.
3. The use of millet for treatment, human food and animal feed. Like most plants, broomcorn millet had its place in humoral medicine and dietetics. The specific millet gruel ("sariene") was known in Lithuania. It was also used for animal feed.

The paper argues that the abandonment of broomcorn millet cultivation and consumption in Lithuania in the 16th–18th centuries was related to climate change (the Little Ice Age). Due to climate change and the shortening of the vegetation period, other summer cereals (like barley and oats) became dominant in the fields and on the table.

## 8 REVISITING THE PRESENCE OF MILLETS IN THE ARCHAEOLOGICAL RECORD

**Abstract author(s):** Lancelotti, Carla (CaSEs Research Group, Department of Humanities, Universitat Pompeu Fabra; ICREA) - Jimenéz-Arteaga, Carolina (CaSEs Research Group, Department of Humanities, Universitat Pompeu Fabra) - Abro, Tasleem (Department of Archaeology, Shah Abdul Latif University) - Balossi, Francesca (Dipartimento di Scienze dell'Antichità dell'Università Sapienza di Roma) - D'Andrea, Catherine (Department of Archaeology, Simon Fraser University) - Ruiz-Giralt, Abel - Santiago-Marerro, Carlos (CaSEs Research Group, Department of Humanities, Universitat Pompeu Fabra) - Usai, Donatella (Centro Studi Sudanese e Sub-Sahariani) - Madella, Marco (CaSEs Research Group, Department of Humanities, Universitat Pompeu Fabra; ICREA) - Chandio, Amin (Department of Archaeology, Shah Abdul Latif University)

**Abstract format:** Oral

Milletts comprise a broad spectrum of small-seeded cereals that share certain morphological and ecological similarities. They can easily grow in poor soils and low-rainfall systems, which makes them well-adapted to dry environments, and due to their short-growing cycles they are also highly reliable cereals in times of food shortage. The importance of milletts in the past is sometimes overlooked due to the difficulties in recovering them in some archaeological contexts. Some species are very small, especially when compared to crops such as wheat and barley, and their preservation has been proven to be highly affected by charring at high temperature. Also, in many instances they were used

in areas where preservation of archaeological material is poor due to salinisation or a constant alternance between humid and arid conditions.

Recently, the increased attention to micro-remains (phytoliths and starch especially) in archaeobotanical studies, and the ever more frequent application of systematic flotation strategies outside of Europe, is changing our understanding of the presence of millets in archaeological contexts. We will show examples from West Asia, South Asia and Africa where, thanks to new archaeobotanical research, millets are emerging in unexpected contexts or with previously underrepresented importance.

## 9 WHEN DID THE COMMON MILLET BECOME COMMONLY EATEN? OLD AND NEW BOTANICAL AND ISOTOPIC EVIDENCE FROM NORTHERN CENTRAL EUROPE

**Abstract author(s):** Pospieszny, Lukasz (Bristol Isotope Group, University of Bristol; Institute of Archaeology and Ethnology, Polish Academy of Sciences) - Rennwanz, Joanna (Institute of Archaeology and Ethnology, Polish Academy of Sciences)

**Abstract format:** Oral

Recent years have brought a series of discoveries that have shed new light on the appearance of common millet in Europe. Large series of radiocarbon dates on plant macro-remains indicate that it should be dated to the Bronze Age and not to the Neolithic as previously thought. The results of human diet reconstruction using isotopic methods has led to similar conclusions. Since millet belongs to C4 group of plants, its consumption led to increased values of carbon isotopes in the organisms of its consumers. This has been observed for an increasing number of human individuals around Europe but not all of them were directly radiocarbon dated and their exact absolute age remains uncertain.

In our paper we will present the results of the reanalysis of millet's macro-remains and imprints on pottery still claimed to be Neolithic in date. We will also discuss the oldest certain finds of millet, secured by radiocarbon dating to Middle Bronze Age, and the first large deposits of millet, demonstrating its growing importance in the economy of Early Iron Age societies.

Following the recent advances in the field, we will review the largest series of paired radiocarbon dates and carbon and nitrogen stable isotope signatures available for humans from selected regions of Central Europe. We will trace the beginnings of human consumption of millet as mirrored by increased carbon stable isotope ratios. Where possible, we will look at the mobility of first "millet eaters" as reconstructed by the use of strontium and oxygen isotope analyses. We will also discuss the specificity of their burials in the contexts of local material culture and funeral customs. Lastly, our paper will be an attempt to answer the question about the reasons for the appearance of common millet in Central Europe, its success and the decline of its economic importance.

## 10 PREHISTORIC GLOBALIZATION OF FOOD VALUES: EFFECTS OF CULTURAL CONDITIONS ON NON-NATIVE CULTIGENS

**Abstract author(s):** Liu, Xinyi (Washington University in St. Louis)

**Abstract format:** Oral

There has been considerable recent momentum in understanding the movements of cultigens and livestock across Eurasia thousands of years before the Silk Road, and the consequent knowledge is having profound implications to the understanding of the human past on a global scale. Crops and their associated cultivation management and culinary treatment may be independently traced in the archaeological record across space and time. The farming dispersals across the Eurasian continent during the third and second millennium BC had profound long-term social and ecological impacts, which transformed the ancient societies and formed the foundation of modern-day foodways. However, identifying the specific manner of their cultivation and cooking has proven problematic. It is timely for innovative inquiries. This paper will seek answers to two questions: (a) were the movement of new resources accompanied by the knowledge of how best to use them? (b) How did receiving communities integrate them into their lifeways? The paper will highlight recent multidisciplinary evidence (isotope, archaeobotany and zooarchaeology) from East and Central Asia to illustrate the process in which non-native innovations were transformed within the indigenous social and cultural spheres.

## DETECTION OF MILIACIN IN ARCHAEOLOGICAL DEPOSITS ILLUSTRATES THE EXTENT OF BROOMCORN MILLET CULTIVATION IN ANCIENT CENTRAL ASIA

**Abstract author(s):** Motuzaitė Matuzeviciūtė Keen, Giedre (Vilnius University; Lithuanian Institute of History) - Jacob, Jérémy (Laboratoire des Sciences du Climat et de l'Environnement, CEA-CNRS-UVSQ, Université Paris-Saclay) - Hermes, Taylor (Max Planck Institute for Evolutionary Anthropology) - Frachetti, Michael (Washington University in St. Louis)

**Abstract format:** Oral

The miliacin biomarker represents an effective proxy for identifying the cultivation, processing, cooking, and consumption of broomcorn millet (*Panicum miliaceum*). Miliacin is the principal (c. 99%) PTME in broomcorn millet, while it is absent in other commonly cultivated crop species. Stable isotope research across the steppe and mountain zones of Central Asia has identified elevated  $\delta^{13}\text{C}$  values in ancient human and animal bone collagen and tooth enamel, pointing towards broomcorn millet consumption. Yet, naturally occurring endemic wild C4 grasses and elevation effects have also been suggested as potential contributors to these higher  $\delta^{13}\text{C}$  values in human tissues via diets based on pastoralist herding. Therefore, identifying miliacin in archaeological deposits associated with human settlements, while simultaneously confirming miliacin absence in more distant, unsettled areas of the landscape from the same time period might indicate cultivated broomcorn millet as the source of high  $\delta^{13}\text{C}$  values. The miliacin biomarker, however, is synthesized by other wild plants, such as Panicoideae family grass species *Digitaria*, *Glyceria* and *Pennisetum*, but in much smaller quantities than domesticated broomcorn millet. Most of those wild grasses also make use of the C4 photosynthesis pathway, making identification of broomcorn millet cultivation less straightforward.

Here, we present results from our investigation of the miliacin biomarker at several sites in Kazakhstan and Kyrgyzstan. Samples were collected either from ancient settlements or palaeofields with known histories of broomcorn millet cultivation or from off-site locations on the landscape. Our data shows the presence of miliacin only in the areas of human activity and an absence of detectable miliacin levels in landscapes distanced from archaeological traces. Our data confirm that both the miliacin biomarker and high  $\delta^{13}\text{C}$  values in human and animal tissues are most likely coming from the cultivation and use of broomcorn millet in Central Asia rather than from wild plants.

## INVESTIGATING THE USE OF BROOMCORN MILLET USING MOLECULAR AND COMPOUND-SPECIFIC STABLE CARBON ISOTOPIC ANALYSES OF POTTERY VESSELS

**Abstract author(s):** Zhang, Mengyao - Roffet-Salque, Melanie (Organic Geochemistry Unit, School of Chemistry, University of Bristol) - Pospieszny, Łukasz (Institute of Archaeology and Ethnology of the Polish Academy of Sciences, Poznań; School of Earth Sciences, University of Bristol) - Evershed, Richard (Organic Geochemistry Unit, School of Chemistry, University of Bristol)

**Abstract format:** Oral

Analysis of organic residues in archaeological pottery vessels has been successful in detecting a range of animal and plant products as indicators of food preparation in human prehistory. Broomcorn millet (*Panicum miliaceum*), one of the most economically important domesticated crops in prehistory, was first domesticated in China ca. 8000BC and arrived in Europe as early as the Middle Bronze Age.

Miliacin, a pentacyclic triterpene methyl ether, is a promising biomarker for broomcorn millet and provides a means to track the introduction, spread and use of this important crop using pottery vessels. Here, we present the results of organic residue analysis from a Late Bronze Age Polish site, where miliacin was present in lipid extracts from pottery sherds. The presence of millet lipids in the extracts is also supported by enriched carbon stable isotope values from the major fatty acids, C16:0 and C18:0, consistent with a C4 plant origin.

For a better understanding of the behaviour of miliacin, cooking experiments were conducted and the uptake of this biomarker into the ceramic matrix investigated using Gas Chromatography-Mass Spectrometry (GC-MS). We cooked five mixtures of millet with water, milk and meat. Although in these experiments low transfer of millet lipids into the pottery matrix was observed, miliacin was detected. This investigation helps refining interpretations regarding the use of broomcorn millet in the past.

## ORIGIN AND EVOLUTION OF MILLET CULTIVATION IN THE IBERIAN PENINSULA'S MEDITERRANEAN AREA (13TH CENTURY BC - 13TH CENTURY AD)

**Abstract author(s):** Alonso, Natàlia (University of Lleida) - Pérez-Jordà, Guillem (University of València)

**Abstract format:** Poster

The history of the cultivation of millet (*Panicum miliaceum*, *Setaria italica*) in Iberia's Mediterranean area could have had different origins and dynamics depending on which geographical zone, its historical evolution and its political organisation. The earliest traces of the cultivation of millet are in Western Catalonia in the northeast of the Peninsula in Bronze Age contexts (13th-12th centuries BC). Here millet was presumably of trans-Pyrenean origin and introduced, like other archaeological elements of the period, through the Segre River Valley. Millet species, on the other hand,



are recorded in southern Iberia (Andalusia and in the area of Valencia) in later 9th-7th century BC contexts where they coincide with the sphere of Phoenician influence. The evidence leads to explore different options, notably a penetration from the NE into the South or two different routes of entry in the two different timeframes. From this moment on, millet was established throughout the area, although there are zones such as the interior of the Ebro Valley and especially the surroundings of the Greek colony of Emporion where it was particularly relevant. Later, the evolution of the archaeobotanical finds of millet suffers a significant decline during Roman times before recovering in Late Antiquity. The record decreases once among the finds of Islamic settlements while increasing in Christian sites. This trend appears to correspond to periods of centralisation of political power in urban contexts (with a decrease of importance of the crop) and to times of dispersion when a more rural organisation appears to coincide with an increase in its cultivation.

## 96 NEITHER RIVER NOR LAKE: HUMAN-MADE 'WATERSCAPES'. THE USE OF GROUND- AND RAINWATER IN NEOLITHIC TIMES

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Staeuble, Harald (Archaeological Heritage Office Saxony) - Pyzel, Joanna (University of Gdansk) - Vostrovská, Ivana (Palacký University Olomouc) - Tóth, Krisztián (Dornyay Béla Museum of Salgótarján)

**Format:** Regular session

The early sedentary communities were mainly focused on the banks of rivers and lakes to meet their vital needs for water. For a long time, this was the dominating paradigm within the Central European settlement archaeology, if not worldwide. In regions with centrally organised states, one must think of complex irrigating systems that bring the water to the settlement. In prehistoric Central Europe, it was not until recently, that human-made sources of water like wells or even potential cisterns were discovered. These findings initially caused a lot of irritation and astonishment among researchers. But since then excavations of wells have increased rapidly for the early sedentary communities, such as the Linear Pottery Culture in Central Europe. We know today more than four dozens of cases. These new discoveries happened mostly by chance or, in the best case, by a very intensive and systematic research in peripheral settlement areas mainly due to very large scale construction or extraction projects.

In this session we do not want to restrict our view to a specific region but as we are interested in early settled societies, we would like to concentrate on the Neolithic Period. The presentation of new finds should not be in our focus. Even if the knowledge gained by each new case is very important and can alter the relatively recent understanding of human-made constructions for this vital resource anytime. The speakers should mainly concentrate on the understanding of the use and distribution of wells and cisterns within the settlements. Their presentation should demonstrate theoretic reflections as well as the manifold analysis of the natural sciences, which can be applied to the often exquisitely preserved organic material in water-logged features.

## ABSTRACTS

### 1 WELL, WELL, WELL, WAS THE WATER SO PRECIOUS FOR EARLY AGRICULTURAL SOCIETIES?

**Abstract author(s):** Tóth, Krisztián (Dornyay Béla Museum) - Csengeri, Piroska - Hajdú, Melinda (Herman Ottó Museum)

**Abstract format:** Oral

In November 2012, during a preventive archaeological excavation necessitated by the construction of a new highway bypassing Sajószentpéter (Borsod-Abaúj-Zemplén county, North-Eastern Hungary), a Middle Neolithic water well with astonishing wooden lining was uncovered by the archaeologists of Herman Ottó Museum, Miskolc. The 60 cm high remains of the tube-like wooden structure was made from a single oak tree with a total diameter of 90 cm. The trunk had been initially cut into four pieces (panels) that were later bond together with trusses of twisted rods. The wooden structure had amazing tool-marks on the entire surface that could be related to at least 3 different axes and bear fundamental information regarding the chaine opératoire. In 2014 another well had been discovered only a few kilometers to the South from Sajószentpéter near the village called Arnót. In this case only a small part of the wooden trunk had been preserved. Based on these two cases we would like to analyse the constructions and structural features of wells from North-Eastern Hungary. On the other hand we aim to investigate settlement patterns, the role of wells and water within settlements, which is an attempt presenting some characteristics of settlement structures from the Neolithic Period of North-Eastern Hungary.

## 2 WELLS AND WATER HOLES OF THE LBK IN KUYAVIA, CENTRAL POLAND

**Abstract author(s):** Pyzel, Joanna (University of Gdansk) - Kittel, Piotr (University of Lodz) - Muzolf, Błażej (Museum of Archaeology and Ethnography in Lodz)

**Abstract format:** Oral

Due to the construction of the A1 motorway, large scale emergency excavations were conducted in eastern Kuyavia region on altogether 34 sites of the Linear Pottery Culture (LBK) which enabled for the first time the insight into the settlement structure of the first farming communities in the Polish lowlands. On seven LBK sites, 12 particularly deep pits of this culture were detected among other regular settlement features. They vary in size, shape, the type and number of finds associated with them, and they were found in different locations within settlements' area. All of them were dug into moraine basal till of the last glaciation, and although any traces of timber structures or other organic material have been registered, these pits can be interpreted as more or less temporary wells or water holes from the Early Neolithic. In this presentation studied features will be compared with each other and with similar objects from other periods in Kuyavia.

## 3 NEOLITHIC WELLS IN MORAVIA IN THE LIGHT OF RECENT ARCHAEOLOGICAL AND ENVIRONMENTAL RESEARCH

**Abstract author(s):** Kalabková, Pavlína - Vostrovská, Ivana (Palacký University Olomouc)

**Abstract format:** Oral

The discoveries at Mohelnice in Moravia (Czech Republic) in the early 1970s have started the exploration of Neolithic wells of the Linear Pottery Culture in Europe. Besides unique archaeological findings also the first environmental analyses were made, which helped to reconstruct the natural conditions at the beginning of the Neolithic Period. After an almost fifty-year-long research we can now compare and update the achieved results. The paper presents the results of excavations of Neolithic wells at Mohelnice, Brno – Bohunice and Uničov in Moravia. It compares the building techniques used with individual wells, construction types, the way of use and decline, movable archaeological finds and the results of environmental analyses leading to reconstructions of natural environment on individual sites and on the whole territory of Moravia. Results of dendrochronology and radiocarbon dating, trasology, lithostratigraphy, palynology, anthracology and xylotomy, plant macroremains and mosses, zoology and entomology will be presented. Subsistence strategy of the first farmers in Moravia will be presented.

## 4 WHERE WAS THE WATER? GEOARCHAEOLOGICAL INVESTIGATIONS REGARDING THE FORMER GROUNDWATER TABLE OF EARLY NEOLITHIC WELLS IN NW-SAXONY

**Abstract author(s):** Tinapp, Christian (Saxonian Heritage office)

**Abstract format:** Oral

From 1997 onwards 12 Early Neolithic wells were discovered and excavated in NW-Saxony. All of them were affected by former and recent open coal mines. Thus the former groundwater tables are difficult to detect.

The situation of 6 wells were reconstructed by using available hydrogeologic informations and some unpublished groundwater studies. All of them were dug in loose sediments of Pleistocene age. In the Leipzig basin Tertiary sands and different layers of glacial fill of the Elsterian and Saalian ice age are the aquicludes, sand and gravel between them form the aquifers.

All wells reached the groundwater. Some of them achieved the aquifer, others are deepened in the aquiclude. Using of the aquifer guarantees nearly unlimited use of ground water. Waterlogged aquicludes were obviously also suitable despite their reduced water refilling capacity. Obviously, wells in the Leipzig basin with available groundwater less than 7m below the surface were build in or nearby the settlement and the places were mostly found by chance.

## 5 CONSIDERATIONS ON THE SETTLEMENT PATTERN WITH WELLS IN THE EARLY NEOLITHIC SETTLEMENT AREA OF EYTHRA, SAXONY, GERMANY

**Abstract author(s):** Staeuble, Harald (Archaeological Heritage Office Saxony)

**Abstract format:** Oral

In the course of large-scale excavations prior to lignite mining, an extensive settlement area of the Linear and Stroked Pottery Culture was discovered with findings of about 300 houses dating from about 5400-4600 BC. It was located at the edge of the wide river valley of the White Elster and thus belonged to the traditional settlement type near flowing water. Among several thousand settlement features, wooden constructions of a total of three Linear Pottery Culture wells were found in only two pits. Two successive wells within one pit were built shortly after each other, as both were dated around 5200 dendroBC. The third was constructed more than 100 years later, in 5098 dendroBC. Within the continuous settlement activity of about 800 years, evidence of daily water use from wells was thus underrepresented. Based on various dating results such as dendrochronology, radiocarbon dating and typoschronology, we reconstruct the settlement phases with wells.

Even if the discussion about the temporal relationship between houses, pits and the finds in them is still ongoing, wells and water management in settlements can only ever be discussed in the context of the settlement existing at the same time.

## 6 IS ALL WELL? SEVEN PRESERVED WOODEN CONSTRUCTIONS FROM THE LBK-SITE DROSSDORF, LEIPZIG COUNTY, SAXONY, GERMANY

**Abstract author(s):** Schell, Frank - Kretschmer, Saskia - Stäuble, Harald (Landesamt für Archäologie Sachsen / Archaeological Heritage Office Saxony)

**Abstract format:** Oral

During large-scale excavations in the opencast lignite mine Peres, south of Leipzig a large settlement of the Linear Pottery Culture (LBK) ranging from the 53rd to approximately 51st century BC was documented. On an excavation area of about 12 ha up to 70 typical house layouts and thousands of settlement pits were documented, among them seven more or less deep pits in which wooden constructions were preserved. Six of those were concentrated in a large waterlogged depression about 100 m southwest from the settlement. The constructions were built in different ways, three had chest-like wooden linings, one was built with wattle and two were made of hollowed tree trunks reaching depths between 2.5-3 metres. The seventh and biggest one, located at the south-eastern periphery of the settlement, reached 4 m deep and was built in log cabin style with finely shaped notched timbers.

Although Droßdorf was not conventionally located near a watercourse, the first six well-constructions may not have served primarily for potable water supply. This is suggested by their constructional details as well as by their location within the settlement and the landscape as well as by the finds from within. The substandard construction of these wells and their location in some distance to the settlement might imply that these were meant for other technical purposes like tanning, bast retting, for keeping things moist or as a watering place for live-stock. To understand the water management within the settlement during its entire 250-300 years of existence we have to consider that the largest and probably single water-well was built as late as during the last half century of habitation, at 5134 dendroBC.

---

## 98 HUNTER-GATHERER'S SOCIETIES IN THE SOUTHWESTERN EUROPE BETWEEN 18,500-10,000 CAL. BP [PAM]

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Vadillo Conesa, Margarita - Real, Cristina (Departament de Prehistòria, Arqueologia i Història Antiga. Universitat de València) - Ricci, Giulia (Laboratoire Méditerranéen de Préhistoire, Europe, Afrique - LAMPEA – UMR 7269, Aix-Marseille Université, CNRS, Ministère de la Culture)

**Format:** Regular session

The Southwestern Europe covers a wide territory with diverse ecosystems, from the Iberian Peninsula, through southern France to Italy. In each of these areas the different research tradition has focused on defining cultural characteristics at the regional level, that has resulted in varied nomenclatures (eg. Badegoulian-Magdalenian-Epigravettian; Epipalaeolithic-Epimagdalenian-Azilian) used to name the latest palaeolithic technocomplexes of the same chronology. This fact makes it difficult to establish comparisons between the results of the different studies.

Some of the differences that characterize, a priori, these cultural groups located in the several territories may be a consequence of the research tradition and / or the methodologies used. If this were the case, the existence of possible similarities between the territories should be considered and highlighted. If not, we should ask ourselves why these differences occur.

This session aims to be a starting point to establish a summary of the current state of the art to assess the existence or otherwise of a cultural process of regionalization or to recognize and highlight the existence of common characteristics between territories in the proposed chronology: 18,500-10,000 cal. BP. Therefore, in the face of the increasing specialization of research projects, we propose an effort of synthesis of an interdisciplinary nature. In this sense, we invite you to present works that show the dynamics of human groups, connecting the main axes of study: resources (biotic and abiotic), technology, paleoenvironment, symbolism, settlement / occupation patterns. All this included in an updated radiocarbon chronology, which allows to establish a common chronological framework for the different regions.

**1 THE TAIHA PROJECT “THE LATEGLACIAL IN ATLANTIC ARC: INTERACTIONS BETWEEN HUMAN AND NON-HUMAN COMMUNITIES DURING THE TRANSITION PLEISTOCENE-HOLOCENE”**

**Abstract author(s):** Mathieu, Langlais (CNRS) - Nicolas, Naudinot (Univ Nice)

**Abstract format:** Oral

The TAIHA program focuses on the last upper paleolithic communities of the second half of the Lateglacial (between 14500 and 11000 cal BP). This key period is marked by important paleoenvironmental changes in parallel of complex cultural transformations. In addition to consolidating a collaborative network already partially established in the large geographical area under consideration (Atlantic coastline between England and northwestern Spain), this program seeks to bring together this community of researchers around a particular issue that has not yet been fully addressed: to better assess all interactions between humans and non-human animals. Because of a wide latitudinal gradient selected, the study area of the program is particularly relevant to advance on this question and in particular on the role potentially played by environmental transformations in these processes. This project will allow us to question our respective paradigms from a common methodology of analysis of lithic equipment, faunal remains and graphic representations on contextualized artefacts collected at the most important sites in the study area. Other corpus will also be mobilized to move forward on more targeted issues. This contribution aims to present the issues and means of this program as well as to highlight the first developments of this ongoing research for the next four years.

**2 GLOBALISATION OF BACK RETOUCH TECHNIQUES? COMPARING THE LATE EPIGRAVETTIAN OF NORTHERN ITALY TO THE LATE GLACIAL SEQUENCE OF SOUTH-WESTERN FRANCE**

**Abstract author(s):** Fasser, Nicolò (Università degli Studi di Ferrara, Dipartimento di Studi Umanistici - Sezione di Scienze Preistoriche e Antropologiche; TRACES, UMR 5608, Université Toulouse Jean Jaurès) - Visentin, Davide (Università degli Studi di Ferrara, Dipartimento di Studi Umanistici - Sezione di Scienze Preistoriche e Antropologiche; Archaeology of Social Dynamics Group, Institución Milá y Fontanals, Consejo Superior de Investigaciones Científicas - IMF-CSIC) - Langlais, Mathieu (PACEA, UMR 5199, Université de Bordeaux) - Valdeyron, Nicolas (TRACES, UMR 5608, Université Toulouse Jean Jaurès) - Fontana, Federica (Università degli Studi di Ferrara, Dipartimento di Studi Umanistici - Sezione di Scienze Preistoriche e Antropologiche)

**Abstract format:** Oral

Since the earliest studies dated to the end of the 19th and the beginning of the 20th century, the typological variability of lithic armatures and other specific traits in lithic and osseous technology after the Gravettian have allowed establishing a cultural separation between the Western-Atlantic and Mediterranean-Balkan regions. According to the latest studies, the former is characterised by the Solutrean-Badegoulian-Magdalenian-Azilian-Laborian sequence, whereas the second attests to the Early and the Late Epigravettian development. Moreover, the adoption of new methodological approaches is enlarging our view on the cultural complexity of European Late Palaeolithic groups. To contribute to this debate, our research has focused on the reconstruction of manufacturing modalities of lithic armatures, verifying whether there is a correlation between their morphological/typological variability and retouch techniques used to manufacture them.

To answer this question, we present the results of studies on a sample of lithic armatures from five South European sites dated between the last part of GS-2 and GS-1. Riparo Tagliente (VR), Riparo Biarzo (UD) and Riparo Soman (VR) belong to the Late Epigravettian, and they are located in North-Eastern Italy, while Troubat and Pont d'Ambon cover the period between the Upper Magdalenian and the Late Laborian. The former is situated in the northern Pyrenees (Hautes Pyrénées, France), the latter is in northern Périgord (Dordogne, France). The identification of retouch techniques was performed by combining an experimental activity, a low and high magnification analysis and a quantitative approach creating a new protocol for the study of lithic backed armatures. Applying this type of analysis at a large scale allowed observing the variability of Late Glacial armatures in a new light and highlighted several similarities between the two cultural sequences, suggesting the presence of social networks linking Epigravettian and Western societies across time.

**3 THE LIGURO-PROVENÇAL ARC BETWEEN TERMINAL PLEISTOCENE AND EARLY HOLOCENE. INNOVATIONS, PERSISTENT BEHAVIOURS AND TECHNO-ECONOMIC CHANGES AMONG LATE EPIGRAVETTIAN-MESOLITHIC GROUPS**

**Abstract author(s):** Ricci, Giulia (LAMPEA-UMR 7269, Aix-Marseille Université, CNRS) - Negrino, Fabio (Dipartimento di Antichità, Filosofia, Storia - DAFIST, Università di Genova)

**Abstract format:** Oral

The Liguro-Provençal Arc (ALP) forms a narrow coastal band between the Alps and the Mediterranean Sea. For the study of human settlements on the scale of the western Mediterranean, the ALP is a privileged area of investigation

since it constitutes a circulation corridor between Italian peninsula and the Rhône valley and where several prehistoric human occupations are attested.

The end of the Upper Palaeolithic in the ALP is marked by a technical and techno-economic change attesting a mutation in the organisation systems and socio-economic structures of populations. This is reflected in changing modes of raw materials procurements, from now on characterised by a more flexible selection and circulation of lithotypes over shorter distances. This transformation is also reflected in a less standardized blank production and in integrating new typological elements, especially among microlithic armatures (e.g., segments and triangles). It should be noted, anyway, that the Late Epigravettian and the appearance of the Mesolithic (Sauveterrian) in the ALP is based on a very small set of archaeological sites, especially if compared with the neighbouring areas (south-western France or north-eastern Italy). However, archaeological assemblages from this region reveal a remarkable heterogeneity, suggesting that many factors - environmental, functional and/or cultural - remain to be explored.

This speech is intended to be a synthesis of the recent discoveries and studies that have nevertheless brought new notable outputs about terminal Pleistocene and Early Holocene of this area. The reflection will take into account different proxies as well as lithic industries, ornaments, burials, subsistence practices, human mobility, and the evolution of the local environmental conditions. Different and common features in the technical and behavioural evolution of the ALP Late Epigravettian-Mesolithic population will be highlighted, using an interdisciplinary approach, but also benefiting from new radiocarbon dates necessary to define a more detailed chronological and cultural framework.

#### 4 AN INTEGRATED ANALYSIS OF THE LATE UPPER PALAEOLITHIC LAYERS 4009-4011 FROM THE ROMANELLI CAVE (SOUTHERN ITALY)

**Abstract author(s):** Sigari, Dario (CNRS - UMR 5608 TRACES, Toulouse; CNR-ISPC - Area della Ricerca di Roma 1, Montelibretti, RM) - Mazzini, Ilaria (CNR-IGAG, Area della Ricerca di Roma 1, Montelibretti, RM) - Bona, Fabio (Dipartimento di Scienze della Terra "Ardito Desio", Università degli Studi di Milano) - Forti, Luca (Dipartimento di Scienze della Terra "Ardito Desio", Università degli Studi di Milano; IGG-CNR) - Lembo, Giuseppe (Associazione Culturale Archeoldea, Campobasso) - Mecozzi, Beniamino (Dipartimento Scienze della Terra, Sapienza Università di Roma; Laboratorio PaleoFactory, Dipartimento Scienze della Terra, Sapienza Università di Roma) - Muffillo, Brunella (Dipartimento di Studi Umanistici, Sezione Scienze Preistoriche e Antropologiche, Università degli Studi di Ferrara) - Ranaldo, Filomena (Museo della Preistoria di Nardò; Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, U.R. Preistoria e Antropologia, Università degli Studi di Siena) - Sadori, Laura (Dipartimento di Biologia Ambientale, Sapienza Università di Roma) - Sardella, Raffaele (Dipartimento Scienze della Terra, Sapienza Università di Roma)

**Abstract format:** Oral

The new research activities started in 2015 at the Romanelli Cave aim to improve the resolution of the site stratigraphy, to revise and update the existing palaeontological and archaeological research and to develop conservation strategies of the infilling sequence and the cave itself.

In 2018, a new area of excavation of the so-called Terre Brune sequence i.e., attributed to the upper Palaeolithic occupation, was opened close to the northern wall of the cave.

A high quantity and variety of findings and data have come to light from the four excavated squares. Some of the findings have already been published: a distal phalanx of the hand of a child; a first record of pollen samples; new dating series.

In this work, we present the whole record recovered so far from the stratigraphic units 4009-4011, which have been dated between c. 14,000 and 11,200 cal. years BP. From these units several and varied findings, including lithics, bone tools and portable art pieces have been brought to light. Here we provide a first integrated analysis of these units using a multidisciplinary approach towards the understanding of how the last hunter-fisher-gatherer societies exploited the Romanelli Cave and the environment in which they lived.

#### 5 ENVIRONMENTAL SHIFTS AND TECHNICAL TRADITION CHANGES DURING THE PLEISTOCENE/ HOLOCENE TRANSITION IN SOUTHERN ITALY. NEW DATA FROM THE GROTTA DELLA SERRATURA

**Abstract author(s):** Poggiali, Federico (University of Liverpool) - Ricci, Giulia (LAMPEA – UMR 7269. Aix-Marseille Université, CNRS)

**Abstract format:** Oral

Grotta della Serratura represents an excellent reference site for the study of the Upper Paleolithic and the Mesolithic of the lower Tyrrhenian Italian peninsula. The long and well-detailed archaeological stratigraphy, which has been the focus of numerous interdisciplinary studies, offers a remarkable standpoint for the study of past hunter-gatherer societies during the shifting landscapes of the late Pleistocene and the early Holocene. New anthracological evidence (carbonized fuel wood waste) from the layers attributed to Evolved and Final Epigravettian (Strata 10B; 10A; 10; 9; 8C), Sauveterrian (Stratum 7) and Epipaleolithic Indifferetiated (Stratum 5) assist in the reconstruction of the past human exploitations of woodland resources and their interactions with the changing ecology of the Lateglacial period and the transition to the early Holocene. The data from these archaeobotanical analyses are discussed and

integrated with the data related to material culture, leading us to a more coherent discussion of the complex socio-cultural interactions between past human communities and the vegetational ecology surrounding this coastal site in the southern Italian peninsula.

## 6 THE MAGDALENIAN SETTLEMENT OF PORTUGUESE ESTREMADURA: NEW DATA FROM LAPA DO PICAREIRO

**Abstract author(s):** Haws, Jonathan (University of Louisville; ICArEHB, University of Algarve) - Benedetti, Michael (University of North Carolina Wilmington; ICArEHB, University of Algarve) - Bicho, Nuno (ICArEHB, University of Algarve) - Carvalho, Milena (University of New Mexico; ICArEHB, University of Algarve) - Friedl, Lukas (University of West Bohemia; ICArEHB, University of Algarve) - Ellis, M. (Colorado State University; ICArEHB, University of Algarve) - Pereira, Telmo (Universidade Autónoma de Lisboa; Instituto Politécnico de Tomar, Portugal; Centro de Geociências da Universidade de Coimbra; UNIARQ, Centro de Arqueologia da Universidade de Lisboa) - Cascalheira, João (ICArEHB, University of Algarve)

**Abstract format:** Oral

Portuguese Estremadura has a well-documented record of human settlement during the Upper Paleolithic with a couple notable exceptions. The Early and Middle Magdalenian phases are largely absent in the regional archaeological record. Only a few radiocarbon dates from a small number of sites provide evidence for human presence. By contrast, the Late Magdalenian is very well represented in numerous open-air sites and a few relatively thick cave and rockshelter sequences. Why is the earlier Magdalenian so poorly represented? Climate appears to have played a significant role. One possibility is that the harsh climate conditions of Heinrich Stadial 1 led to demographic declines after the LGM. Another potential explanation is that climate-mediated erosive episodes at the end of cold/arid phases like H1 led to widespread landscape modification and destruction of archaeological evidence for human occupations in sites across Estremadura. Here we present and discuss new archaeological and paleoenvironmental data from Lapa do Picareiro that may help shed light on this problem. The cave has a lengthy stratigraphic sequence with ca. 6 m of sediment containing artifact assemblages from all the major Upper Paleolithic phases. For the Magdalenian, rich occupations are evident from the Late and Final Magdalenian phases. Recent excavations yielded lithic and osseous artifacts from levels dated to the Early and Middle Magdalenian time frame. These assemblages are much smaller and limit any purely typological attributions. Nevertheless, they demonstrate the presence of human populations on the landscape, but the earlier Magdalenian occupations were more ephemeral than the later ones.

## 7 TITO BUSTILLO REVISITED: NEW RESEARCH ABOUT HUNTER-GATHERER'S SOCIETIES IN THE SELLA VALLEY (ASTURIAS, NORTHERN SPAIN) DURING THE MAGDALENIAN

**Abstract author(s):** Alvarez-Fernández, Esteban (University of Salamanca) - Cueto, Marián (Universitat Autònoma Barcelona) - Tapia, Jesús (Sociedad de Ciencias Aranzadi) - Cerezo-Fernández, Rosana (Universidad de Salamanca) - Wanderley, Rafael (IIIPC-Universidad de Cantabria)

**Abstract format:** Oral

The "Living Area" of the Tito Bustillo cave (Ribadesella, Asturias, Spain) was the subject of systematic excavations, first by M. A. García Guinea (1970) and later by J. A. Moure (between 1972 and 1986). In the excavated area (27 m<sup>2</sup>) various occupations assigned to different phases from the Magdalenian (Lower, Middle and Upper Phases) were documented (Level 1), determined fundamentally from radiocarbon dates and "fossil directeurs". Level 2, also ascribed to the Magdalenian (Lower Phase), corresponds to a period with sedimentation in the cave. Recently, the materials documented in the excavations carried out in the last century have begun to be reviewed, in particular, the bone industry and the personal ornaments. This has been completed with new interventions carried out in the "Living Area" since 2020, whose objective is to better understand the occupations in Tito Bustillo. This communication offers preliminary data on these investigations carried out in the cave.

## 8 THE ANTLER AS A CORE: NEW PERSPECTIVES ON THE CHAÎNE OPÉRATOIRE OF BONE INDUSTRY

**Abstract author(s):** Tapia, Jesus (Aranzadi Science Society) - Álvarez-Fernández, Esteban - Cerezo-Fernández, Rosana (University of Salamanca) - Cueto, Marián (Autonomous University of Barcelona)

**Abstract format:** Oral

Bone industry has been a key subject of study in the periodization and classification of Upper Paleolithic cultures in Europe since the beginning of prehistoric research, which has traditionally been oriented towards the description of formal and typological aspects. Since the 1970's, technological studies and experimental programs have led to a new understanding of prehistoric material culture and to the emergence of the concept of operational sequence. In recent decades, research on the Upper Paleolithic has focused on the reconstruction of the technical procedures followed to make bone and antler tools, describing complete sequences from the collection of raw material to the use of the artifacts. However, the study of operative sequences of the bone industry has not yet reached its full explanatory potential compared to the lithic industry.

Specifically, the analysis of incomplete or partial operational chains makes it possible to identify time lapses between different production phases, but up to now, technical procedures specifically conceived for their deferred processing have not been described.

In this communication, we present a study that we are carrying out of three sets of Magdalenian antler remains from Tito Bustillo, El Cierro and Arangas caves, trying to identify if the extraction of blanks was intended to transport and transform them in a deferred way. Preliminary results suggest that, during Magdalenian in Cantabrian Spain, the production of broad antler blanks was designed for their transport and deferred processing.

## 9 REACHING HIGH: A MOUNTAIN HUNTING CAMP OF THE LATE UPPER PALEOLITHIC IN SAN ADRIAN, NORTHERN IBERIA

**Abstract author(s):** Tapia, Jesus - Castaños, Pedro (Aranzadi Science Society)

**Abstract format:** Oral

In recent decades, numerous Late Upper Paleolithic sites have been discovered in the Mediterranean watershed of northern Iberia, revealing that human settlement was not restricted to the Atlantic coast. In the same way, the study of lithic raw materials has shown that some of the flint varieties used in this area come from outcrops located to the south of the Cantabrian mountain range. However, human settlement in the inland area has been considered sporadic, short or limited to more temperate climatic periods due to its altitude. In this sense, it has been considered that hunter-gatherer groups would access these inland areas through low mountain passes, and in short, that the mountainous areas were hardly occupied until the Holocene. In this communication we present San Adrian cave, a new site located at 1.000 m.a.s.l., that has been dated 11.200BP. Our study helps to understand how human settlement was articulated between coastal and inland areas at the end of the Paleolithic and how the occupation of mountain areas occurred at the end of the last ice age.

## 10 LITHIC PRODUCTIONS AND TECHNO-ECONOMIC BEHAVIOR IN THE PRE-PYRENEAN MAGDALENIAN SITE OF CUEVA DE CHAVES (BASTARÁS, SPAIN)

**Abstract author(s):** Jiménez Ruiz, Luis (Primeros Pobladores y Patrimonio Arqueológico-IPH. Universidad de Zaragoza) - Sánchez de la Torre, Marta (SERP-IAUB. Universitat de Barcelona) - Domingo, Rafael - Utrilla, Pilar (Primeros Pobladores y Patrimonio Arqueológico-IPH. Universidad de Zaragoza)

**Abstract format:** Oral

The study of Late Pleistocene at the Iberian Peninsula shows us the variability of lithic techno-economic behaviors that were developed during the Magdalenian chronology. The archaeological site of Cueva de Chaves (Bastarás, Huesca, Spain) is an exceptional example of human occupations coming from recent times to Upper-Final Magdalenian chronology (15141-14485 cal. BP) at the Pre-Pyrenean mountains. The site was excavated from the eighties until its destruction in 2007, and the archaeological works founded a rich hunter-gatherer camping site with several lithic and bone-tools ensembles in two different levels (2a & 2b).

Through techno-typological and morphometric studies, we have identified the lithic reduction systems and the economical processes that were developed in the cave. Bladelets and little blades were the most produced kind of raw blanks as they were used to produce backed bladelets and hunting armatures. Some domestic tools and big retouched blades were probably brought to the site preconfigured due to the absence of big blade cores.

Along with the geochemical and micropaleontological characterization of raw materials, our study shows the complexity of economic interactions of these human groups and the great mobility of their lithic exchange's through the northern and southern Pyrenean slopes. This explains the progressive efficiency of lithic productions and the high level of portability at close, middle, and long-outcrops distances that were managed by these societies at the end of Pleistocene times.

## LATE GLACIAL TECHNOLOGICAL EVOLUTION IN NE IBERIA: INSIGHTS FROM COVA DE LES BORRES AND COVA GRAN DE MONTSERRAT SEQUENCES

**Abstract author(s):** Rabuñal, José Ramón (Instituto Universitario de Investigación en Arqueología y Patrimonio Histórico - INAPH, Universidad de Alicante; Department of Archaeology and Heritage Studies, Aarhus University Moesgård) - Morales, Juan Ignacio (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Àrea de Prehistòria, Universitat Rovira i Virgili - URV) - Soto, María (Madrid Institute for Advanced Study, MIAS. Casa Velázquez; Departamento de Prehistoria y Arqueología. Facultad de Filosofía y Letras. Universidad Autónoma de Madrid) - Cebrià, Artur (SERP, Departament d'Història i Arqueologia, Secció de Prehistòria, Universitat de Barcelona) - Hernando, Raquel (Àrea de Prehistòria, Universitat Rovira i Virgili - URV; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA) - Marsal, Roser (Institut de Recerca de l'Aigua - IdRA, Universidad de Barcelona; Department of Archaeology and Ancient History, Uppsala University) - Soares-Remiseiro, Miguel (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Àrea de Prehistòria, Universitat Rovira i Virgili - URV) - Riede, Felix (Department of Archaeology and Heritage Studies, Aarhus University Moesgård) - Vallverdú, Josep (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Àrea de Prehistòria, Universitat Rovira i Virgili - URV)

**Abstract format:** Oral

Northeastern Iberia has a long-established research tradition on Late Pleistocene archaeology, resulting in an extensive record of sites that have allowed continuous discussion and refinement of the periodization models for the cultural evolution during the Pleistocene-Holocene transition. Post-Magdalenian assemblages (Epipalaeolithic sensu lato; post-ca.14000 cal BP) have been characterized as microlaminar industries with clear Magdalenian filiation, as suggested by the stability of their general design with minor gradual modifications in the production systems and typological structure.

In this paper we present unpublished technological and chronological data from the recently excavated multi-stratified sequences of Cova de les Borres (La Febró, Tarragona) and Cova Gran de Montserrat (Collbató, Barcelona), and discuss their role within the actual state-of-the-art for the post-Magdalenian sequence from both regional (NE Iberia) and macro-regional (SW Europe) perspectives.

Cova de les Borres rockshelter has been excavated since 2015, opening a surface over 35m<sup>2</sup>. Within its archaeological sequence, layers 2.1 and 2 are dated to the mid GI-1, and layer 1.2 to the late GI-1 – early GS-1. These yielded abundant lithic remains, featuring similar blade and bladelet production strategies and retouched assemblages, dominated by endscrapers and backed elements, but standing out the appearance of geometric microliths in layer 1.2.

At Cova Gran cave, excavated since 2018 through over 25 m<sup>2</sup>, Late Glacial occupations have been documented in two archaeological layers: layer 202, dated to the mid GI-1, and still scarcely investigated; and layer 200, which yielded well-preserved occupations dated to the GS-I and a microlaminar lithic assemblage with endscrapers, backed elements and geometric microliths.

This work will contribute with new valuable chronological and techno-typological data to the discussion of major questions regarding the final Pleistocene technological and cultural evolution, such as the evolution of the post-Magdalenian techno-complexes, including the appearance of the first geometric microliths, during the Late Glacial period.

## MULTI-ISOTOPE STUDY ON UNGULATES FROM COVA DE LES CENDRES (ALACANT, SPAIN): PALEOENVIRONMENT AND HUNTING STRATEGY RECONSTRUCTIONS THROUGHOUT THE UPPER PALEOLITHIC

**Abstract author(s):** Salazar García, Domingo Carlos (Departament de Prehistòria, Arqueologia i Història Antiga, Universitat de València; Grupo de Investigación en Prehistoria IT-1223-19 - UPV-EHU/IKERBASQUE-Basque Foundation for Science; Department of Geological Sciences, University of Cape Town) - Tornero, Carlos (Departament de Prehistòria, Universitat Autònoma de Barcelona - UAB, Edifici B Facultat de Filosofia i Lletres; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA) - Real, Cristina (Departament de Prehistòria, Arqueologia i Història Antiga, Universitat de València; Laboratory of Osteoarchaeology and Paleoanthropology, Department of Cultural Heritage, University of Bologna) - Villaverde, Valentín (Departament de Prehistòria, Arqueologia i Història Antiga, Universitat de València)

**Abstract format:** Oral

We here present isotopic analysis of wild goat and red deer remains from the site of Cova de les Cendres (Mediterranean coast of central eastern Iberia) as a proxy to reconstruct paleoecological conditions during the Late Pleistocene and to assess hunting strategies of Upper Palaeolithic human groups in the region. Analysing both carbon and nitrogen isotope ratios on bone bulk collagen, as well as carbon and oxygen isotope ratios on sequential samples of molar enamel, offers isotopic different temporal resolutions of an animal's life to address these questions. During this time period, climatic conditions changed rapidly and human occupations were adapted to abrupt modifications on environmental conditions. Both species analysed (*Capra pyrenaica* and *Cervus elaphus*) are dominant throughout



the Solutrean and Magdalenian levels, dating from 20,300-20,200 calBP to 15,180-14,100 calBP, although a variety of other ungulates, leporids and carnivores are also present but in lower amounts. Our study allows comparing isotope values from same species between all layers, giving our results new insights on environmental factors and hunting strategies from the Western Mediterranean Late Upper Palaeolithic.

### 13 THE SAUVETERRIAN OCCUPATIONS OF COVETA DE LA FOIA (VILAFRANCA, VALENCIAN COUNTRY) AND THE END OF PALAEOOLITHIC CULTURES IN MEDITERRANEAN IBERIA

**Abstract author(s):** Roman, Didac (Universitat Jaume I) - Domingo, Inés (ICREA; Universitat de Barcelona) - Fullola-Isern, Joan - Alcàntara, Roger (Universitat Jaume I)

**Abstract format:** Oral

In the last few years, research on the cultures of the Pleistocene-Holocene transition has experienced a growing interest in Western Europe. Within this wide area, the Mediterranean side of the Iberian Peninsula is one of the regions contributing new evidence to feed current discussions.

The study of the end of the cultures based on microlaminar industries (Magdalenian, Epimagdalenian and Sauveterrian) and their transition to those based on the production of flakes (ancient Mesolithic), is one of the issues to be delved into in the coming years. To this end, it is particularly important to rely on new sites with potential to provide fresh data to advance on the characterization of these periods. Our recent projects exploring human occupations in the inland area of Castelló (north of the Valencian Country) have included the excavation of a couple of sites of interest to this research. La Fontanella site, excavated between 2011 and 2015, preserves a deposit including ancient Mesolithic industries valuable to refine the characteristics of the beginning of the period (Román and Domingo, 2021; Lloveras et al, 2020). In addition, our excavations at Coveta de la Foia site, still in progress, are offering a series of deposits dating between the end of the Magdalenian and the Sauveterrian. Our aim in this presentation is to introduce the latest finds uncovered at the Sauveterrian level and dating right to the Pleistocene-Holocene transition. We will focus on the techno-typological features of the stone tools, paying special attention to the geometrical and backed tools, as well as on the analysis of the faunal remains, with a dominance of red deer and wild goat, and a smaller presence of horses and carnivores. These data will be analyzed in the regional context.

### 14 REVIEW OF THE TECHNO-ECONOMIC TRENDS FROM THE CENTRAL IBERIAN MEDITERRANEAN AREA DURING THE TARDIGLACIAL AND EARLY POSTGLACIAL

**Abstract author(s):** Real, Cristina (Departamento de Prehistoria, Arqueología e Historia Antigua. Universidad de Valencia; Laboratory of Osteoarchaeology and Paleoanthropology. Department of Cultural Heritage. University of Bologna) - Vadillo Conesa, Margarita - Aura, J. Emili - Villaverde, Valentín (Departamento de Prehistoria, Arqueología e Historia Antigua. Universidad de Valencia.) - Morales, J. Vicente (Departamento de didáctica de las ciencias experimentales y sociales. Universidad de Valencia) - Román, Dídac (Departamento de Historia, Geografía y Arte. Universidad Jaume I)

**Abstract format:** Oral

The central Iberian Mediterranean region is a narrow area but with a wide record of Upper and Final Palaeolithic sites, studied from a technological, ecological, and economic point of view, although the relationship between the hinterland and the coastal landscapes has not been dealt with in enough depth. Our main objective is to review the techno-economic trends from these two types of landscape, their coincidences and their differences. We focus our data on the Upper and Final Palaeolithic sequences from Coves de Santa Maira (hinterland) and Cova de les Cendres (coastal), which are fundamental in the construction of the regional sequence.

The laminar-microlaminar techno-complexes from the end of the Late Glacial period to the early Holocene are characterised by continuity: local and regional raw material procurement, production objectives. It is a Magdalenian substrate that lasts until the beginning of the Mesolithic period. Although some changes occur in the exploitation modalities and retouched tools, however, this did not affect the essential purposes of lithic production. Through the analysis of the lithic assemblages from these sites, we can observe the characteristics and particularities of this entire Magdalenian cycle.

The subsistence model has common characteristics: hunting based on one medium-sized species (red deer or Spanish ibex), with a complementary consumption of other ungulates, carnivores, small prey, and even marine resources. Domestic human activities show a complete exploitation processing and even preparation of skins and preservation activities related to long-term strategy. We explore the difference in the taxonomic spectrum and the domestic activities between both areas. And to what extent might landscape or settlement dynamics have influenced.

The final goal is to develop a comparison with other Mediterranean regions, leaving aside the different nomenclatures that create confusion, and open a discussion on the traditions and changes that define these final Palaeolithic human groups.

## A. RECONSTRUCTING REINDEER (RANGIFER TARANDUS) MOBILITY PATTERNS THROUGH 3D GMM ANALYSIS OF THEIR PHALANGES

**Abstract author(s):** Galán López, Ana Belén (CNRS TRACES UMR 5608 - Université Toulouse Jean Jaurès) - Pelletier, Maxime (Archaeology, History, Culture and Communication Studies, Faculty of Humanities, University of Oulu) - Discamps, Emmanuel (CNRS TRACES UMR 5608 - Université Toulouse Jean Jaurès)

**Abstract format:** Poster

Reconstructing the interactions between Palaeolithic human groups and their prey is often complicated by a general lack of data on the ethology and ecology of past animal communities. DeerPal is an interdisciplinary project aimed at applying different cutting-edge analytical techniques (dental microwear texture analysis, stable isotopic analysis, cementochronology and geometric morphometrics [GMM]) to progress in this avenue. It focuses on two archaeological periods (the Middle Palaeolithic of southwestern France and the Late Glacial from the Pyrenees to the Paris-Basin) and two animal species that were key to hunter-gatherer groups: reindeer (*Rangifer tarandus*) and red deer (*Cervus elaphus*). At the end of the Late Glacial, reindeer gradually disappeared from southwestern Europe with the climate warming. As they became more fragmented geographically, different responses should be expected, such as variation in their migratory patterns (e.g. more or less sedentary groups, latitudinal vs. altitudinal migration along the Pyrenees, etc.). As the migration behaviours of reindeer herds during this period are largely unknown, it is difficult to interpret Late Glacial socio-economic organization and mobility strategies. In this contribution, we present the first results acquired by GMM on reindeer phalanges from modern populations.

Due to the fact that locomotor morphological adaptations are closely related to habitat preferences and mobility, it is possible to infer behavioural responses using an animal's cranial and post-cranial morphology. GMM allows identifying subtle differences in size and form between individuals of the same species.

For our study, a total of 155 first and third phalanges from different ecotypes of extant caribou were scanned with a laser-surface 3D-scanner. Results acquired by the 3D-GMM analysis of this reference sample allows a discussion of our capacity to identify migratory/non-migratory reindeer in past populations. A similar methodology is then applied to archaeological remains to test hypothesis on migratory behaviour of Late Glacial reindeer populations.

---

## 100 HUMAN FORENSIC TAPHONOMY – HOW MULTIDISCIPLINARY APPROACHES SHED LIGHT ON PAST FUNERARY PRACTICES

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Moghaddam, Negahnaz (Swiss Human Institute of Forensic Taphonomy, University Centre of Legal Medicine Lausanne-Geneva; Unit of Forensic Imaging and Anthropology, University Centre of Legal Medicine Lausanne-Geneva) - Varlet, Vincent (Swiss Human Institute of Forensic Taphonomy, University Centre of Legal Medicine Lausanne-Geneva) - Shvedchikova, Tatiana (-) - Mateovics-László, Orsolya (Hungarian National Museum, Archaeological Heritage Directorate)

**Format:** Regular session

Over the last decades, human taphonomy became an important research field within the study of funeral practices and burials of the past. For a better understanding of mortuary practices in history and prehistory, in-depth knowledge of the natural processes of cadaver decomposition is indispensable. There are various external factors, such as environmental and climatic conditions but also human behavior, which affect the rate of decomposition. The analyses of burnt and cremated human remains, for instant, involves great challenges. Other examples are human remains found in water but also conserved bodies due to volcanic activity, bogs or frozen remains that date thousands of years ago. Those are rare and outstanding archaeological findings that can provide valuable information about decomposition under rigorous conditions. On the other hand, the methodological approaches of forensic taphonomy, modern cases and experimental research should be taken into consideration to understand the impact and influence of various external factors. Forensic taphonomy is a cross-cutting approach, which uses the knowledge of several disciplines, such as for example forensic medicine, imaging, toxicology, biological anthropology, archaeo-ethanatology, odontology, entomology, botany and environmental sciences.

The aim of the session is to bring together various scientific fields to gain insights on the influences of different external factors and natural environments on buried human remains and how this knowledge should be used for further historic and prehistoric interpretations.

**1 HOW FORENSIC TAPHONOMY CAN HELP TO INTERPRET HUMAN BURIALS IN THE ARCHAEOLOGICAL RECORD: INSIGHTS FROM AN INTERDISCIPLINARY EXPERIMENTAL RESEARCH PROGRAM**

**Abstract author(s):** Mickleburgh, Hayley (Linnaeus University; Forensic Anthropology Center Texas State University)

**Abstract format:** Oral

Actualistic taphonomic research on human remains can provide uniquely valuable insights into the sequence of events surrounding death and burial as well as the subsequent formation processes of the grave. Observations of the process of human decomposition and the effects of different variables on the outcome (such as the manner of body treatment and positioning of the body in the grave), can help to distinguish between the results of human actions and other taphonomic processes in the archaeological record. Experiments importantly provide information on processes that cannot be gleaned from archaeological data alone. This paper discusses the methods and findings of an ongoing experimental forensic taphonomic research program developed to assist the interpretation of human burials in both traditional and forensic archaeological contexts. The program replicates two distinct medicolegal/archaeological burial contexts - individual depositions and mass graves - in a series of actualistic experiments at the human taphonomy facility managed by the Forensic Anthropology Center at Texas State University (FACTS). This inter-disciplinary program aims to contribute to mortuary archaeology by advancing archaeoethanatology analysis, as well as to the forensic sciences by among others, developing new methods to estimate time since death and human identification, assessing the implications of tissue diagenesis for isotope forensics, and testing and validating methods for the detection of clandestine graves.

To date, the series of experiments has provided valuable new information on the processes involved in joint disarticulation, and the relation between bone displacement and 1) open space (voids) in the grave, 2) the position of the body upon placement (flexed, extended), and 3) the condition of the body (fresh, mummified). These processes are fundamental to models and interpretations applied in archaeoethanatology, and the results obtained from the actualistic taphonomic research allow us to reevaluate and augment our reconstructions of funerary practices in the past.

**2 INTRODUCING GEOFOR – A NOVEL GIS-BASED APPLICATION FOR IMPROVING PMI METHODS**

**Abstract author(s):** Tica, Cristina - Weisensee, Katherine - Clafin, Patrick - Carbajales-Dale, Patricia (Clemson University)

**Abstract format:** Oral

One of the crucial aspects of forensic death investigations is the determination of time since death, or postmortem interval (PMI). To date, PMI research has either made use of a few outdoor decomposition research facilities, or of geographically constrained case studies, both approaches based on relatively small sample sizes. Thus, no current PMI methods incorporate large reference datasets, representative of various geographical and environmental settings.

In order to remedy this gap in research, the geoFOR application was built to allow forensic practitioners to efficiently submit reliable and accurate information about the characteristics observed in forensic casework, with the goal of improving upon existing methods for estimating PMI. The project uses the data repository from submitted forensic casework and develops robust models for calculating PMI, to provide accurate estimates with known error rates by utilizing georeferenced environmental information. The application is available to coroners, medical examiners, and death investigators worldwide. With more than 550 cases entered up to date, it is the largest database used for PMI estimations.

The application has a built-in calculator that encourages data submission and provides practitioners with immediate benefits: it estimates PMI based on the recovered remains' location and the accumulated degree days (ADD) or total body score (TBS) entered. ADD is frequently used for many of the available methods. The investigator inputs the information about the case and geoFOR automatically compiles temperature information from the National Oceanic and Atmospheric Administration (NOAA), with weather stations available worldwide; it locates the nearest weather station and calculates daily average temperatures until it reaches the entered ADD, thus providing the user with an estimated PMI and corresponding calendar date or range. geoFOR aims to deliver PMI estimates easier and quicker than currently available methods, an immediate incentive for medicolegal death investigators and forensic professionals to contribute their data.

### 3 GRAVES MATTERS: INTERDISCIPLINARY RESEARCH OF MORTUARY BEHAVIOR

**Abstract author(s):** Durczak, Kinga (Independent researcher)

**Abstract format:** Oral

Human mortuary behaviors have many variations throughout humankind's history. One of the most common practice, but usually forgotten or unnoticed in archaeological records, is warping human remains in shrouds. This funerary behavior can be a focal point of early preparation of a corpse, however, that may also be one of many steps of mortuary practice. Nevertheless, decomposition of the body and other taphonomic factors can have a huge impact on the formation of a grave site.

Nowadays, it is still widely practiced in many different cultures and religions, it is most pronounced among Muslim and Jews. However, it is usually omitted in the research on the Early Christian funerary practice in Poland. This practice has been incorporated into mortuary rites, and the custom was widespread, until, the use of coffin became a common practice, slowly disappeared and currently it almost completely went out of use.

For better understanding this invisible practice, we can apply a twofold approach. On the one hand research of the past archival documentation; on the other detailed excavation processes, incorporating new techniques, that could help to better understand existing data. This can provide improved, new insights into existing knowledge of funerary rites. A case study illustrating such research comes from Giecz cemetery of Early medieval Poland.

### 4 BEETLES, FLIES AND LICE ASSOCIATED WITH SOUTH AMERICAN HUMAN MUMMIES: THE ARCHAEOENTOMOLOGICAL EVIDENCE

**Abstract author(s):** Kirgís, Pauline (UMR 5199 du CNRS, PACEA, University of Bordeaux) - Huchet, Jean-Bernard (UMR 5199 du CNRS, PACEA, University of Bordeaux; UMR 7209, Muséum d'Histoire Naturelle de Paris; UMR 7205 CNRS MNHN UPMC EPHE, Muséum national d'Histoire naturelle de Paris)

**Abstract format:** Oral

Insects are powerful sources of information both in forensic and archaeological studies. The application of forensic entomology in an archaeological context, designated by the term of 'funerary archaeoentomology', appears as a relevant method to improve investigations of the treatment of the dead, taphonomic events, and, by extension, of the funerary practices of past societies. While the entomofauna associated with human and animal mummies from ancient Egypt is now relatively well documented, few archaeoentomological studies have been devoted to pre-Hispanic mummies, despite their high prevalence in most American and European museums. We will present here some insects and other arthropods originated from human mummies from the Royal Museums of Art and History in Brussels and the Musée de l'Homme in Paris. These investigations led us to evidence a large corpus of insect remains belonging to 10 distinct orders and to propose some first hypotheses, both on the funerary practices and on the health conditions of these ancient populations of South America.

### 5 "COLD CASES FROM THE PAST" - COMPREHENSIVE EVALUATION OF SHARP FORCE SKELETAL TRAUMAS FROM MEDIEVAL HUNGARY

**Abstract author(s):** László-Mateovics, Orsolya (Hungarian National Museum / Magyar Nemzeti Múzeum)

**Abstract format:** Oral

Interpretation of violent injuries on archaeological specimens is a great challenge for bioarchaeologists. Forensic methodology and evaluation criteria can support such analyses and help to avoid missing data or false explanations of certain injuries. This is especially valid for sharp force injuries, especially from deviant burials. The in-depth interpretation of how these wounds were inflicted is crucial to reconstruct the circumstances of the death. This presentation intends to use this critical view to interpret blade injuries from two Hungarian archaeological contexts. These studies represent special sharp force injuries, namely cutmarks of decapitation and an amputation. This study aims to show and evaluate the special features of these types of lesions which can be instructive for future interpretations of such traumas and injuries. On the other hand, these case studies can also point at how the osteobiography of a skeleton combined with the historical and cultural framework can turn into a unique story of one's life and death from the past.

### 6 PRELIMINARY ESTIMATION OF THE CADAVER PRESERVATION STATE AND THE REALITY: THE CASE STUDY OF GENERAL GUDIN'S BURIAL

**Abstract author(s):** Shvedchikova, Tatiana (-)

**Abstract format:** Oral

Our contemporary rich knowledge about human cadaver decay help us to understand the processes that commence after its burial. This knowledge gives the possibility to detect the ritualistic behavior, estimate the external environmental influence and predict the human tissue preservation state. But do always the models we have, studying

the contemporary cases and experimental sets can answer these questions precisely? What unexpected factors can influence on preservation state of the burial and cadaver itself? The case study of the 19th century burial is presented. According to written sources, burial found in 2019 in the center of Smolensk city is supposed to belong to the general Gudin, one of the closest friend of Napoleon. He was injured in the battle near Lubino (Valutino), lost left leg and died in the couple of days. The precise place of his burial remained unknown until the archaeological investigations. Preliminary estimation of the soil conditions tended to the excellent body preservation and taphonomical situation when hair and textile could be preserved. But the revealed remains showed the extremely bad preservation state. Most of the spongy bones were almost decayed. The possibility of the further micromolecular investigations was under the big question. Fast changes of the bone tissue after the burial opening made us to act quickly and with the higher state of accuracy. The possible causes of such bad preservation state are discussed. The conservation protocol is presented.

## 7 YET IN MY FLESH I WILL SEE GOD - COMPARING THEOLOGICAL, ARCHAEOLOGICAL AND FORENSIC THOUGHTS ON NATURAL AND ARTIFICIAL MUMMIFICATION

**Abstract author(s):** Alterauge, Amelie (University of Bern; University of Tübingen)

**Abstract format:** Oral

Post-medieval church crypts were the preferred burial place of the European elite between the 16th and 19th centuries AD. They offer perfect conditions for the preservation of human remains: coffins placed above ground, absorbent coffin padding, good ventilation, and slowly changing temperatures and humidity. For those reasons, most of the bodies are naturally mummified due to simple desiccation. However, some individuals were artificially mummified through evisceration and embalming, as revealed by medical examinations. The aim of this paper is to discuss whether both types of mummification lead to a similar body preservation or if there are type-specific decomposition patterns. By using forensic methods, such as imaging techniques (X-ray, computed tomography) and entomology, multiple factors influencing the mummification process are considered. In combination with the historical sources reporting on the burial of the deceased, it is possible to reconstruct the burial circumstances, such as the time span between death and burial or the season. The inscriptions on the coffins are biblical quotations which recall the hope of resurrection and transience of life. It is reasoned whether both mummification processes were regarded as equally beneficial to an assumed bodily resurrection.

## 8 MULTIDISCIPLINARY TAPHONOMIC APPROACHES REVEAL MUMMIFICATION PRACTICES IN THE MESOLITHIC, SADO VALLEY, PORTUGAL

**Abstract author(s):** Peyroteo Stjerna, Rita (Human Evolution, Dep Organismal Biology, Human Evolution, Uppsala University; UNIARQ, Centro de Arqueologia da Universidade de Lisboa) - Nilsson Stutz, Liv (Department of Cultural Sciences, Linnaeus University) - Mickleburgh, Hayley (Department of Cultural Sciences, Linnaeus University; Forensic Anthropology Center, Texas State University) - Cardoso, João (Universidade Aberta; Centre of Archaeological Studies, Oeiras Municipal Council; ICArEHB, Universidade do Algarve)

**Abstract format:** Oral

Recently rediscovered photographs of the remains of thirteen individuals excavated in 1960 and 1962 at the Mesolithic shell middens of Arapouco and P. S. Bento in the Sado Valley, Portugal, show the potential of revisiting excavation archives with new methods.

We analysed this documentation using a combined taphonomic approach by integrating archaeoethnology and actualistic taphonomic research. Our analysis indicates that some bodies may have been mummified prior to burial, a phenomenon possibly linked to their curation and transport, highlighting the significance of both the body and the burial place in Mesolithic Portugal, c. 8000 years ago. Here we present what we believe to be evidence for intentional mummification through desiccation thus adding a new dimension to our understanding of Mesolithic mortuary practices. This research was only possible through the transfer of knowledge from experiment to application and demonstrates how different taphonomic approaches can be usefully combined to address complex archaeological problems.

## 9 DE-COMMINGLING PREHISTORIC AEGEAN MORTUARY ASSEMBLAGES: A MULTIDISCIPLINARY METHODOLOGICAL APPROACH TOWARDS THE STUDY OF COMMINGLED UNBURNT AND BURNT HUMAN REMAINS

**Abstract author(s):** Chatzikonstantinou, Ioannis (School of History and Archaeology, Aristotle University of Thessaloniki) - Papakonstantinou, Niki (School of History and Archaeology, Aristotle University of Thessaloniki; Fitch Laboratory, British School at Athens)

**Abstract format:** Oral

Reconstructing mortuary practices from the prehistoric archaeological record of the Aegean region is challenging. In many cases, these practices represent different stages from a complex ritual sequence, involving tomb reuse, mul-

multiple interments, visits by the living, differential use of fire, as well as, secondary manipulation of the dead, resulting in masses of commingled, fragmented, and poorly preserved bones. Despite the abundant evidence of mortuary loci from Crete and the Greek mainland, commingled skeletal assemblages, often with traces of fire, had, until recently, remained marginalized, being perceived of minor importance, further complicated by issues of equifinality.

This paper presents a systematic methodological approach in the study of commingled bones deriving from collective Minoan tholos (Koumasa B) and Mycenaean chamber tombs (Kolikrepi, Spata). The meticulous examination of osteological and taphonomic data (e.g., weathering, erosion, plant, animal, and insect damage) and the identification of heat-induced changes (e.g., discoloration, fractures, warping, shrinkage), combined with contextual mortuary information, are further supplemented by microscopic analysis (histotaphonomy), as well as, isotope (C, O, Sr) and infrared measurements on burnt bones. This multidisciplinary perspective enhances our perception of the depositional history of the remains and the formation mechanisms of skeletal assemblages (human actions and natural processes) during the Bronze Age in the Aegean.

## 10 SOILS AND BONES – HOW IT WAS AND HOW IT GOES. CULTURAL AND NATURAL TAPHONOMY OF ROMAN PERIOD CREMAINS

**Abstract author(s):** Wolska, Bogumila (Institute of Archaeology and Ethnology, Polish Academy of Sciences) - Dudek, Michał - Bednik, Magdalena (Institute of Soil Science, Plant Nutrition and Environmental Protection, Wrocław University of Life and Environmental Sciences) - Krupski, Mateusz (Institute of Soil Science, Plant Nutrition and Environmental Protection, Wrocław University of Life and Environmental Sciences; Archeolodzy.org Foundation)

**Abstract format:** Oral

It is known that the study of cremains provides insights into the life and death of individuals. However, the distinction between cultural and natural factors that affected the bones is sometimes difficult, since many stages of taphonomy have bearing on their final preservation: 1) pre-burning condition of the body, 2) combustion, 3) post-burning activities, 4) post-depositional processes and also, 5) urn exploration.

On the example of an urn grave from the prehistoric (Roman Period) necropolis in Czarnówko (North Poland), we'd like to present the taphonomic processes that have acted on the bones since the death of the individual. This was possible following osteological and FT-IR analysis of burned remains as well as the quantitative geochemical characterization of soil/sediment infill of the urn.

The results show that: 1) the deceased was probably burned shortly after death, 2) oxygen availability/ temperature varied in the pyre, 3) the bones were collected meticulously from the pyre debris and no further cultural actions occurred, 4) mechanical fragmentation (powdering) of trabecular bone is responsible for enhanced P and Ca levels in the urn soil, 5) the presence of organic carbon results from microcharcoal and "soot", allowing microbial activity in the vessel's infill, 6) pH was non-aggressive for bone preservation, 7) percolating water affected the bronze artefacts in the urn and induced wetting/drying conditions in its bottommost part.

The bones were generally well-preserved and two main taphonomic processes can be indicated: combustion on the pyre and powdering of the burned bone epiphyses in the urn. The soil conditions were neutral for bone preservation in this case. As it turns out, the degree of post depositional alteration was relatively low in the Czarnówko burial. Having such knowledge allows to concentrate on cultural taphonomic factors (i.e. the peculiarities of burial rites), aiding interpretation of past funerary practices.

## 11 HOW CAN TAPHONOMY HELP WITH BURIAL RITUALS UNDERSTANDING. CASE STUDY BASED ON THE CHILDREN'S GRAVES WITH GRAVE PIT STONE LINING

**Abstract author(s):** Prichystalová, Renáta (Department of Archaeology and Museology, Masaryk University)

**Abstract format:** Oral

The church graveyard with 152 graves was discovered at the early medieval site Pohansko near Břeclav (CZ). Among these graves were 27 with grave pit stone lining. In more than 59 % of these graves were buried children, in age brackets from Infans Ia to Infans II. Majority of these children's graves belongs to the category Infans Ib, children between the ages of 1 and 7. We can distinguish three basic forms of the stone adjustment of grave pit's perimeter: 1) complete stone lining; 2) almost complete or partial stone lining; 3) symbolic (suggestive) stone lining, which belongs to prevailing typ. All these categories incorporate the children's burial. What were these children? What social rank could they be included in? We try to answer these questions on the basis of a complete archaeological assessment of the graves (grave location within the churchyard, grave pit adjustment, presence of grave goods). Archaeological outcomes are compared to results of the tafonomical analysis (presence / absence of the primary hollow space). The results are also supplemented with findings from paleopathology. The outcomes of this research we present on case studies of all mentioned types of grave pit stone lining.

## INSIGHTS INTO MORTUARY PRACTICES OF CHALCOLITHIC HUMAN REMAINS FROM TOMB 3 OF PERDIGÕES (PORTUGAL) THROUGH BIOANTHROPOLOGICAL AND TAPHONOMIC ANALYSIS

**Abstract author(s):** Relvado, Cláudia (Interdisciplinary Center for Archaeology and Evolution of Human Behaviour, University of Algarve) - Almeida, Nelson (Uniarq, Centro de Arqueologia da Universidade de Lisboa) - Valera, António (Era Arqueologia SA; Interdisciplinary Center for Archaeology and Evolution of Human Behaviour, University of Algarve) - Evangelista, Lucy (Era Arqueologia SA; Research Center in Anthropology and Health, University of Coimbra; Interdisciplinary Center for Archaeology and Evolution of Human Behaviour, University of Algarve) - Maurer, Anne-France (HERCULES Laboratory, University of Évora) - Godinho, Ricardo (Interdisciplinary Center for Archaeology and Evolution of Human Behaviour, University of Algarve)

**Abstract format:** Oral

The archaeological site of Perdigões (Reguengos de Monsaraz, Southern Portugal), dated between 3500-2000 BCE, is a large (16ha) and complex set of ditched enclosures. The site has been extensively studied by the ERA archaeology team for the last ~25 years, revealing different funerary contexts that exhibit a variety of body treatments (primary and secondary depositions, cremations), among other contexts. Of the four fully excavated funerary tombs, this study focuses on Tomb 3 (2800-2600 BCE). It applies taphonomic and bioanthropological analyses to provide an integrated biocultural understanding of funerary, demographic and health profiles, thus enabling a deeper appreciation of the funerary rites practiced during the Chalcolithic.

Although some possible partial anatomical connections were detected during fieldwork, most of the bones were disarticulated, raising several questions about the use of this tomb as a primary or secondary deposition site, or both. Preliminary analysis allowed an estimate of a minimum number of 15 adults and 5 non-adults. The low magnitude of dental wear, along with the absence of degenerative pathologies, suggests that even the adult individuals would be relatively young when deceased. Morphological analysis and sex diagnosis was strongly influenced and limited by the poor preservation of the osteological material.

The human remains in Tomb 3 are poorly preserved, displaying numerous taphonomic alterations, including recent and not recent post-depositional bone fragmentation. Other observed alterations include the presence of significant erosion and concretions in some bones, while others present an almost unaltered cortical surface. This may indicate different taphonomic processes occurring within this structure or that the human remains were originally deposited in different contexts.

Overall, these remains are "more than just bones". Indeed, the study of human remains, even when poorly preserved, is crucial to understand past human populations and their funerary behaviour, especially when combined with other approaches (e.g., archaeological and archaeometric studies).

### A. MICROBIAL BIOEROSION OF BONE: THE USE OF TRAINABLE WEKA SEGMENTATION FOR BSE-SEM IMAGE ASSESSMENT

**Abstract author(s):** Pankowska, Anna - Žižková, Andrea (University of West Bohemia)

**Abstract format:** Poster

Human bones from archaeological context in Moravia were studied to reconstruct their post-mortem histories based on the distribution of their microbial destruction. BSE-SEM was used for visual assessment of bioerosion in total number of 19 bone thin sections. Visual data from histological analysis were transformed to quantitative data through Waikato Environment for Knowledge Analysis (WEKA) in ImageJ software. During the analysis we specified three classes of visible areas (1st class: unaltered bone, 2nd class: altered bone, 3rd class: background, and in some cases 4th class: soil inclusion). Finally, we calculated area of each classifier relative to the total field-of-view (in percent). WEKA was applied three times per sample. The intra-observer error was low; the mean deviation between two measurements was 0.86 (95% CI was -8.887, 7.157). The time spent on each image was depending on the number of original SEM images (from 12 to 60 per sample) and computer properties, about 20 minutes per image on average. The WEKA toolkit was found to be a suitable method for quantity assessment and spatial distribution of the bone microbial destruction.

### B. THE QUESTION OF THE BAD PRESERVATION AND DISAPPEARANCE OF BONES IN THE EARLY MODERN CEMETERY OF SZÉCSÉNY (HUNGARY)

**Abstract author(s):** Líbor, Csilla (Szent István Király Museum) - Balogh Bodor, Tekla - Laczkó, Virág (Hungarian National Museum) - Grynæus, András (Pázmány Péter Catholic University)

**Abstract format:** Poster

Human skeletal remains from archaeological contexts show the most direct picture of the health, well-being, and lifestyles of past populations. In recent years, there has been an increasing amount of literature on how the taphonomic changes enhance the interpretation of funerary practices in the bioarchaeological field.

In general, bones are most affected by the chemical composition of the soil where the bodies were buried. In fact, the pH of the soil has the largest influence on bone preservation. Due to human intervention, the pH level can easily change.

In 2019, we had the opportunity to excavate a late medieval-modern cemetery in Szécsény (Hungary). In the bone material of the nearly 300 graves, in most cases, the entire upper body had dusted off, only the long bones remained from the skeleton. There were a few remains in remarkably good condition, next to the poorly preserved individuals in the cemetery.

Each buried individual laid in a coffin, therefore we assumed that the answer lies in the type of woods of the coffins. Thus, we took samples from the wood of the coffins, and we identified the types. In parallel, the pH level of the soil samples (taken from the graves) was also examined. Finally, we compared the results with the preservation status of the skeletons.

Overall, our results indicate that the dusted bones hold information for the archaeologists that should not be ignored.

102

## CAMPAINING STRATEGIES FOR ARCHAEOLOGY AND CULTURAL HERITAGE - PRINCIPLES, STRATEGIES, AND PRACTICAL EXPERIENCES

**Theme: 1. Archaeologists and Archaeology Here and Now**

**Organisers:** Siegmund, Frank (DGUF - Deutsche Gesellschaft für Ur- und Frühgeschichte; Univ. Münster) - Scherzler, Diane (DGUF - Deutsche Gesellschaft für Ur- und Frühgeschichte) - Wait, Gerry (GWHeritage; ISDAf - Institute for Sustainable Development in Africa) - Bejko, Lorenc (Univ. Tirana)

**Format:** Regular session

Archaeology and the protection of cultural heritage often diverge or even conflict with other, equally legitimate interests of the economy or the society. Decisions have to be made about where funds go, how laws are formulated, who receives political and public support - and who does not. In democratic societies, it is common to create attention for one's own interest with the help of campaigns or petitions; to put pressure on decision-makers; to convince citizens and to organise democratic majorities. Archaeology is often not very successful in this; it usually reacts too late and too little to expected crises. Looking back on such initiatives, typical shortcomings of such campaigns - as well as weaknesses of the archaeological community - can be identified on the basis of failures or partial successes. Recommendations for a more effective approach can be derived from the successes. The session does not want to exclude the presentation of (significant) individual cases, but it does want to look at the topic in a more fundamental way, and to compile existing experiences from all over Europe. It will also not be about lobbying, but will focus on campaigns that have cleverly combined several approaches to convince other stakeholders and successfully take advantage of the different roles within archaeology.

### ABSTRACTS

#### 1 ADVOCACY AND CONSTITUENCIES

**Abstract author(s):** Wait, Gerald (GWHeritage)

**Abstract format:** Oral

Archaeological and cultural heritage organisations, whether they are more academic membership groups (think EAA, SAA, SAFA) or professional associations (e.g. RPA, ClfA) or indeed trade organisations (FAME, ACRA) all choose to devote time and energy to representing what they see as the best interests of their subject matter or their members. Such representation may be more or less overt and may be variously focussed. We often think this means efforts to affect how governments or international organisations by, for example, advocating that politicians enact legislation with specific characteristics that we consider will have the most beneficial effects upon our chosen fields such as archaeological heritage management. For some years a loose network of members of various archaeological and cultural heritage organisations have undertaken advocacy aimed at some of the international organisations that are funders of extremely large projects with considerable archaeological impacts. Experience suggests clarity of authorship, membership - who the constituency represented is, and desired outcomes are important.

#### 2 EXPERIENCES AND LESSONS FROM A COMPLEX, SUCCESSFUL CAMPAIGN IN GERMANY FOR ARCHEOLOGY AND THE PRESERVATION OF HISTORICAL MONUMENTS

**Abstract author(s):** Scherzler, Diane - Siegmund, Frank (DGUF)

**Abstract format:** Oral

In the spring of 2013, the government of the German State North Rhine-Westphalia (NRW) surprisingly announced drastic cuts in federal state funding: The previous state subsidies for archaeology and the preservation of historical monuments were to be reduced to zero in three annual steps. A DGUF campaign was based on three approaches:



1. A petition spoke out against these cuts. It met with broad public support and was signed by 27.000 citizens from all over the world. 2. We committed ourselves and gave advice to an elaborate new version of the Heritage Protection Act, especially with regard to the polluter pays principle, in order to use public resources sparingly. 3. In the medium term, we planned election benchmarks for the next state election (in 2017). As a result of the approaches 1 and 2, the funds for archaeology in NRW were gradually increased again and brought to the level of 2012. The Heritage Protection Act particularly introduced a treasure trove regulation and the principle of developer funding. But the boost this gave to archaeology in the federal state has until today only limited effect, because the implementation regulations for law do not exhaust its potential. Approach 3 reminded political parties in 2017 to reflect on their medium-term weighting of archaeology. In the budget of 2018 the funds for archaeology in NRW were even around EUR 0.5 million higher than in 2012. To date, our petition is the largest that has ever existed in German monument preservation. The campaign is the only one that was able to achieve a clear, positive result of this scale for archaeology and the preservation of historical monuments in Germany. Based on this case study, the paper discusses about the main procedures and the requirements for the protagonists.

### 3 "ELECTION BENCHMARKS": A TOOL TO BRING ARCHAEOLOGY CLOSER TO POLITICIANS AND VOTERS

**Abstract author(s):** Siegmund, Frank (Univ. Münster, Germany; DGUF) - Scherzler, Diane (DGUF)

**Abstract format:** Oral

Election benchmarks" are a special tool in the context of political elections to promote and debate archaeological issues. The DGUF – serving as the NGO for archaeology in Germany – was already using this tool for the seventh time since 2009 in the run-up to an election this May. What are such benchmarks, how does such a process work? In the run-up to an election, the DGUF formulates questions on archaeologically relevant topics. It sends these questions to the political parties standing for election and asks them to answer the DGUF and the electorate on how they would decide and act on these issues in the coming legislative period in case the party wins the election, for example in legislation or in the funding of archaeology. The DGUF then collects the parties' responses and makes them known to voters in the run-up to the election, so that voters who care about archaeology have another basis on which to make their decisions. The DGUF also contextualizes the answers for the electorate. Since at least one of the addressed parties will be later on in government, there is an opportunity to check a few years later to what extent election promises were kept. DGUF's strategic approach and modus operandi were adapted by the EAA Political Strategies Committee ahead of the European Parliament Elections in May 2019. Unlike other forms of campaigning, such as petitions, election benchmarks work slowly. But election campaigns are times when politicians reach out and listen to citizens more than usual. Therefore, election benchmarks are a good tool to make politicians (and voters) aware of issues and to establish them in the long term. The paper will explain the process and discusses the challenges and needs for other archaeological bodies who might be interested in this form of campaigning.

### 4 #SAVESHEFFIELDARCHAEOLOGY: CAMPAIGNING AS SOLIDARITY

**Abstract author(s):** Albarella, Umberto (Dept of Archaeology, University of Sheffield)

**Abstract format:** Oral

On 19th May 2021, the Executive Board of the University of Sheffield, announced its intention of closing its internationally renowned Department of Archaeology. In the five days between then and the time when this decision was formalised, a massive campaign to save the department was launched. The international community responded robustly and c.1,500 letters of complaint were sent to the University Vice-Chancellor, while an online petition to support the department attracted more than 48,000 signatures. Several rallies were organized, local and national media followed the story with interest and concern, and the Union, as well as the major political parties in Sheffield, unambiguously sided with our campaign. The social media conversation was on fire. To date, the campaign continues and, though the University Executive has mitigated its hostility, the determination of closing the Department remains in place. It will be argued in this paper that the campaign was - and is - worth fighting regardless of its outcome. The feeling of solidarity and outrage that has been generated represents a valuable asset for the international community of archaeologists and beyond. Archaeologists have demonstrated that they can mobilise when they want, and they will not remain indifferent to further acts of cultural vandalism.

### 5 THE POWER OF ATTENTION: CAMPAIGNING ARCHAEOLOGY IN SOCIAL MEDIA

**Abstract author(s):** Agolli, Esmeralda (University of Tirana)

**Abstract format:** Oral

Attention has never been anymore measured, qualifying and crucial as it is nowadays. Constantly in the social media expressions like views, likes, loves, sadness, comments, shares, or even subscribes define in various the ways how perceptions are created, followed and cherished. Beyond any skepticism or even strong views expressed against, the virtual social media has succeeded in an irreversible way to revolutionize, communication, socializing, expectations

and connectivity. This innovative setting however not always translates into joyful and promising ground in which posts, appearances, reporting and publication secure attention and by default success. Archaeology is increasingly developing in an interdisciplinary focus and especially in the last few decades has produced rather captivating scientific results for the understanding of the many dimensions of human behavior. Indeed, in the social media with simple research engines is easy to notice the presence of posts or pages with archaeological content. However, the discipline struggles to convey such promising message outside its narrow network and community. Not to mention the growing pressure that academic institutions encounter against systematic long-term research, education and professional training. Culture heritage even so very intimately associated with the archaeological exploration, has managed much easily to maintain a growing interest and attention from decision-makers, public and professionals. In this presentation, I seek to analyze to what extent the visibility of archaeology and culture heritage in social media contribute to create perceptions about them. Where is the attention going and how does it reach to the general public? How are problems addressed in social media and do they influence the policies and interest of the stakeholders?

## 6 THE WEIGHT OF PROFESSIONAL WEAKNESS AND THE DREAM TO REACH SOMEONE BEYOND THE "CULTURAL TRIBE"

**Abstract author(s): Almansa-Sanchez, Jaime (Incipit, CSIC)**

**Abstract format: Oral**

Historically, fortunately improving nowadays, academic archaeological practice has been disengaged from society. Focusing only on the(ir) past, with very limited outreach activities, it overlooked public interest, opening the door to alternative views that fed the public. These views ranged from nationalistic discourses to ancient astronauts in a variety of attractive narratives empowered by the "archaeoappeal" transmitted in popular culture and big heritage sites.

The development of big new infrastructures from the mid 20th Century changed the working model and shaped a new profession aside from Academia, led by daily work and with little collective cohesion, which resulted in a weak professional body in most of the world. The surge of new media amplified all discourses, especially with the irruption of social media, but academia and the wider profession were quite late to it.

The structural weakness of the profession is still grave in most places, making it difficult to confront efficiently the many menaces that archaeology and archaeological heritage face in a daily basis. Campaigning is essential to advance towards success, but what are our chances?

Archaeology lacks a real impact in (the perception of) society. If nobody dies and no major site is destroyed, people will apparently not mobilize. Far from true, the satisfaction with daily outreach (death by success), the weak existing networks (inside and outside archaeology), as well as the limited resources to hand, are to consider when the three main bodies confronted are: big media, big development companies and governments.

Throughout some experiences of success, but mainly failure, over the last fifteen years in Spain, this paper aims to discuss the need to overcome our structural burdens and embrace larger networks of activism to advance towards more successful campaigns that can impact positively in archaeology and archaeological heritage.

## 7 COUNCIL OF EUROPE CONVENTIONS – CAMPAIGNING FOR CIVIL SOCIETY WITH THE CONFERENCE OF INGOS

**Abstract author(s): Hueglin, Sophie (University of Tuebingen) - Ermischer, Gerhard (Council of Europe, Conference of International NGOs)**

**Abstract format: Oral**

Archaeologists know Council of Europe (CoE) Conventions by their place-related nicknames: Valetta, Faro or Florence. Similarly, organizations from nature protection, education or human rights have their own canon of CoE Conventions they relate to in their engagement. These conventions are ready to be used because so many countries have signed them. All it needs are administrations and organizations insisting on their implementation in national law and practical politics.

The Florence or Landscape convention is important because it can solve conflicts of aims in the current climate crisis. In the European Green Deal, politicians see the importance of speeding up planning processes in order to increase the percentage of CO2-neutral energy. On the other hand, groups from culture and nature protection are anxious to lose essential heritage and environmental assets to sun collectors and wind turbines. The Landscape Convention was made to mediate conflicting interests and create legal certainty.

Unfortunately, Germany and Austria have not signed the Landscape Convention yet. There is a chance the new government in Berlin will reconsider if enough awareness is created for this deficit. The Conference of INGOs Thematic Committee on Environment, Climate Change, Heritage & Health has started campaigning with an appeal to experts across institutions and organizations. While there is a lot of support already, there are also many hurdles when trying to unite organizations from culture and nature.

For civil society, the conventions are important because they focus on citizen participation. This has increased with time: recent conventions emphasize participation more than older ones. Also, they are complementary and can be used as a toolbox in different contexts. As the conventions are legal instruments and administered by different ministries/branches of administration it is up to civil society to pick them up to use them efficiently and in combination.

## 8 FROM ARCHAEOLOGICAL EDUCATION TO PROTECTION OF CH SITES: CAMPAIGNING ON ARCHAEOLOGY AND CH IN A RAPIDLY CHANGING SOCIAL CONTEXT

**Abstract author(s):** Bejko, Lorenc - Pojani, Iris (University of Tirana)

**Abstract format:** Oral

This paper discusses several case studies of campaigning for archaeological and cultural heritage issues in Albania during the last two decades. The topics of the campaigns range from the need for formal higher education in the country, to specific threats of heritage sites from development projects, or confronting the dramatic increase in looting of sites and illicit trafficking of cultural property. The analysis of the case studies aim at identifying the strengths and weaknesses of the respective campaigns, successful strategies for conveying the message and failures to reach the target objectives. This analysis will serve as a reflection on the learning curve of the local archaeological community towards improvement of its engagement with the general public and the representatives of different levels. It also shows the progressive increase of the discipline's relevance in a society that is continuously changing its structure, consciousness, and the vision of its own future. The paper tries to identify the special place that the public perception of the past has in the success or failure of the campaigns, as well as its important role in building campaign strategies.

## 9 DIGITAL APPROACHES TO THE PROMOTION OF ARCHAEOLOGICAL LANDSCAPES IN THE DANUBE REGION - EXPERIENCES FROM THE DAEL-PROJECT

**Abstract author(s):** Fera, Martin (University of Vienna, Department of Prehistoric and Historical Archaeology) - Mele, Marko (Universalmuseum Joanneum) - Jancsary, Nika - Doneus, Michael (University of Vienna, Department of Prehistoric and Historical Archaeology) - Črešnar, Matija (Department of Archaeology, University of Ljubljana) - Dolinar, Nejc (Institute for the Protection of Cultural Heritage of Slovenia) - Kiszter, Sarah (Universalmuseum Joanneum) - Scoppie, Sarah (State Office for Cultural Heritage Baden-Wuerttemberg) - Balen, Jacqueline (Archaeological Museum in Zagreb)

**Abstract format:** Oral

In July 2020 the project Virtual archaeological landscapes of the Danube region (Danube's Archaeological eLandscapes), co-financed by the Interreg Danube Transnational programme, started and involved partners from 10 countries of the Danube region. The project's major goal is to regionally, nationally and internationally increase the visibility of the cultural heritage, and in particular the archaeological landscapes of the Danube region, making them more attractive for an integration into the region's tourism offers. In order to achieve this goal, new technologies are employed throughout the project.

Within the framework of the project, a strategy has been adopted by the partners, developed by a group of experts amongst them. The strategy approaches the topic of archaeological heritage from an archaeological, social and a technological standpoint. By using SWOT (Strengths, Weaknesses, Opportunities, and Threats) analyses conducted by the working groups, major challenges in the sector were defined, leading to two main strategy units. The first unit focuses on working processes from the archaeological discovery to a virtual visualisation, and the second on the potential of archaeological heritage in the digital world. To support the further adaptation and development of new technologies for the archaeological sector, the strategy concludes with 12 recommendations for heritage stakeholders. Priority lists are adopted for the implementation of the recommendations at national level for each participating country.

---

## 108 THE TIMES ARE A CHANGING - SOCIO-CULTURAL AND ECOLOGICAL CHANGE DURING THE ATLANTIC BIOZONE AND THEIR IMPACT ON HUMAN LIFE [PAM]

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Posch, Caroline (Natural History Museum Vienna) - Groß, Daniel (Museum Lolland-Falster)

**Format:** Regular session

The Atlantic is a period of severe environmental and social changes in Europe. Against the background of the Holocene thermal maximum, widespread forests were dominating the landscapes, reaching heights, where glaciers and alpine grasslands formerly dominated, whereas at the coasts the global sea-level was rising, inundating increasingly large areas. Within these constantly alternating and challenging landscapes, human impact became increasingly profound, as has been shown by the archaeological and paleo-environmental record of the last decades. They show different modes of adaptation and problem solving strategies in the various different climate zones of Europe, with some of these strategies reaching over the shift from a foraging to a producing way of life.

In this session we want to address the archaeological evidence for the Atlantic biozone from ca. 7,000 to 3,700 cal. BC and cast light on different aspects of socio-cultural change, adaptation, and impact. We aim at discussing processes that have started in the Mesolithic and reached over to the Neolithic but similarly “dead-ends” of cultural development. In particular, we would like to address the way humans in the period have utilised their landscapes and available resources and discuss to which extent and level they have caused alterations in natural systems.

We invite researchers from different disciplines to present studies and discuss human-environment interactions during the Atlantic from a diachronic perspective. A wide range of topics will be accepted and may cover, material culture studies, palaeoenvironmental developments, theoretical endeavours, as well as demographic analysis. We do, however, ask for the submitted papers to explicitly address the given chronological frame as completely as possible and refrain from addressing only Mesolithic or Neolithic case studies. To address human reactions in different ecosystems, no regional limitations are given.

## ABSTRACTS

### 1 FROM TRAVELLING LONG DISTANCES TO BUILDING STRONGER FISH FENCES. CHANGES IN COMMUNICATION THE WESTERN BALTIC AREA

**Abstract author(s):** Groß, Daniel - Söderlind, Sandra (Museum Lolland-Falster)

**Abstract format:** Oral

In this contribution, we present selected case studies that inform us about the changes in communication in the western Baltic area during the Atlantic biozone. Recent studies on lithic technology and social learning within northern Europe have indicated that the handle core pressure concept (HCPC) was invented within southern Scandinavia and that knowledge and know-how diffused rapidly to adjacent areas soon after, at the same time as various large-scale environmental and landscape-related changes occurred in northern Europe.

The spread of knowledge and know-how related to this technological concept also seem to have followed similar, but not identical, communication networks as some previous technological diffusion processes. These, however, apparently had a more limited extent. Consequently, social networks in northern Europe may have changed in regional scale throughout the Mesolithic period. Possibly, these patterns were partly affected by rising sea levels and consequential changes of the landscape, specifically relating to the fragmentation of the western Baltic area (during the creation of the Danish isles) into a more segmented “islandscape”. To round off our presentation, we want to hypothesize, based on the results from the presented case studies, to which extend socio-cultural aspects and environmental conditions are relevant for the spatial interaction spheres of human groups and their archaeological traceability.

### 2 (IN)VISIBLE INTERACTIONS BETWEEN HUMANS AND WILD BOAR DURING THE MESOLITHIC-NEOLITHIC TRANSITION

**Abstract author(s):** Brusgaard, Nathalie (University of Groningen)

**Abstract format:** Oral

The Atlantic period in northwest Europe witnessed the transition from foraging to farming. Throughout this time of pivotal changes, wild boar (*Sus scrofa*) are a constant presence at sites in the Dutch wetlands. Their remains indicate continued hunting of wild boar populations from the earliest evidence in this area (ca. 5500 BC) to the latest (3500 BC). Yet, simultaneously, this species is entangled in the fundamental shift towards animal husbandry, either through their local domestication by foraging-early farming communities and/or their coexistence with their cousin of Near Eastern descent, the domestic pig. While various studies have endeavoured to uncover the domestication process, the nature of the human-wild boar relationship throughout this period remains elusive. This paper offers a diachronic perspective on the role of the wild boar in the Atlantic period in the Dutch wetlands. It presents new zooarchaeological and stable isotopic evidence on wild boar hunting and palaeoecology at Swifterbant Culture sites. Based on this evidence, this paper discusses the visible interactions between humans and wild boar, and contemplates the invisible interactions that may have made up the ecosystem of relationships that humans and wild boar were part of in this period of change.

### 3 TRADITION OBLIGATES. OCCUPATION, ADAPTIVE PROCESSES AND THE PERSISTENCE OF HUNTER-GATHERER COMMUNITIES IN THE NORTHERN ALPS DURING THE ATLANTIC BIOZONE

**Abstract author(s):** Posch, Caroline (Department of Archaeologies, University of Innsbruck; Naturhistorisches Museum Wien)

**Abstract format:** Oral

The period of the Atlantic climatic optimum introduced profound changes in the ecosystems of the Alpine environment. The compositions of the woods changed from the mixed deciduous forests of the Boreal to the ever-thickening

fir and spruce woods. Furthermore, the inner alpine forest line reached an unprecedented maximum, with heights at the main alpine divide around 2,300 m asl.

However, although several studies have been published concerning human life and adaptation to the changing conditions during the Atlantic Biozone in the Western Alps and the southern half of the Eastern Alps, a comparative study of the northern half of the Eastern Alps is as yet lacking.

This is unfortunate insofar, as the number of archaeological sites dating to the Atlantic increases profoundly, indicating a peak in occupational activities during the first half of this period. Furthermore, several of these sites seem to be stretching over the proposed Mesolithic/Neolithic divide of the region around 5,500 calBCE, whereas the available pollen records do not suggest any anthropogenic impact into the northern alpine landscapes well into the second half of the 5th millennium BCE.

This paper proposes a first introduction into the northern Alpine region during the Atlantic period, introducing its main sites, adaptive processes, and problems, as well as a discussion of a possible persistence of a Mesolithic way of life in a time, when the Neolithic was already in full force to the south and north of the Alps.

#### **4 POPULATION AND NUTRITION IN ATLANTIC SOUTHERN BAVARIA AND NORTHERN TYROL**

**Abstract author(s):** Pechtl, Joachim (Institute of Archaeology University of Innsbruck)

**Abstract format:** Oral

After a period of massive climatic and ecological change, most ecosystems in southern Bavaria and northern Tyrol settled into a relatively stable state during the Atlantic period. In sharp contrast, continued socio-cultural changes led to a profound transformation of people's living conditions. Two interrelated key elements of this systemic change were population size and nutrition.

The development of population size can be plausibly estimated during the 7th and 6th millennium BC. Therefore, especially for the time period of primary Neolithisation, an enormous increase in population can be demonstrated. For the more recent periods, on the other hand, only rough estimates are currently possible.

Increasingly detailed information is available both for the type and quality of the diet and for the strategies of food production. The reconstruction of the development of nutrition during the Atlantic period is based on a survey of currently available archaeological, archaeometric and biological data. In some aspects, this also provides indications of anthropogenic environmental change.

#### **5 TESTING HYPOTHESES OF SOCIO-ENVIRONMENTAL CONNECTIVITY IN FOSTERING DEMOGRAPHIC DYNAMICS ACROSS LATE NEOLITHIC AND BRONZE AGE EUROPE**

**Abstract author(s):** Großmann, Ralph (Kiel University; Cluster of Excellence ROOTS)

**Abstract format:** Oral

It is evident that environmental hazards recurred throughout the Holocene. Episodes of heightened socio-environmental stress combined with resource narrows have probably fostered demographic busts and possibly triggering migrations. Here we test hypotheses of socio-environmental dynamics from a European perspective and presents the results regarding the impact of climate and environmental hazards to past societies. In concrete, this project aiming to calculate demography based on <sup>14</sup>C summed probability distributions on three Central European regions and to compare the different demography developments.

The project focuses on the time period between 3500 and 1500 B.C.E. In focus are several regions with high diachronic agglomerations of archaeological records and radiocarbon dates (Central Germany, Alpine foothill, and Czech Republic). In comparing these regions, enable to identify Late Neolithic to Bronze Age demography dynamics, which were probably accompanied by migration processes between those regions. Additionally, these results are correlated with regional climatic data to evaluate the impact of environmental hazards and especially of the 4.2 kyr climate event.

---

#### **109 ANIMAL AND PLANT MANAGEMENT IN PREHISTORIC HUNTER-FISHER-GATHERER COMMUNITIES [PAM]**

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Mjaerum, Axel (Museum of Cultural History, University of Oslo) - Boethius, Adam (Department of Archaeology and Ancient History, Lund University) - Groß, Daniel (Museum Lolland-Falster) - Živaljević, Ivana (BioSense Institute, University of Novi Sad) - Mansrud, Anja (Museum of Archaeology, University of Stavanger)

**Format:** Regular session

The aim of this session is to challenge the conceptual dichotomy between the "Mesolithic" and "Neolithic", by focusing on animal and plant management in prehistoric hunter-fisher-gatherer communities. The shift from foraging to farming and animal husbandry is often narrated as a turning point where humanity's relationship with the environ-

ment was profoundly altered. Resource management is fundamental to concept of the Neolithic and further linked to aspects such as storage, surplus accumulation, and social complexity. Recent findings however show that human involvement with the environment was biologically, socially and economically complex long before the transition to agriculture. Multiple archaeological records point towards the existence of various resource management practices among hunter-fisher-gatherers long before, and independent of, the Neolithization process. Rather than being just "ecologically adapted" Mesolithic foragers actively engaged with, intervened, transformed, and cultivated the flora and fauna in their local landscapes. Examples include introducing novel plants to their environments, transferring fish fry between rivers and lakes, altering habitats attract grazing animals by burning and weeding, and constructing permanent trapping systems for various fish species and deer species. We invite papers addressing this topic independent of geographical scope and spatial scale. Contributions may focus on specific methods, models, case studies or theoretical frameworks such as niche construction theory and multispecies archaeology.

## ABSTRACTS

### 1 DEVELOPMENTS IN THE CONCEPT OF RESOURCE MANAGEMENT IN THE ARCHAEOLOGY OF SOUTHERN NORWAY

**Abstract author(s):** Mjaerum, Axel (Museum of Cultural History, University of Oslo)

**Abstract format:** Oral

Archaeologists at the beginning of the 20th century considered the Mesolithic period in the southern part of Norway as "raw"; originating in the most primitive of all civilizations. Based in new empirical and theoretical perspectives, this view has been modified and challenged during later research. Considering the comprehensive archaeological record, it is now commonly argued for the existence of semi-sedimentary complex hunter-fisher-gatherer societies as far back as the Middle Mesolithic (c. 8000 BCE). It is also believed that the Mesolithic inhabitants of Southern Norway were, to some extent, capable and willing to control and regulate their ambient ecosystems.

The changing perspectives on past resource management capture the quintessence of archaeologists' views on Mesolithic societies and how they look at the dichotomy between the "Mesolithic" and the "Neolithic". This paper presents an overview of the last 150 years of research on foragers' ability to actively intervene, transform, and cultivate flora and fauna in Southern Norway, and recapitulates overall trends in the perspectives on the early past. Besides offering this general review of existing data on the topic of resource management, this paper will present a summary of previous positions and arguments concerning early management of nature and place them in the proper research context. Finally, these previous studies will be used to point out questions for further research.

### 2 MESOLITHIC AND EARLY NEOLITHIC OF SOUTHWESTERN ROMANIA. A VIEW FROM ARCHAEOZOOLOGY

**Abstract author(s):** Balasescu, Adrian - Boroneant, Adina ("Vasile Parvan" Institute of Archaeology, Bucharest) - Bonsall, Clive (University of Edinburgh) - Radu, Valentin (Research Institute of the University of Bucharest, Division of ArchaeoSciences, University of Bucharest)

**Abstract format:** Oral

The Mesolithic and Early Neolithic sites in southwestern Romania were investigated over 50 years ago by field surveys and excavations carried out on the occasion of the construction of the Iron Gates I -II dams and hydro-power stations. For several Mesolithic and Early Neolithic sites (Icoana, Cuina Turcului and Ostrovul Corbului) faunal studies were undertaken soon after the excavation. Given the new archaeozoological methodologies these faunal collections have been re-visited recently, alongside previously unstudied collections (Cuina Turcului, Schela Cladovei, Răzvrata and Ostrovul Banului). New approaches such as slaughtering curves, ageing and sexing, biometry, cut marks, butchery patterns and palaeogenetics were employed aiming to obtain a more accurate image of the Mesolithic and Early Neolithic period in the area.

This has resulted in a new interpretation of the local fauna and the Mesolithic and Early Neolithic activities. All the faunal remains represent food waste, with high fragmentation ratios. The list of taxa identified includes molluscs, fish, reptiles, birds and mammals. Dog (*Canis familiaris*) is the only domestic mammal present at the Romanian Mesolithic sites. Cut marks on certain bones at Icoana show that dog was occasionally part of the food supply, a fact also observed at Lepenski Vir, Vlasac and Padina in Serbia during the Mesolithic period. Fishing is another economic activity discussed here.

During the Early Neolithic period, the appearance of new domestic animals with origins in the Middle East (cattle, ovicaprids and pig) is observed. Hunting still plays an important role and at the dawn of the Early Neolithic in the area, so does fishing.

This work was supported by a grant from the Ministry of Research, Innovation and Digitization, CNCS/CCCDI – UEFIS-CDI, project number PN-III-P4-ID- PCE-2020-2369, within PNCDI III.

### 3 RESOURCE MANAGEMENT AND EXPLOITATION AT THE EARLY HOLOCENE COASTAL SITE OF HUSEBY KLEV, SWEDEN

**Abstract author(s):** Boethius, Adam (Lund University) - Robson, Harry (University of York)

**Abstract format:** Oral

Resource management in foraging contexts is notoriously difficult to trace. While some form of "harvesting" behaviour can be related to mass catches of temporally limited resources, e.g. fish and migrating birds etc., and mass capture equipment, many forms of mammalian resource management goes unnoticed in archaeological investigations. In an attempt to study how and from where different mammal species were exploited, we applied laser ablation technology to analyse the  $87\text{Sr}/86\text{Sr}$ -ratio of 28 different mammal teeth from the Early Holocene site of Huseby Klev on the west coast of Sweden. The mammal ablation data and individual mobility patterns from each investigated animal were related to the bioavailable strontium ratios in the landscape surrounding the site to establish where the different species resided and were presumably hunted. This information was further related to the zooarchaeological record from the three different occupational contexts at the site to enable discussion of how humans exploited various animals in the landscape surrounding a Mesolithic coastal settlement. Our results suggest that it is possible to study the extent of land required to sustain the human population at the settlement. Our study advances our knowledge of how the landscape surrounding the site was managed to allow long-term occupation in the area and how the "territories" used might have affected neighbouring groups of people.

### 4 TAKE ME TO THE LAKE: THE UTILISATION OF LACUSTRINE RESOURCES AT THE NEOLITHIC WETLAND SITE OF JÄRVENSUO 1, SOUTH-WEST FINLAND

**Abstract author(s):** Koivisto, Satu - Lempiäinen-Avci, Mia (University of Turku) - Mannermaa, Kristiina (University of Helsinki)

**Abstract format:** Oral

Lakes have constituted important environments for human habitation and their abundant resources have been utilised intensively over the long term. In north-east Europe, certain similarities may be discerned in the setting and long-term use of Neolithic settlements located by the shores of shallow and small lakes with fluctuating water levels. One example of such sites is Järvensuo 1, located by the shore of the overgrown and drained Lake Rautajärvi in south-west Finland. The water-level fluctuation and sedimentation have resulted in formation processes that have aided the preservation of rare organic archaeological and palaeoenvironmental remains from the Neolithic (c. 4000–2000 calBCE). The assemblage points to various daily-life activities practised in the shore zone, such as fishing (with nets and stationary wooden structures), gathering of plants, and dumping of waste, yet with a possible ritual element related to the use of the lakeshore. The Järvensuo populations based their economy to seasonally abundant freshwater resources, especially fish and nutrient-rich plants (hazel and water chestnuts in particular), yet with suggested cereal cultivation as an addition to the diet during the Late Neolithic settlement phase. Eurasian elk, beaver and various waterfowl had also economic importance. Need to intensively use various lacustrine and surrounding woodland resources was an important factor in determining the location of settlement, food- and raw material-getting strategies and social organisation of labour. The scales of inundation and the drying up of the littoral zone have varied through time and people have adapted to the changing environmental conditions. The active and long-term use of similar lake environments may be linked to the economic shift towards more intensive utilisation of freshwater resources in large geographic area in north-east Europe, beginning in the mid-5th millennium BCE and continuing to the Early Metal Age and Bronze Age.

### 5 PLANNING FOR THE HUNT

**Abstract author(s):** Bergstol, Jostein - Friis, Ellen Kathrine - Post-Melbye, Julian (Museum of Cultural History, University of Oslo)

**Abstract format:** Oral

In this paper, we will look at hunting for large ungulates (reindeer and elk/moose) in the Mesolithic in the inland of Southern Norway and discuss evidence for resource management. Did the hunter just go into the woods and mountains looking for big game, or did they invest in the landscape for future visits and expeditions?

The large-scale migrations of reindeer may have consisted of thousands of animals, while the elk migrate in much smaller numbers. These migrations follow very constant routes, often determined by geographical barriers, such as large lakes and steep mountainsides. Hunters could therefore return to, and invest in, these places with a high expectation of meat-rich yields. We will discuss the location of the traps and hunting sites in connections with the animals' migration routes and migration behavior. During the centuries after 7000 BCE, there is an increased use of the inland in southern Norway, and excavations have shown that strategically placed locations have been used repeatedly.

We will look at hunting traps and archaeological material from hunting sites connected to the hunt of the seasonal migration routes for ungulates. There are evidence of release of fish (trout) into watercourses where they could not

possibly migrate unaided. We will also discuss paleobotanic evidence of forest fires in areas with high density of inland settlements in the Mesolithic.

## 6 WHAT WE CAN LEARN FROM EACH OTHER: THE HYPOTHESIS OF THE SUBSISTENCE STRATEGY FROM MESOLITHIC TO NEOLITHIC IN MORAVIA

**Abstract author(s):** Cerevková, Alžbeta (Moravian Museum) - Malíšková, Johana (Institute of Archaeology, Czech Academy of Science, Brno)

**Abstract format:** Oral

One of the tasks of archaeology as a science is to examine the facts of the past in order to try to enlighten the present world. We can apply the same principle to past communities and their mutual relations. When studying the subsistence strategies of the first Moravian farmers, we can thus use as one of the starting points also information about the nature of the previous subsistence, ie Mesolithic. Unfortunately, Moravia does not belong to the territories with a very developed state of research about the Mesolithic period. In order not to draw hasty conclusions based on a small amount of information, we will use the available data primarily to implement a hypothetical model of settlement development and subsistence at the turn of the Mesolithic and Neolithic in the focused area of Moravia. We will continue to work with this model in the future to verify the outlined hypotheses. The basis for our research has become mainly published and new absolute data, which we compare with relative chronology. We create the model using GIS to place our survey and findings in a narrower and broader geographical context.

## 7 WE HAVE ALWAYS DONE IT LIKE THIS! FORAGING SUBSISTENCE MODELS IN EARLY NEOLITHIC COASTAL DENMARK AND RESULTING IMPLICATIONS

**Abstract author(s):** Groß, Daniel (Museum Lolland-Falster)

**Abstract format:** Oral

In this contribution, I will present different examples for fishing subsistence models in coastal Denmark around 4000 cal. BC. Based on the extensive archaeological work in the context of the Femern-Belt-tunnel constructions, several examples will be shown that highlight how the acquisition of wild resources – fish in this context – has played a relevant role during the final Mesolithic and Early Neolithic. I aim to discuss the chronological setting of the excavated fishing equipment, for instance leisters, fish-fences, and fish-traps, and contextualize them with bone assemblages from settlements in the area. This will highlight that the timeframe under consideration rather reflects a transitional period during which several external influences were integrated into the cultural contexts, while several older traditions remained part of the daily routines. Consequently, I will address the relevance of integrating more integrative approaches and perspectives for creating chrono-cultural narratives. As a part of this, I advocate for reflecting our use of a priori-taxonomic concepts that implicitly come with explanatory models.

## 8 POSSIBLE WILD BOAR MANAGEMENT DURING THE LATE MESOLITHIC. A MULTI-ISOTOPE INVESTIGATION OF WILD BOAR FROM DENMARK

**Abstract author(s):** Maring, Rikke (Aarhus University; Museum Østjylland) - Riede, Felix - Mannino, Marcello (Aarhus University)

**Abstract format:** Oral

Based on carbon and nitrogen isotope analysis on samples of wild boar (*Sus scrofa*) from the Late Mesolithic shell-midden Fannerup F in Denmark, a previous study (Maring & Riede 2019) argued for the possible management of wild boar by local Ertebølle groups. Indicated by a dietary intake of substantial amounts of marine food, some wild boars were most likely foraging on and around the Fannerup F shell-midden. The isotope ratios of the wild boar are almost indistinguishable from that of contemporaneous humans and dogs, substantiating such a relation since neither wild boars nor dogs are known to actively procure marine foods. The omnivorous behaviour of wild boar allows them to exploit human food waste, which in turn may have facilitated more direct contact between the two species, eventually resulting in a form of soft management. Building on previous work, this paper presents a new multi-isotope investigation of wild boar feeding on marine protein to explore similarities and differences to the diet of Ertebølle hunter-gatherer-fishers, and to so achieve a better understanding of precisely how similar their diets were. Ultimately, this study seeks to evaluate if the wild boars were consciously provisioned and hence managed by Late Mesolithic humans or if the refuse-rich shell-middens simply served as a synanthropic feeding ground for some intrepid *Sus* leading to a form of commensalism; either constellation offers clues to local processes of domestication among Late Mesolithic hunter-gatherer-fishers.

Maring & Riede (2019). Possible Wild Boar Management during the Ertebølle Period. A Carbon and Nitrogen Isotope Analysis of Mesolithic Wild Boar from Fannerup F, Denmark, *Environmental Archaeology*, 24:1, 15-27, DOI: 10.1080/14614103.2018.1516328.



## DAIRY WITHOUT DOMESTICATES

**Abstract author(s):** Kim, Alexander (Department of Anthropology, Archaeology Program, Harvard University; Department of Genetics, Harvard Medical School)

**Abstract format:** Oral

I articulate ethnohistorical and anthropological data from North America, Eurasia, and Africa to highlight an under-appreciated possibility in the prehistoric exploitation of animal milk: dairy without domesticates. The consumption of the stomach contents of mammalian prey, including nursing young, and the processing of udders are two recurrently documented routes of access to milk that are known to and even especially sought out by terrestrially hunting forager groups — without necessity for adult lactase persistence or stimulus from milking food-producers. I suggest that this acquaintance with wild (and, when extracted from digestive tracts, already quasi-"secondary") milk products is a conceptual and behavioral viaduct between non-milking and milking lifeways, recasting vast spans of time and subsistence as potential bearers of the prelude or predaceous alternative realizations of dairying. I close with a prospective consideration of these practices' archaeological visibility and a call to probe for them worldwide through new analyses of ancient biomolecules and less narrowly culture-bound outlooks on milk in prehistory.

## PREHISTORIC INTER-SOCIETAL DYNAMICS ALONG THE ATLANTIC FAÇADE II. NEOLITHIC TO THE IRON AGE

**Theme:** 2. [Re]integration

**Organisers:** Carrero-Pazos, Miguel (UCL Institute of Archaeology; University of Oviedo) - Higginbottom, Gail (Incipit, CSIC)

**Format:** Regular session

Following on from last year's dynamic session discussions, we are back to discuss the social interactions and activities that occurred along the Atlantic Façade from the Neolithic to the Iron Age. We also intend to continue this as working group and will explain this at the meeting.

We see this session helping to uncover the ongoing enigmas of cultural encounters, transitions and even (re)integration along the Façade through different times and places, which can include environmental signatures as either cause or effect. We see the location of the Atlantic regions as an anchor for long-distance connections and as a vector for developing strong social identities, which included the circulation of ideas, innovations and people that started in prehistory. Whilst certain groups applied idiosyncratic changes through a variety of material culture and behavioural forms to express social and political identity, people along the Atlantic repeatedly shared cultural phenomena for more than several millennia, as communities became sedentary.

As for last year, presentations can be regional or local case-studies related to maritime and terrestrial movement, social networks, environmental connections (place, landscape, territory), ritual experiences, cultural practices, material creations and so forth. Specifically, we would like to see papers coming from a variety of backgrounds that contribute towards a greater understanding of this region of Western and Northwestern Europe. These include: excavation results to computer modelling and archaeogenetic approaches to landscape archaeology, especially interdisciplinary.

We invite presenters with future projects or ideas as well as those already begun or completed. Together these studies will enable this session to foster future investigations and relationships with emerging research synergies between contributors and participants. With such things in mind, we will look to publishing this session (in combination with last year's) and coordinating a yearly session connected within this dynamic geographical region.

## ABSTRACTS

## FROM BIG STONES TO A BIGGER PICTURE: THE DEVELOPMENT OF THE MEGALITHIC PHENOMENON IN NORTHWESTERN EUROPE

**Abstract author(s):** Brinkmann, Johanna (Institut fuer Ur- und Fruehgeschichte Kiel)

**Abstract format:** Oral

The megalithic tradition is one of the most iconic features of the Neolithic along the Atlantic Façade. Not only restricted to burial architecture, these monuments have been built in Britain and Ireland during the 4th and 3rd millennium BCE. Similar but less elaborated megaliths are known for example from Southern Scandinavia across the North Sea. The role of these monuments in the Neolithic transition has been discussed in these two regions which lie at the fringe of a continent which had already adopted the Neolithic way of life for over a millennium before this new practice first appeared in the Northwest at the beginning of the 4th millennium BCE. Using a synergetic approach, the development of the megalithic monuments and related material culture in Britain, Ireland and Scandinavia is described in terms of architectural development and burial rites. An increased use of absolute dating methods enables a large-

scale examination of the phenomenon in time and space that goes far beyond the question of diffusion or acculturation. This approach facilitates a view on long-distance connections, but also recognises nuances in the bigger picture in the form of regional identities. This shared cultural phenomenon highlights the role of the Atlantic as a medium for contacts and as a mediator for social interactions that occurred along the Façade. It becomes apparent that the megalithic monuments do not belong to material entities which are fixed in time and space, but are part of a dynamic mosaic of interactions and transitions. Their variability bears witness to fluid and changing social identities, which are expressed in the circulation of ideas, innovations and people.

## 2 DOLMENS OF IBERIA: THE PLACE WHERE TECHNOLOGY, NATURE AND COSMOLOGY MEET

**Abstract author(s):** Higginbottom, Gail (El Instituto de Ciencias del Patrimonio - Incipit, CSIC) - Cesar González-García, Cesar (Incipit, CSIC) - Vilas-Estévez, Benito (University of Vigo - Pontevedra; Abore Arqueoloxia) - Criado Boado, Felipe (Incipit, CSIC)

**Abstract format:** Oral

We look into the relevance of the astronomical phenomena in the Middle Neolithic of NW Iberia, in particular those that are indicated by the orientations of the dolmens and how these orientations were related to the landscapes in which people chose to erect their monuments. This paper investigates two continuing Galician enigmas: (i) exactly what might have been the astronomical phenomena of interest for the dolmen builders (like Crossover Full Moons in Autumn and Spring or Last Winter Crescents based upon Silva and Pimenta's 2012 Model for solar and lunar behaviour at 40o latitude) and (ii) what might be the relevance to Neolithic societies for such astronomical foci. We argue that there was a perceivable connection by Neolithic people between the celestial orientations of the dolmens and the following: landscape topography, regional seasonal changes and the concomitant environmental-landscape changes, as well as resource use and management, fertility, coming into being and the passing away of things and that all of these are channelled through the materiality of the dolmens.

## 3 REGIONAL IDENTITIES AND CULTURAL VARIATION IN THE SOUTH NORWEGIAN NEOLITHIC (CA. 4000–1700 BC)

**Abstract author(s):** Olsen, Dag Erik (Museum of Cultural History, University of Oslo)

**Abstract format:** Oral

At the onset of the Neolithic, the people in South Norway were well-adapted hunter-gatherer-fishers with distinct differences in settlement patterns and material culture between western and southeastern groups. This is due to adaptations to unique natural and climatic regional variations and to participation in different cultural networks. The regional variation became more pronounced after 4000 BC with the spread of the agricultural practicing Funnel Beaker Culture (TRB) into South Norway. The southeastern coastal groups became integrated in this network reflected by the presence of imported pottery and polished flint axes, although with little evidence of agriculture. In contrast, this new cultural network did not have major impact on the western Norwegian societies, where novel local technologies became important instead. This is interpreted as a choice in order to preserve the existing social traditions and reflects the degree of contact with groups from eastern Norway. One area of possible direct contact between people from the two regions is the high mountains of Hardangervidda and Nordfjella where seasonal hunting for reindeer has a long tradition. Here, distinct regional technological traits indicate a low presence of western groups while the majority of activity can be related to eastern Norwegian coastal and inland groups. This changed after ca. 2800 BC with a more prominent western Norwegian presence and led to more contact and interaction between different cultural groups. This coincides with a marked cultural change in western Norway integrating the region to southern Scandinavian networks via eastern Norway. This paper aims to discuss how various groups developed distinctive social traditions that changed to various degree partly related to fluctuating participation in networks where cultural knowledge was transferred. This also opens for discussing how new ideas was implemented or integrated into existing social structures as reflected by the material culture found at the settlement sites.

## 4 TRACING CONNECTIONS ACROSS THE IRISH SEA – ORGANIC RESIDUE ANALYSIS OF MIDDLE AND LATE NEOLITHIC POTTERY FROM NORTH WALES

**Abstract author(s):** Olet, Lilly - Evershed, Richard (University of Bristol - Organic Geochemistry Unit) - Smyth, Jessica (University College Dublin - School of Archaeology)

**Abstract format:** Oral

Organic residue analysis is a useful technique to study ancient diet and subsistence practices via the use of pottery vessels for cooking and storing. However, few studies have been conducted on prehistoric pottery from Wales. In this paper, we report the results from 111 potsherds from 5 Middle Neolithic sites on Anglesey and the adjacent coast (Parc Bryn Cegin, Parc Cybi, Llanfaethlu, Clynnog and Penmynydd). Ongoing work also includes compound-specific radiocarbon dating of 15 vessels, which belong to the Mortlake, Fengate and Grooved Ware traditions. First results of lipid residue analysis show a predominance of dairy fats among all three pottery types. In this paper, we explore how

these results can be used to study the connection between communities in Anglesey and other regions on either side of the Irish Sea. We are addressing questions regarding similar subsistence strategies and maritime connections. Whilst peripheral as a landscape from an inland point of view, Anglesey is a prominent location from a maritime point of view and could have been a more focal landscape in the past. Radiocarbon dating work on lipids extracted from pottery can further increase our knowledge about dissemination of cultural traits and directions of movements.

This research is part of the Passage Tomb People project, which aims to study connectedness and subsistence practices in the Middle Neolithic. The focus is on the social drivers behind a phenomenon of the Atlantic façade – passage tombs – and the contemporary societies in Ireland, Orkney and Wales.

## 5 GOING NORTH: TIN, MOBILITY AND INTERACTION IN ATLANTIC IBERIA DURING THE LATE BRONZE AGE

**Abstract author(s):** Rodríguez Corral, Javier (Departament of Prehistory and Archaeology, Universidad de Sevilla) - Rodríguez Rellán, Carlos (Department of Prehistory and Archaeology, University de Granada)

**Abstract format:** Oral

Western Iberia is the main tin region in Europe. Both the archaeological evidence and the geographical and geological features of the region suggest that the place mentioned in the classical sources is located in its northwest corner, where Mediterranean navigators sailed to establish trade relations with the local communities and obtain tin. The estuaries and their islands and peninsulas provided direct access to the resources of the extensive western tin region of Iberia. However, archaeological evidence shows how tin sources were exploited and traded supra-regionally much earlier. This paper explores the correlation between the distribution of object types and material forms with tin sources in order to show how, during the Late Bronze Age (1400/1200-700 BC), this critical resource encouraged Atlantic-Mediterranean interaction, terrestrial mobility and processes of interchange under gift economies along the entire western regions. The material evidence analyses comprises specific objects such as bronze axes, statue-men-hirs and stelae, which sheds light on the ways in which the social identity of the Atlantic people shifted or was altered through these encounters, and to what extent the people adopted and adapted socio-material practices within a shared cultural milieu.

## 6 ZOOMORPHIC SCULPTURES FROM THE II IRON AGE IN THE IBERIAN PENINSULA-NEW CONTRIBUTIONS TO THE STUDY AND UNDERSTANDING OF THE PHENOMENON

**Abstract author(s):** Soares, Inês (Mestre em Arqueologia e Território pela Faculdade de Letras da Universidade de Coimbra) - Osório, Marcos (Instituto de Arqueologia da Faculdade de Letras da Universidade de Coimbra, CEAACP)

**Abstract format:** Oral

During the Second Iron Age, the communities that lived in the central territory of the Iberian Peninsula from Zamora, Ávila, Cáceres and Salamanca (Spain), to Trás-os-Montes and Beira Interior (Portugal), revealed their own cultural expressions.

Several zoomorphic sculptures made of stone were found in this region, with different dimensions, representing wild boars, bulls and, in sporadic cases, other species such as bears. This form of social expression is called "Cultura dos Berrões" (in Spanish "verracos").

In part, these sculptures are associated with "castros", which are settlements positioned in prominent places, with natural defenses and large walls, fortified or not with ditches or/and chevaux de frise.

The interpretations of these zoomorphic representations are multiple: from the religious meaning of protection of cattle to funerary nature. The lack of well-defined contexts for the findings does not make it easier to determine their meaning.

The observation of the sculptures also raises some questions about the represented species and its gender. In this way, we focused our approach in the morphological/sexual characterization of some sculptures from Trás-os-Montes and Beira Interior. Furthermore, in the few cases that interpretation is uncertain, we will use photogrammetric technology to clarify in a clear way some of these questions.

There are also known a few examples of zoomorphic sculptures in the region of Silesia (Poland) with the same chronology and associated to walled enclosures. From an aesthetic point of view, these sculptures are similar to those found in Portugal. Yet, those sculptures from Poland representing bears encourage the revision of the previous interpretations and suggest a connoted semantic with power and bravery in Portuguese cases.

This approach to the anatomy of peninsular sculptures and the intersection with eastern specimens of this culture allow us to move forward in a broader interpretation of these monuments for these Iron Age communities.

**Theme:** 2. [Re]integration

**Organisers:** Yamasaki, Mari (Johannes Gutenberg University Mainz) - Speck, Sonja (Philipps University Marburg; Johannes Gutenberg University Mainz) - Meneghetti, Francesca (Independent researcher)

**Format:** Regular session

This session aims to explore the liminal qualities of spaces deriving from human interaction with the surrounding environment. By inhabiting/occupying/frequenting/building spaces, humans attribute meaning to them, setting them apart from others and creating boundaries. The creation of meaningful places is thus inseparable from their delimitation through a variety of methods that go from identifying specific intrinsic spatial properties, to the construction of built architecture.

A boundary or border may be perceived through a change in the materiality of space (e.g. solid earth vs. water vs. air); the erection of surrounding walls bears the conceptual distinction between an "inside" and an "outside", while architectural changes affect the very features of space through the use of light and darkness as well as of different materials. For instance, a space filled with water or sand may not be intended as a place for the living, but such spatial features may instead be perceived as delimiting, defining and spatially identifying a border beyond which other entities - be it gods, spirits and the dead - have their place. Tightly connected with the concept of border is that of the material and/or immaterial passageway devised to go across, from one space into the next. Considering that beyond every border lies a different kind of space, we are interested in the types of spatial properties attributed to them, may it affect particular activities or even time itself.

We encourage the participants to propose reflections on spatial properties as border-creating features; the role of built architecture in characterizing and defining the space within it - and its ability to transform its spatial properties; the function of gates, doors and thresholds in transitioning between spaces with different properties.

In the hopes of comparing spatial concepts from a global perspective, we welcome contributions on all premodern cultures.

## ABSTRACTS

### 1 FROM FLOOR TO ROOF: BOUNDARIES ON THE VERTICAL AXIS AND THEIR ROLE IN THE CONCEPTUALISATION OF BUILT SPACES

**Abstract author(s):** Speck, Sonja (Mainz University)

**Abstract format:** Oral

In archaeological research ancient spaces are largely remapped in two-dimensional ground plans. In these we take notice of delineating features like standing walls and wall faces while floors and ceilings are upstaged. However, boundaries on the vertical axis are of course as crucial to the use, perception and conceptualisation of spaces as any other horizontally delineating feature. Indeed, our concept of a room includes a space surrounded by surfaces at six sides but a room without a roof would become a courtyard.

This paper is supposed to increase awareness of the 3D-structure of spaces, especially on aspects of vertical depth. For this purpose, floors/the ground can't be taken for granted as a natural surface to things and ceilings/roofs shouldn't be considered only as a means to block light, weather and animals. They must be understood as equal spatial boundaries which influence the conceptualized properties of spaces. Also, different kinds of coverings and litter need to be considered as delineating features. A focus on the three-dimensional structure of spaces becomes crucial when we start analysing fillings and massive structures as spaces too. They can be both, spaces with boundaries and boundary-spaces, taking on functions of supporting, covering, blocking and letting through.

As archaeological remains around the world often share the trait of not being vertically well preserved (at least aboveground), this paper will choose tombs with sufficiently preserved sub and super structures as a starting point.

### 2 DIVING THROUGH THE MIRROR: THE LIMINALITY OF WATER SURFACES

**Abstract author(s):** Yamasaki, Mari (Johannes Gutenberg University Mainz)

**Abstract format:** Oral

Few elements are as intrinsically liminal as water. Rivers and oceans are an interruption of the walkable land and as such often mark the limit, the border beyond which some kind of perceived otherness exists. But water surfaces are borders also in the vertical dimension: they separate a space filled with air, where humans can live, from the liquid depths of seas, lakes and wells. Throughout cultures and ages, the deceivingly reflective surface of water has often been perceived as a gateway, an access point to a different realm. But how was the spatial transition through these

passages conceptualised and perceived? In which measure did the experiential factor play a role in representing the transition between above and under water?

This paper discusses the ways in which the water passageway affects the spatiality beyond it and addresses the differences between the space "beyond" and the "normal" space through examples from ancient Eastern Mediterranean cultures. In particular, I will focus on the impact that real-world sensory experience had on literary and material representations of underwater spatiality, in tension between mirroring the upper world and describing original underwater spaces.

### 3 **MORE THAN A BOUNDARY: WATER AS STRUCTURING ELEMENT IN THE SPATIAL EXPERIENCE OF ANCIENT GREEK INITIATION**

**Abstract author(s):** Ward, Andrew (Indiana University)

**Abstract format:** Oral

The importance of demarcating sacred and profane space in the context of ancient Greek ritual practice is well documented, with the temenos that separates the built environment of a sanctuary from its surroundings only one in a series of successive physical and metaphysical boundaries crossed by an ancient worshipper. Recent scholarship has demonstrated the importance of water in the articulation of such boundaries in Greek cult. Passage over water and lustration symbolized a shift in a worshipper's state, but water could also be an impediment. Rivers and artificial water conduits seem to have been sited frequently along a worshipper's path, signifying through kinesthetic experience the approaching of sacred space.

This paper seeks to consider how the idea of water as a boundary was adapted and transformed within the context of Greek initiation rituals. Beginning with the well-known use of water in the Eleusinian Mysteries, our understanding of the use of water as a literal and symbolic boundary within Greek ritual be nuanced with two geographically and chronologically disparate case studies: the sanctuaries of Demeter Malophoros at Selinunte and of the Great Gods on Samothrace. In all three sanctuary contexts, water systems exceed the demands of simple purification at a single boundary, a visitor's repeated encounter with water spatially paralleling the serial structure of initiatory ritual. The pairing of water features with spaces of spectacle like the newly studied theater in the Sanctuary of the Great Gods on Samothrace reinforces the idea that water served not only as a boundary to be crossed but also as a facilitator of sublime sacred experiences.

### 4 **ANCIENT EGYPTIANS LIVING ABROAD IN THE NEW KINGDOM**

**Abstract author(s):** Rocha da Silva, Thais (University of Oxford; University of São Paulo)

**Abstract format:** Oral

This paper explores new methodologies to understand domestic space in Egypt during the New Kingdom taking into consideration the sensorial elements of the dwelling. It is intended to identify the main architectural features and domestic activities in the settlements that housed a specialized workforce. These sites were usually planned and allocated by the Egyptian state and their archaeological evidence shows various types of interaction between the government and the inhabitants of these settlements. Various sensory aspects of the houses, such as light, ventilation, maintenance and control of temperature, visibility, odours, and sounds show how the constitution of domestic space was dynamic and collectively negotiated in these settlements. These elements can be understood as creative responses of these communities to a model of state housing. These sensorial experiences are fundamental to understanding the ways of living and how individuals establish boundaries within their houses. In this paper, I explore how dwellings can be effective in constituting both physical and social boundaries.

### 5 **ON THE THRESHOLDS OF SOCIAL SPACE IN SWAHILI TOWNS OF EAST AFRICA**

**Abstract author(s):** Baumanova, Monika (University of West Bohemia, Pilsen)

**Abstract format:** Oral

The coastal towns of East Africa have been well-known for their distinctive coral rag architecture, which preserves on the archaeological sites from the precolonial era and its transformed versions continue to be used today. Within the urban space, the concept of boundaries has been an important feature in situating social relations since the beginning of the 2nd millennium CE. In terms of material culture, there is for example an abundant evidence of low walls circumscribing zones within Swahili towns and acting on sensory perception, especially in facilitating and obscuring specific views.

This paper expands on the routinely discussed elements of boundaries on Swahili sites and focuses on thresholds, especially associated with doorways, as places of transition between social and residential space in densely built-up zones such as house blocks. Recent surveys, using advanced scanning technologies, are presented to show possible means of street identification, where their existence has long been either doubted or disregarded for lack of evidence. The social space is represented by streets and passageways outside the houses and by open-air courtyards situated

within. It is argued how the social and residential/private space complemented one another and that thresholds with distinctive features were used on the boundaries between these two types of space. The specific properties of these thresholds in Swahili urban space, including their architectural form, building material and capacity to act on sensory experience, are discussed to show how space was compartmentalised and attributed with meaning.

## 6 **DEFINING HOUSEHOLD AND MORTUARY BOUNDARIES IN IRON AGE (SAKA-WUSUN) SETTLEMENTS AND BURIAL BARROW (KURGAN) COMPLEXES IN SE KAZAKHSTAN**

**Abstract author(s):** Chang, Claudia (Independent scholar; Research Associate, Institute for the Study of the Ancient World, New York University)

**Abstract format:** Oral

Survey and excavation projects on the Talgar alluvial fan in SE Kazakhstan have defined both mortuary complexes and settlements of agropastoralists of the Iron Age (800 BCE to 400 CE). Linear clusters of burial kurgans (earthen mounds) could mark either kinship or land-use territories during the first millennium BCE of Saka occupations. Accompanying excavations conducted from 2008-2018 at the Late Saka-Wusun site of Tuzusai where the herding of sheep, goats, cattle and horses, and the cultivation of wheat, barley, and the two millets have been well-documented. Awareness of how space was divided between household habitations and the realm of the dead involves an approach to sensory information that can enhance our archaeological interpretations.

A house form can either be semi-subterranean and round in shape or above ground rectangular mudbrick buildings, depending on phase designations. A simple formulation is: Saka = round houses and Wusun = rectangular houses. The Late Saka period burial mounds (earthen or stone) are above-ground barrows, round or parabolic in configuration, while the burial chambers themselves are usually rectangular. Large barrows have a dromos or an underground passageway into the center of the barrow where the grave shaft is most often located. What invisible boundaries exist between the world of the living and the world of the dead? The opposition between above ground burial barrows and below ground pit houses for the Late Saka phase (ca 400 to 200 BCE) is an important nomadic feature of these agropastoralists.

Sensory archaeology may help explain our empirical findings that suggest visible and invisible boundaries on the landscape and at excavations of enclosed pit houses and mudbrick dwellings. The liminality of life and death, as well as the cosmic forces of natural elements, often embedded in the contemporary Kazakh yurt (round wood and felt house), serves as an analogy.

## 7 **ENTRANCE TO THE BUILT ENVIRONMENT – PERCEPTION OF SPACE ON THE EARLY NEOLITHIC GÖBEKLI TEPE**

**Abstract author(s):** Waszk, Benny (Johannes Gutenberg-Universität Mainz; Graduiertenkolleg 1876 "Frühe Konzepte von Mensch und Natur")

**Abstract format:** Oral

The Early Neolithic site of Göbekli Tepe in southeastern Turkey is known for its special buildings with the characteristic T-shaped pillars. Since the beginning of the systematic research of the phenomenon in 1995 the focus has been on the monumentality of the buildings and the richly decorated pillars. In the interpretation of the iconography, its structural context was included only to a limited extent. But even less attention has been paid to the importance of pathways, access and thus the overall perception of space. The hitherto undeveloped group of door-hole stones therefore offers an opportunity to deal with the dividing line between the built environment and the natural environment. Together with walls and possibly roofs, doorway stones also form a dividing line between light and darkness. The architecture thus has a direct influence on the human body and forces specific movements of the visitor. The aim of my work is to understand the spatial experience and the deliberately designed transitions and to make them experienceable in suitable formats – by means of 3D models and "multisensual" reconstructions.

## 8 **THE GATES OF THE COSMOS. LIMINALITY IN THE ARCHITECTURE AND FUNCTIONS OF CENTRAL EUROPEAN NEOLITHIC PALISADED ENCLOSURES (RONDELS)**

**Abstract author(s):** P. Barna, Judit (Hungarian National Museum / Magyar Nemzeti Múzeum) - Kalla, Gábor (Eötvös Loránd University – Institute of Archaeological Sciences)

**Abstract format:** Oral

Built over a large area in a short period (1st half of the 5th millennium BC), the Neolithic circular ditched/palisaded monuments (rondels) of Central Europe are perhaps the most typical prehistoric examples of uncovered spaces with special functions, clearly delimited by visual signs. Usually located at a distance from settlements and placed at a meaningful point in the surrounding landscape, the circular constructions were surrounded by deep ditches, raised earth rampart often in several concentric circles, and, internally, by palisades. These clearly marked the boundaries between the inner, ritualised space (inside) and the outer world (outside), interrupted by nearly symmetrically arranged entrances or gates.

It is now clear to research that the rondels were used only occasionally, in communal rituals, and their astronomical orientation suggests that they were perceived as cosmic symbols. The space, which was well isolated from the outside world, could have been given a special meaning by the outstanding acoustics, confirmed by experimental archaeology, which amplified the magical power of the magical words, the songs and the music. Their very construction may have been also performative, as was their approach. Our earlier suggestion is that they could have been processional sites, where the community could march in spectacular venue, but with only a few chosen ones allowed to enter. They had to undergo a qualitative transformation on entering the gates, and inside they emerged as a new person, through rites of passage.

Research has so far paid little attention to the prominent role of the gates and their liminal character. We would like to focus on the architectural elements and rituals that mark the interaction of persons with spaces of different qualities. Among ritual phenomena in the districts of entrances, traces of depositions, and especially rites related to fire will be evaluated.

## 9 TOMB BOUNDARIES AND THE CREATION OF MEANINGFUL SPACE

**Abstract author(s):** Beek, Nicky - van de Beek, Nicky (JGU Mainz)

**Abstract format:** Oral

Ancient Egyptian tombs are often considered sacred places where the cult took place and only the initiated dwelt. Set apart in the desert landscape, cut from the bedrock or constructed in the shape of a 'mastaba', they overlooked the fertile 'black land' of the living.

While the tomb functioned as an enclosed space guarding the body and memory of the tomb owner, its decorated surfaces refer back to an outside, worldly environment inhabited by people, cattle, fish, birds and wildlife. The association and placement of these scenes within the architecture hints at meaning: trees full of songbirds perched above doorways, walls devoted entirely to marshland scenes while others show the cultivated land. Although wooden doors probably blocked the tomb entrances, the images were devised to invite the visitor in to admire its artistry, in return asking for the favour of pronouncing the offering formula.

Internal 'rooms' invoke the idea of a house concept, with a courtyard, storerooms and a 'serdab' (enclosed space with a peephole to protect the statue of the tomb owner). The false door with the offering table served as a focus for the offering cult and an 'interface' through which to interact with the deceased. Shafts, though filled with sand, were 'virtually' connected to the outside world as the soul of the tomb owner could take flight in the form of a Ba-bird. The necropolis, called 'sacred land', was also a profane place where construction went on, priests practiced their jobs and families came to share a meal. In this paper I will examine various aspects of the private tomb environment, and the way in which accessibility, visibility and the setting of boundaries was used to create a 'meaningful place' that was perhaps more of this world than it was of the next.

## 10 FROM TIMBER TO EARTH: BOUNDARIES, ENTRANCES AND THE CREATION OF LIMINAL SPACES AT CASTELL HENLLYS IRON AGE FORT, WALES

**Abstract author(s):** Mytum, Harold (University of Liverpool)

**Abstract format:** Oral

The phases of Castell Henllys Iron Age fort, from a timber palisade and chevaux-de-frise to stone-faced earthen ramparts and an entrance with guard chambers, have been considered as experiments in monumentality. However, the main and subsidiary entrances were differently treated, and had varied forms of approach that created contrasting visual impacts by those approaching the fort interior. The access route to the gateway with guard chambers could be argued had a military defensive aspect, but at least as important was its symbolic significance. The partial reconstruction of the Castell Henllys gateway, and consideration of the experience of a full reconstruction, raises issues regarding the roles of guard chambers at hillforts and the liminal nature of the entrance passages at hillfort gateways. The creation of boundaries, and controlled access points through these, was part of the occupants' placemaking activities as they established their settlement and then lived on the same site continuously over several generations. The changing forms of the boundaries created a genealogy of placemaking that could establish a coherent history for the occupants which was imbued with meanings formed through repeated domestic practices within the settlement.

## 11 LATE PREHISTORIC ARCHITECTURE AS A PARADIGMATIC CONSTRUCT

**Abstract author(s):** Igljic, Sara - Kulenović, Igor - Vrkić, Šime - Kulenović, Neda (University of Zadar)

**Abstract format:** Oral

In later prehistory of Adriatic, hillforts have had a prominent role in most prehistoric settlement research. It is a theory-laden term that is under the influence of traditional culture-historical framework and as such is thoroughly defined in said terms. Hillforts, as constructed concepts, have an important role in perpetuating ideas of cultural change,

insecurities, and violence. It is a highly visual concept that presents a focal point in the landscape and boasts massive walls or ramparts. All the characteristics that are contributed to such sites should be studied as a research assemblage with focusing on all the relations it produces. That being said, several examples of different sites have been documented in northern Dalmatia in recent years through various archaeological methods, such as analysis of areal and satellite imagery and field survey. Said sites are surrounded and bounded by low walls that are not so visible as walls of their contemporaries (hillforts). Drywall structures encompass smaller or larger areas and form a border. These sites do not correspond to the concept of a hillfort, they do not have a prominent position in the landscape, also they are lacking monumental fortifications and rich cultural layers. As such they are not documented throughout earlier archaeological records. Said walled structures show evidence of different kinds of land usage. How is the space inside the structures defined? What is the purpose of limiting said spaces that do not correspond to the usual divisions visible in prehistory of Dalmatia? Do the closed drywall structures have a role in marking environment and defining authority over land? How do these prehistoric enclosures correspond to hillforts and to the interpretation of late prehistoric landscape? These are some of the main questions that will be tackled in order to define such land divisions and limitations.

## 12 LIMINAL STRUCTURES AS SACRIFICIAL SPACES: A STUDY OF RING DITCHES OF SCYTHIAN BURIAL MOUNDS IN NORTHERN AZOV

**Abstract author(s):** Demina, Alisa (National University of Kyiv-Mohyla Academy)

**Abstract format:** Oral

This study presents the analysis of the burial mound's ring ditches on the territory of the Northern and North-Western Azov regions in the 6th-4th centuries BC.

Although "The Histories" of Herodotus paint a grand picture of the Scythian farewell ceremonies, the archaeological evidence for them is more sparse. Given that the surface of the mound is subject to the destructive effects of time, any traces of human activity reach researchers in a limited form. However, funeral traditions are usually a very conservative, stable system, repeated by its bearers, almost without changes, for a long time, that allows researchers to trace its patterns. The purpose of this study is to examine the ritual significance of the burial mound's boundaries. Particular attention is paid to the frequency and correlation analysis of the findings of animal bones and their location. The results show that a burial feast cannot always serve as an explanation for the entire spectrum of ceremonies associated with the ring ditches, the most widespread among which is the sacrifice of horses' heads at the ditch breaks. This work intends to draw attention to further field studies of the ritual actions on the territory of the burial mounds and their surroundings.

## 13 IS A WALL REALLY A BOUNDARY? FORTIFICATIONS AND THEIR RELATIONSHIP TO SETTLEMENT AT BRONZE AGE ROCAVECCHIA, SOUTHEASTERN ITALY

**Abstract author(s):** Iacono, Francesco (Dipartimento di Storia Culture Civiltà, University of Bologna) - Alessandri, Luca (Institute of Archaeology, University of Groningen) - Magrì, Alessandra - Agostini, Giovanna - Ceccato, Zoe (Dipartimento di Storia Culture Civiltà, University of Bologna)

**Abstract format:** Oral

Fortified sites of Bronze Age Southeastern Italy have long been recognised as a crucial category of settlements for understanding the 2nd millennium BC of the central Mediterranean. Their emergence and continued importance through the centuries has been variously ascribed to economic dynamics, and/or the development of internal or external conflict. While elements undoubtedly connecting these monuments to moments of increasing tension do exist, it is important not to transform such episodes into a universal explanation for the phenomenon. The first and foremost issue that needs to be critically assessed has to do with the very significance of these stone fortifications. Are these monuments really about closure and protection or there is more to them? How can we reconcile the "inward" looking image of settlements closed by an imposing line of fortifications, with our basic knowledge that these same settlements were also particularly open to, and involved in external relations on the short, medium and long range? In this paper, we will try to address this basic question through the analysis of the archaeological record of Rocavecchia, one of the most important fortified sites in Apulia, that has both the largest example of fortifications in the region (measuring some 20 meters in width) and the largest amount of Aegean type (Minoan/Mycenaean) ceramics ever recovered west of Greece. We will combine our knowledge coming from over 30 years of systematic excavation of the site with new exciting data coming from a new survey project (the Roca Archaeological Survey) in the landscape surrounding the site.



## 14 YOU HAVE TO BELIEVE IT TO SEE IT

**Abstract author(s):** Gourgouletti, Eleni (National and Kapodistrian University of Athens)

**Abstract format:** Oral

The end of Bronze Age finds Crete under a process of transformation marked by the collapse of the palatial system and the abandonment of the related locales which are succeeded by the emergence of the so - called refuge sites, located in new, more defensible positions. Social change engages and thus affects the relationship between landscapes, seascapes and people. As a result, during this period architecture appears to be taking a new purpose in defining spaces leading to reshaping the surrounding world. Therefore, this paper seeks to understand the ways that spatial, temporal, conceptual and even cultural boundaries were established, their range and meaning. How active or passive was topography itself in this process remains the focal point of this exploration of the creation of Late Minoan III B-C settlements and cemeteries.

For this venture, this paper attempts to follow a complementary use of phenomenology and GIS, questioning what each method can provide for the nature of change and the creation of meaningful places in the 2nd millennium BC. The potentials as well as the limitations of such a relational approach are yet to be discovered, proposing an alternative ground for future research.

## 15 LANDSCAPE AND DELINEATION: ENVIRONMENTAL CHANGE AND PERCEPTIONS OF BOUNDARIES IN THE HELLENISTIC WORLD

**Abstract author(s):** Lord, Maria (University of Wales Trinity St David)

**Abstract format:** Oral

This paper considers how changes to landscapes – whether through natural processes or human impact – during the Hellenistic period undermined the perception of spatial delineation. Where progressive or seasonal changes occurred to landscapes, delineation of land and political borders would have had to follow suit in order to adapt to the new topography. In some locations this would have been a constant process of renewal or renegotiation. Areas where such effects might be seen include: the river valleys and deltas of Anatolia which were subject to high sedimentation rates; the floodplain of the Indus with its shifting channels; and Egypt, where agricultural land was remade on an annual basis as a consequence of the flooding of the Nile. This change or remaking of space, especially as perceived from the perspective of local non-elite populations, has the potential to challenge elite ideologies that rely on the delineation of territory for legitimacy and the construction of power. As such, this paper moves towards a non-elite conception of space that is based more on use and movement, than the construction of boundaries and borders. It brings together evidence from geoarchaeology and ancient history to argue that when, seen from below, the delineation of Hellenistic space was often contingent, irrelevant or non-existent.

## 16 LIMITED PERFECTION - REGULAR MEDIAEVAL TOWNS IN CENTRAL EUROPE, WANDERING OF IDEAS, LAWS AND MEASURES

**Abstract author(s):** Leguť-Pintal, Maria (Institute of Archaeology - University of Wrocław) - Kubicka, Anna (Faculty of Geodesy and Cartography - Warsaw University of Technology) - Fokt, Krzysztof (Faculty of Law and Administration - Jagiellonian University in Kraków) - Klír, Tomáš (Department of Archaeology - Charles University, Prague)

**Abstract format:** Oral

The thirteenth and fourteenth century in Central Europe is a period associated with increased colonisation action, even referred to as an urban revolution. The transition from the traditional system of princely law to the advanced feudal economy involved, inter alia, the transformation of old settlement structures and the establishment of new settlements - towns and villages with a new legal status. New settlements, as long as they did not arise on older structures, took a regular form. The division of space initially reflected the pursuit of an ideal program reflecting the legal and social order. The way of limiting the space was an element of the cultural transition - it was transferred along with the legal regime from one centre to another. The ideal program, even if it was entirely implemented, was from then a subject of numerous modifications related to the transformations of the social and spatial structure of cities or villages. The original boundaries were shifted and blurred. In this paper, we try to present, using the example of several Central European cities and villages, research methods that facilitate retrospective analysis of given structures, and research problems related to the way of delineating borders. Historical, cartographic and archaeological data will support spatial analyses. The studies undertaken are to help to understand the importance of boundaries in the functioning of the former urban and rural communities.

## 17 OBSERVING BORDERS WHERE HUMANS HAVE TRIED TO BUILD BOUNDARIES

**Abstract author(s):** Jané, Oscar - Banica, Costina Adriana (Autonomous University of Barcelona)

**Abstract format:** Oral

This work is a study and a reflection on the concept of border. The border is a constantly evolving dynamic element. Therefore, beyond cartographic or physical boundaries, border processes are mental and internal. In this sense, borders are human and, if they succeed, they can go beyond the political fact: culture, language, architecture, religion, and so on. However, the differences are gradual, and despite the border, it doesn't always exist. We will provide a vision of the border of the Pyrenees over the last centuries by elements such as: adaptation to the border (assimilation, resilience, visual transformations), the perception of a non-border (by architecture, religious uses, traditions, etc.) or transgression of the unborder. We will expose various physical elements and especially perceptual and cultural, in which the formation of state identities have tried to influence, to see how this border has been formed and how people coexists in it, from a vertical versus local identity within these border spaces. In this sense, we will do the study of these spaces thanks to history, archeology, geography and other disciplines which can be very useful.

## 18 WARRIOR STATUES ON THE EDGE: MOTIVED SYMBOLISM AND SITUATED ICONOGRAPHY IN THE NORTHWESTERN IBERIA DURING THE IRON AGE

**Abstract author(s):** Rodríguez Corral, Javier (Departament of Prehistory and Archaeology, Universidad de Sevilla)

**Abstract format:** Oral

Social identity and limits is always enacted in specific contexts. Due to its evolving character, concrete material points of reference in the form of landscapes, places, artifacts and people are always required. Through a particular study case, the warrior statues from the so-called 'Castro culture' in northwestern Iberia, this article reflect on the role of the material images as an important medium through which issues of identity and social relations are created, contested, and resolved. To this regard, it is explored how these monumental images of warriors, which emerged in the context of large hillforts in this region by the late first millennium BC, actively build their own meaning and sense in the socio-material contexts where they belong. More specifically, it is focused on how, in this process, their materiality and theatrical power, in connection with architectural and spatial properties, plays a part in the creation of meaningful places where the indigenous identity was experienced and boundaries defined.

---

## 127 INTEGRATIONS, INTERACTIONS, AND INTERSECTIONS IN ISLAMIC ARCHAEOLOGIES OF AFRO-EURASIA

**Theme:** 2. [Re]integration

**Organisers:** Shingiray, Irina (University of Oxford) - Belyaev, Leonid (-) - Carvajal Lopez, Jose (University of Leicester)

**Format:** Regular session

Archaeologists who focus on the Islamic pasts in Europe, Asia, Africa, and beyond are keenly aware of the need to examine and understand those pasts in the context of the wider (globalized) worlds and of interconnected activities, communities, and material cultures. For archaeological researchers of Islam, the paradigm of a simple dichotomy between a single core and periphery, between Muslims and non-Muslims, between urban and rural landscapes, has been shifting toward new perspectives which acknowledge the existence of multiple centers, networks, activities, and actors with multiple voices, identities, and modes of life—all of which composed the fabric of the Islamic culture as a whole over time. This session invites contributions which explore the processes involved in integration or re-integration and connectivity (as well as disjunctures), between and within Islamic culture/s across Afro-Eurasia. We welcome a wide range of approaches: from global, comparative, transregional, to local case studies, and studies within Islamic communities, including intersectional identifies based on the politics of class, gender, subsistence, diasporas or minority status. We are also interested in material studies and landscapes which contributed to re/integration, connectivity, de/territorialization, conflict, and transition in Islamic cultures over time. For instance, how boundaries were negotiated, constructed, reconstructed, and eliminated; how materials were assembled, reassembled, exchanged, and reused; and how landscapes were created, re-appropriated, reclaimed, and re-integrated, contributing to the intrinsic interconnectedness of the Islamic world.

**1 THE UNBEARABLE LIGHTNESS OF AL-ANDALUS: POLITICS, ARCHAEOLOGY AND INTANGIBLE FRONTIERS**

**Abstract author(s):** Govantes Edwards, David (University of Córdoba)

**Abstract format:** Oral

The historiography of al-Andalus (Islamicate Spain) was for a long time, and remains, to a large extent, marked by otherness. During the 19th and 20th centuries, Spanish historians, archaeologists and Arabists struggled to find a balance between the other that the Reconquista endeavoured to remove from Spanish soil, and the unquestionable cultural achievements of Andalusí polities between the 8th and 15th centuries. While standing behind the Reconquista as the foundational process of the Spanish nation, antiquarians, academics and cultural managers were keen to emphasise the unique and splendid monuments left by the Muslim presence. World-famous monuments were there to be displayed and turned into a touristic asset (e.g. Madinat al-Zahra, the Alhambra), and unmistakable examples of cultural synergy were too prominent to be ignored (e.g. the cultural movement built around Alphonse X of Castile). The way historiography went about this, especially during Francoism (1939-1975) and its state ideology of National-Catholicism, was to appropriate the cultural achievements of al-Andalus for Spain, understood as an essential, immutable and eternal construct, attributing it to an alleged secular Spanish genius rather than to al-Andalus per se. In this way, the real frontier between Islamicate and Christian Spain (understood as monolithic realities) was not only made a lot harder and neater than it was in reality, but was also compounded by an invisible internal frontier in al-Andalus, which separated those elements that the modern Spanish nation-state could safely assume as "ours", while keeping the Islamic "them" out. This presentation will examine the historiography of the Caliphal city of Madinat al-Zahra (Córdoba) as an illustration of this historiographical phenomenon throughout the 20th century, and the opening decades of the 21st century.

**2 NEW DIACHRONIC APPROACH AND THE ISLAMIZATION OF THE MOUNTAIN LANDSCAPE**

**Abstract author(s):** Berrica, Silvia (Universidad de Alcalá)

**Abstract format:** Oral

Within the framework of studying the formation of the early medieval landscape, examining a series of sites such as hilltops, villages, farms, churches, and monasteries shape the rural landscape of the northern area of the Sierra de Guadarrama (Madrid, Spain). From the 700 CE, it is recognisably a change in the landscape thanks to the development of new constructions in rural areas. These structures, founded by aristocrats or the Church, are probably designated private buildings. Furthermore, the archaeological evidence shows a dynamism of planning new constructions in pre-existing villages and the previous rural churches, monasteries, and villages.

Studying the landscape and the material culture allows recognising various social aspects of villages such as Cancho del Confesionario, La Cabilda, Dehesa de Navalvillar, Placer de Ver. In addition, different economic activities (mining processes, metallurgical activities, textile productions and food production chain) reveal essential aspects of the early medieval society within the central Iberian peninsula.

In conclusion, studying this mountain landscape is very important because it is unaltered over time, telling us a story of a changing society of the 8th century at the arrival of the Arabs. Furthermore, this site is interesting for the various artisanal (glass, metallurgical and textile) and commercial activities allowing us to debate the early medieval economy. Therefore, the following archaeological results have the object to show the transformations in this site and its hierarchical position over the rest of the region.

**3 MOSQUES, OTHER PLACES OF WORSHIP, AND THE LANDSCAPE DURING EARLY ISLAM: ARCHAEOLOGICAL, EPIGRAPHIC, AND HISTORICAL PERSPECTIVES**

**Abstract author(s):** Nol, Hagit (Université libre de Bruxelles)

**Abstract format:** Oral

Mosques are an important feature of Muslim faith. They represent Islam in the physical sphere along with burials and specific inscriptions or graffiti. Mapping mosques by chronology advances the understanding of the processes and directions of the spread of Islam. In theory, the presence of an early mosque in the archaeological record would support certain historical narratives in the written sources. Moreover, stratifying mosques in relation to former and successive places of worship might reflect social and political dynamics – locally and regionally. A number of source corpora provide information about the earliest mosques, from the first to the third century of Hijra (seventh-ninth centuries AD). The central ones are Arabic chronicles, excavations, and inscriptions. However, an independent examination of each corpus paints different pictures. This paper will focus on two subjects and the different results each source type presents for them. The first topic is the spread of mosques over the Islamicate world until the late ninth century. The second subject involves cases where an alleged mosque was erected over, or within, a church, a synagogue,

or a temple. These inquiries point to the challenges in relying on each of the sources (texts or archaeology). More broadly, they reflect the difficulty with understanding interactions between individuals and groups during early Islam or the process of integration.

#### **4 NOMADS OF QATAR? THE EMERGENCE OF BEDOUIN COMMUNITIES IN THE PERSIAN-ARABIAN GULF**

**Abstract author(s): Carvajal Lopez, Jose (University of Leicester)**

**Abstract format: Oral**

In this paper I will present an overview of the material remains of communities living in Qatar in the early Islamic period. Although sometimes it is difficult to differentiate between sedentary and nomadic communities with the scarce remains that we have, I will focus on the emergence of so-called Bedouin (i.e. desert-inhabitant) communities in the Islamic period.

Whereas communities have been documented in Qatar as early as the Neolithic period, a strong mark of human presence in the North of the peninsula is evident mostly from the Tylos period (300 BC to 300 CE) in the form of very distinctive tombs. However, no inhabitation sites have been detected in this area until the late Sassanian-early Islamic period (circa 500-900 CE). The first sites to be detected are small villages that have the same outline as nomadic encampments. One of these, Yoghbi (radiocarbon dated between the 6th and the 8th centuries CE), was excavated in 2018. A later village of a larger scale, Murwab (dated between the 8th and the 9th centuries) has also been investigated across several seasons of excavations. Many others have been recently mapped with aerial images.

The villages of the early Islamic period present a chance to analyse Bedouin settlements and lifestyle in a particular way: they are fossilised becomings of Bedouin to settled populations, a still picture of the dynamic process of change of communities in Qatar. I will argue that this is not by chance: we are able to document these communities in this particular historical moment because they are in themselves the result of the period of Islamization, of the intersection of different ideas and flows of what becoming Islamic is.

#### **5 MORE THAN MEETS THE EYE: EARLY ISLAMIC NOMADIC AND URBAN INTERACTIONS AND INTERSECTIONS IN THE NORTH CASPIAN STEPPE REGION**

**Abstract author(s): Shingiray, Irina (University of Oxford)**

**Abstract format: Oral**

Islam spread into the North Caspian Steppe Region by the tenth century CE. And the first early medieval urban sites are reported to have emerged there by the same time. Although the process of Islamization in this region is still poorly understood, conventional explanations for the rise of Islam in this region treat this historical process as an urban phenomenon. Such suppositions are mainly based on available medieval textual sources and compilations, the authors of which never visited the Northern Caspian territories in person. In contrast to these sources, available archaeological evidence suggests that the spread of Islam in this region was more likely a product of extensive nomadic networks which expanded far beyond any permanent settlements. This paper will address archaeological evidence derived from urban and non-urban contexts and explore extant and potential interactions and intersections between nomadic non-urban and city populations focusing on the Lower Volga Region of the Caspian Steppe. The paper will highlight variations in Islamic practices of these communities based on their diverse cultural preferences and connections.

#### **6 BEYOND SULTANATES: MUSLIM NARRATIVES IN THE MEDIEVAL HORN OF AFRICA**

**Abstract author(s): de Torres Rodríguez, Jorge - Cornax Gómez, Carolina (Incipit - Institute of Heritage Sciences)**

**Abstract format: Oral**

The history of medieval Islam in the Horn of Africa has usually been built around the long-term conflict between the Christian kingdom of Abyssinia and a succession of Muslim sultanates which controlled large areas of what is now Somaliland, Djibouti and southwestern Ethiopia. However, this powerful narrative of a religious clash between two cohesive, religion-driven polities has overshadowed the complexity and variety of Muslim realities which existed in the Horn of Africa between the 13th and the 16th centuries AD. Based on historical and archaeological data, this paper will briefly approach four of the multifaceted ways and expressions through which Islam arrived, interacted, materialized and consolidated throughout the region.

The first case will analyse the arrival, expansion and consolidation of Islam among the Somali nomads, paying especial attention to the role of trade and missionaries and their impact in the developing a highly adaptative and successful system which has lasted until our days. The second case will approach the interactions between state and Islam during the medieval period, analysing its influence on internal politics, international diplomacy, expansive strategies and cohesion force. A third case study will propose the existence of regional differences in Muslim materiality through the study of urban medieval mosques. Finally, the presence of non-Muslim communities within the

Sultanates borders will also be approached, from both its material expressions and the perdurance of non-Muslim traditions in the current populations of the region. The combination of these different case studies aims to provide a more sophisticated -and accurate- perception of medieval Islam in the Horn of Africa, and a better understanding of the historical dynamics which accompanied its arrival, spread and consolidation to one of the most dynamic and complex regions of Africa."

## 7 **ARCHAEOLOGY OF THE ITALIAN PRESENCE IN MEDIEVAL ISLAMIC MURCIA (12TH-13TH CENTURIES)**

**Abstract author(s):** Hernández Robles, Alicia - Eiroa Rodríguez, Jorge A. (University of Murcia) - Gómez Ródenas, Mariángelos (Servicio de Museos y Exposiciones. Dirección General de Bienes Culturales de Murcia) - Guillermo Martínez, Martín (Museo Teatro Romano de Cartagena)

**Abstract format:** Oral

The relationships between the Italian maritime republics and al-Andalus are well documented by written sources from the middle of the 12th century. Taking these texts as a starting point, one of the lines of work of the research project The Origins of the Italian Presence in Murcia (12th to 15th centuries) (OPIM) has been to deepen the study of the relationships between the republics of Genoa and Pisa with medieval Murcia through the analysis of the material record.

The aim of this paper is to analyse some archaeological data that allow for an in-depth study of the Italian presence in the southeast of the Iberian Peninsula. On the one hand, we will present the study of the buildings destined to the reception of travellers and foreign merchants in the Andalusí cities, the fanadiq, paying attention to the case of Murcia; we will also present some archaeological data that allow us to establish a comparison between the Iberian and Italian territories in the 12th and 13th centuries, especially those coming from the analysis of the palace of Santa Clara in Murcia. Finally, the first data extracted from the study of the medieval Italian productions present in the stratigraphic sequence of the Roman theatre of Cartagena, understood as a representative example of the main port of access to the south-eastern territory, will be presented.

The results of these case studies allow us to conclude the integration of the territory of Murcia in the networks of the medieval Mediterranean, understood in its broadest sense, both economically and commercially, as well as in terms of cultural exchange and transfer between the different actors involved.

## 8 **INTEGRATION, INTERACTION AND INTERSECTION IN ISLAMIC CULTURE AT THE END OF XIII- XV CENTURY IN THE NORTH BLACK SEA AREA**

**Abstract author(s):** Biliaieva, Svitlana (Institute of Archaeology of National Academy of sciences of Ukraine; Uman State Pedagogical University)

**Abstract format:** Oral

From the end of the 13th to the 15th centuries, the Islamic culture of the North Black Sea region was formed as a result of interactions between different kinds of influences from East and West. Some cultural attributes of Chingiz-khan's Empire included elements absorbed from the art of the Jurchen Empire transmitted in the course of conquests from China to Eastern Europe—for example, the image of a doe. The presence of bronze molds of this image at archaeological sites of the Black Sea region assured the survival of this traditional representation of the early Mongol state despite its transmission over long distances. Under Mongol rule, the material culture and art of this region integrated elements of the cultures of different peoples. In the Western part of this territory, one finds Byzantine provincial culture together with other Western impulses from Venice, Genoa, and Spain. The Juchid cities of the North Black Sea region are characterized by syncretic features. Some of these cities became local centers of different kind of production, such as ceramic workshops in Crimea and in the Dniester region (Bilgorod). Archeological investigations in Crimea (Solhat) and in the Lower Dnieper region (Zaporizhzhya and Kherson) revealed the strong influence of the Seljuk culture in applied art and architectural monuments of the Juchid, Lithuanian and Crimean Khanate periods during the 14th-15th centuries. Due to cultural integration, interactions and intersections, a syncretic Islamic culture appeared in the North Black Sea region as a phenomenon of global significance.

## 9 **ISLAMIC ARCHITECTURE AND DIVERSITY OF BURIAL RITES OF THE JOCHI KHAN MAUSOLEUM IN CENTRAL KAZAKHSTAN**

**Abstract author(s):** Usmanova, Emma (Buketov Karaganda University Saryarka Archaeological Institute) - Panyushkina, Irina (University of Arizona, Laboratory of Tree-Ring Research Tucson) - Kozha, Mukhtar (Research Institute of Archeology of the H.A. Yasawi International Kazakh-Turkish University) - Uskenbay, Kanat (Institute for Humanitarian Studies, ABDI) - Dzhumabekov, Dzhambul (Buketov Karaganda University) - Akhatov, Gaziz (Margulan Institute of Archeology)

**Abstract format:** Oral

Folklore, legends and historical chronicles dating back to the 16th-19th centuries designate the burial of Jochi Khan, the eldest son of Genghis Khan, in the eponymous mausoleum in Ulytau, Kazakhstan. The mausoleum (48°09' N,

67°49' E, Karaganda oblast) is built in the style of Islamic funeral architecture of the 14th-15th centuries. It is a single-chambered building with a raised portal made of burnt red brick, decorated with spherical dome mounted on a star-shaped drum and lined with glazed blue tiles. Based on the historical and folk designations, the first excavation of the mausoleum's grave in 1946, suggested that the burial belongs to Jochi Khan. Although Jochi as Chinggisid practiced Tengrism with its canon of sacral and secret burial. The recent AMS 14C dating of construction and burial wood confirmed two phases of the mausoleum construction throughout the 14th century, whereas the 14C date of the mortuary stretcher's plank appears to be decades later after Jochi Khan death in 1225. The chronology of the mausoleum, re-analysis of the historical literature and original field notes of the excavation suggest that Jochi's burial is not in the mausoleum. The burial combines both Islamic and pre-Islamic traditions (Zoroastrian archaic tradition of leaving funeral stretchers, Turkic cult of camel) and was most likely performed for a person of Islamic faith from the Golden Horde. The mausoleum was built shortly after Islam became an official religion of the Golden Horde (1313 AD) and shows high diversity of the burial rites mingling Islamic and pre-Islamic mortuary variants. Ulytau has 36 more medieval Islamic mausoleums. The grouping of large mausoleums, some of them well preserved and revered for 500-700 years, may not be accidental and carries a special historical memory of the Turkic tribes. We discuss problems of commemoration and identity of Islamic mausoleums in central KZ.

## 10 UNDOCUMENTED VESSELS FROM THE NATIONAL MUSEUM OF ALEPPO

**Abstract author(s):** Hamwi, Rahaf (Pázmány Péter Catholic University; Directorate General of Antiquities and Museums - Syria)

**Abstract format:** Oral

In the very early period of the opening of the National Museum of Aleppo and the Islamic Department, most of the artifacts were gifts or were purchased from antiquities merchants or Aleppo's elites, who used to buy antiquities and make their own collection to show off their well-being and wealth. The documentation and period determination process was not possible. For this reason, it remained undiscovered for decades before the archaeological missions became more accurate and documented, thus, these vessels could be compared with counterparts from identified archaeological sites and periods.

This paper is presenting three masterpieces from the Islamic Department in the National Museum of Aleppo, that are recorded in the official records as gifts without determining the production period or the excavation documentation. In this study, by comparing with other museums collections. Moreover, analyzing the decorations and general typology, we could know that the study case vessels are covering the Seljuk-Atabeg and Ayyubid periods. In addition, one of them has some features related to the typology of Persian vessels, the two others are typical Raqqa ware, and all of them are glazed.

## 11 FROM THE BYZANTINE TO THE OTTOMAN CITY: THE INTEGRATION AND CONTINUITY OF URBAN CERAMIC PRODUCTION IN THESSALONIKI (THE 13TH-19TH CENTURIES)

**Abstract author(s):** Živkovic, Jelena (The Cyprus Institute)

**Abstract format:** Oral

Thessaloniki was one of the major urban centres of the Eastern Mediterranean and the Balkans in the Ottoman period. Although populated by the non-Muslim majority, the city was well integrated into the Islamic world and served as a hub of intersecting networks in the Ottoman Empire. Archaeology is yet to explore many aspects of this integration, especially those concerning the bottom-up approach. This paper seeks to discuss the transition of urban ceramic production from the late Byzantine to Ottoman periods as well as the integration and continuity of this production within the context of Islamic World.

The paper presents the results of macroscopic, petrographic and chemical analyses of common pottery from the site of Hamza Bey in Thessaloniki, dated between the late 13th and late 19th centuries. Archaeological and scientific analyses of pottery were used for the reconstruction of urban production technology, workshops and technological traditions over the longue durée.

## 12 CONNECTION AND DISCONNECTION: RECONSTRUCTING ROUTS THROUGH AND BEYOND THE RANIA PLAIN, IN IRAQI KURDISTAN

**Abstract author(s):** Németh, Fruzsina (Eötvös Loránd University)

**Abstract format:** Oral

For centuries, the Kurdish region has been at the intersection of several cultural zones, which have contributed to the development of the Kurdish identity known today. The area was a connecting point and melting pot of Arab, Persian, and Turkish cultures, while retaining the local customs of its own. On the eastern side of this area, on the foothills of the Zagros Mountains, near the present-day Iranian border, stretches the Rania Plain. During the early-modern period, the microregion was located right on the border of the two great powers of the region, the Ottoman, and the Persian Empires, while simultaneously belonging to the territory of the semi-autonomous Kurdish Emirates.

The Rania valley is located close to the main trade route connecting Baghdad with the main Kurdish cities and leading north towards Anatolia. The picture is further nuanced by the fact that the Little Zab river, which flows through the area, has formed a natural connecting route between the inner Zagros Mountains and the Mesopotamian Plain. Nevertheless, it does not appear on the geographical maps of the era, and written sources also stay silent regarding its role during the Ottoman period.

Based on the archaeological field surveys and excavations of the past fifty years a complex and varied topographic image of the valley could be drawn, which, together with the lines of streams and rivers that densely enclose the area, determine the main routes of population movement. During the examination of the historical significance and complex use of the territory, one of the most important questions that arises is how the routes through the microregion can be reconstructed using historical, archaeological, topographical, and GIS data. Furthermore, based on these data whether the valley played a connecting or separating role in the wider scope of the Ottoman Empire's eastern borderlands.

### 13 OTTOMANS IN KAMIANETS-PODILSKYI

**Abstract author(s):** Vynogrodska, Larysa (Institute of Archaeology National Academy of Sciences of Ukraine)

**Abstract format:** Oral

After Kamianets-Podilskiyi has been captured by the Turkish troops in 1672, the city becomes a part of the Ottoman Empire as the center of the Kamenets eyalet. The Turkish authorities attach great importance to Kamianets as to a strategically important fortified military post, as well as to the socioeconomic and administrative center of Podolia. From here it was possible to control the eastern territory of the Polish-Lithuanian Commonwealth de facto. That is why a special significance is attached to the renovation of old and the construction of new fortifications in the city. Under the guidance of French military engineers constructed fortifying in the city and the territory of castle: wood-earth and stone. Stone fortifications were constructed in the stone masonry form with two front sides and a stone backfilling on the lime mortar in the middle of masonry. Wooden and earth-filled reinforcements were constructed with a thickness of earthen breastwork up to 6,0 meters and with a height from 1,6 to 1,8m.

The notion about the construction of the Ottoman fortifications in the Old Castle is given by a half-bastion in the New Eastern Tower area and the New bastia. To protect the city, mainly beluards, fieldworks and sconces were used. The bridge, as a communication between the castle and the city, was brick lined by the stone walls 2,3m in height. The sacred buildings of the city were adapted for mosques and minarets.

### 14 PERSIAN STONE CARVERS IN THE 17TH CENTURY MOSCOW KREMLIN

**Abstract author(s):** Belyaev, Leonid (-)

**Abstract format:** Oral

There is a unique cemetery in the Moscow Kremlin - the Archangel Cathedral. It contains the burials of Moscow princes and tsars starting from the beginning of the 14th century. They are marked by tombs with ornaments and inscriptions carved in limestone. They have never been studied from the point of view of archaeology and art. The appeal to them yields interesting results. The cathedral was completely rebuilt in the early 16th century. New monuments were placed over the graves. It is not known when exactly. The stones of those who died in the 16th century are definitely later than their time. For example, the tombs of Ivan the Terrible and his sons do not belong to the 16th century. All the more so for those who died in the 14th or 15th century. But the monuments of the 17th century correspond to their dates. They are mainly the slabs of the first Romanov Tsars - simple, almost without decoration, but with a long text. The ancient tombstones, on the other hand, are very richly decorated. The oldest bear Islamic carvings. These carvings are too complex to be reproduced without special training. It is believed that the slabs were carved during or after the construction of the Terem Palace (1636-1639). It is also decorated with carvings, but they are not as sophisticated. The nearest centers, where such ornaments are known are in the east of the North Caucasus and Derbent, connected with both Moscow and the Safavid dynasty. A group of carvers might have come here with one of the embassies of Caucasian rulers, or directly from Persia. They left a trace not only in the Kremlin: in Kazan, Nizhni Novgorod and Moscow Islamic ornamentation appears on traditional tombstones, then disappears.

---

## 128 ABOVE AND AROUND 60 DEGREES NORTH: MOVEMENT OF IDEAS, PRACTICES, MATERIALS AND PEOPLE AD 300-1300

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Hillerdal, Charlotta (University of Aberdeen) - Ilves, Kristin (University of Helsinki)

**Format:** Regular session

Recent archaeological studies have drawn attention to the regions above and around 60 degrees North, repeatedly perceived as peripheral and dependent on southern innovations as a driver for change. However, when looking beyond traditional presumptions it becomes clear that northern regions are equally dynamic, and often act as central

players in the developments of past infrastructure and the economic as well as social processes that stimulated it. There is an increasing number of examples demonstrating the centrality of the North; from the importance of forested outlands in Sweden within the context of an over-regional economy already starting from the Migration Period, to the nodal role of northern coastal regions in long-distance interactions well beyond Viking Age; from the rise of distant settlement districts in Norway focussing on interregional trade, to indigenous agency in Norse diaspora settlement frontiers. Despite this, the awareness of the impact of the North is far from being properly explored. In this session we want to discuss the dynamics of interaction and movement within the far northern hemisphere - within and across borders, specifically focusing on the time period of AD 300-1300. We would like to investigate the northern areas as important venues for, and instigators of, the movement of ideas, practices, materials and people. We also aim to explore dynamics of identity creation at the intersection of difference and sameness within these environmentally marginal areas.

## ABSTRACTS

### 1 NEW MATERIAL EVIDENCE TO MIGRATION FROM THE SIBERIAN NORTH TO THE TRANS-URALS

**Abstract author(s):** Zelenkov, Alexander (-) - Matveeva, Natalia (-) - Tretjakov, Evgeniy (-)

**Abstract format:** Oral

The significant factors of historical and cultural transformations in the Siberian North, in particular, the Ob and Irtysh valleys (Tyumen and Omsk regions, Russia) during the hundreds of years were climatic changes, which led to the destabilization of the social order and migrations into southern territories. One of the first migration impulses has been in the Late Bronze, connecting with movements of the population with "cross ceramic" in the Indo-European ecumene (Andronovo culture). In the Iron Ages, the Ancient Ob-Ugric population (Kulayka culture) have interacted with the ancient Iranian population (Sargatka culture) settled in the forest-steppe area of the Trans-Urals until the 400 BC to 300 AD. Next, during the 400–600 AD, the ways of the northern migrants (Nizhneobskaya culture) have been saved, and their influence has fixed in the Bakal culture archaeological sites– heir of the ancient Iranians.

The current excavation in the Kurgan region is to shed light on the latest migration impulse from the Siberian North to the Trans-Urals. The Vodenikovo-I cemetery with 30 collective and single graves under 17 kurgans demonstrate symbiose burial tradition of forest Samoyed migrants (Potchevash culture) and forest-steppe (Bakal culture) population in the 600–700 AD. The innovations are defined by ceramics with figure-stamped decoration, wooden coffins, the West orientation of skeletons, specific ornaments: bracelets with snake ends, torcs, and pendants. The native features were expressed by skull's deformation, pottery with carved ornaments, square tombs under kurgans. The same heterogeneous process we see in the Low Kama and South Ural territories, in the Ancient Udmurt (Nevolino culture) and Magyar (Karayakupovo cultures) areas. Probably, the whole Ural-Siberia region had influenced by Turkic Khaganate, in which political and military power launched new ethnic and cultural transformation processes.

Funding: The research was funded by RFBR and Tyumen Region, number 20-49-720001.

### 2 INDICATIONS OF EASTERN CONTACTS IN LATE IRON AGE NORTHERN SWEDEN

**Abstract author(s):** Hillerdal, Charlotta (Department of Archaeology, St. Marys Building, University of Aberdeen)

**Abstract format:** Oral

In the last decade we have seen a complete reevaluation on the position of Saami communities in Northern Norway from marginalised tributaries to important autonomous players in the Viking Age trade network. Contacts further north, to the mysterious Bjarmaland in the Saga literature, have consequently been imagined as a continuous push along the northernmost seacoast, in accordance to Othere's travel accounts. The inland areas of northernmost Sweden and the coast of the Bothnian Bay are still considered isolated and of little consequence for long-distance contact networks. This is partly underpinned by a scarcity of Late Iron Age archaeological material, but more prominently by a lack of focus on this area and time period in northern research. Archaeological finds from the northernmost municipalities, including two unique Viking Age graves located along the Luleå river valley, suggest intense contacts with Finland and Russia, as well as Norway and the Baltic, and finds of eastern character most notably suggest a different point of contact than Ladoga and Viking Age Rus'. Here, it is suggested that it is time to revisit ideas of an inland trans-arctic trade network linking northern Sweden and Finland with Arkhangelsk Oblast and the White Sea.

### 3 PASTORAL GRAVE GOODS IN CENTRAL SWEDEN DURING THE VIKING AGE AND THEIR IMPLICATIONS

**Abstract author(s):** Rose, Samantha (University of Aberdeen)

**Abstract format:** Oral

The establishment of Norse economic urban centres in Scandinavia produced concentrations of skilled artisans to support the expanding trade & settler networks emerging in the Viking Age. It was, however, the Scandinavian hin-



terlands which kept the requisite raw materials flowing into these centres, such as the vast amounts of wool needed for textile production. Textiles, including sailcloth, facilitated the economic and cultural boom of the Viking Age and their importance has only recently been emphasized, though the academic focus has been centered on the production aspects of spinning and weaving. Through examination of previously overlooked grave goods such as wool shears in the Central regions of Sweden and at Birka, this research aims to explore the complex relationship between hinterland and urban areas. Of particular interest are the cultural and economic implications of these shears and other pastoral equipment placed into graves in Dalarna and Jämtland, an area previously associated most strongly with iron ore.

#### 4 IDENTIFYING LOCAL CERAMIC 'FINGERPRINT' THROUGH GEOCHEMICAL ANALYSIS ON ÅLANDIC LATE IRON AGE POTTERY

**Abstract author(s):** Holmqvist-Sipilä, Elisabeth - Ilves, Kristin (University of Helsinki)

**Abstract format:** Oral

The society on the Late Iron Age Åland Islands has been commonly interpreted as displaying Scandinavian cultural identity, while certain types of material culture, ceramics in particular, is often understood to represent the shared cultural values with the north-eastern coasts of the Baltic Sea. In this study, 54 Late Iron Age ceramic vessels from four settlement sites (Kvarnbo-Kohagen, Lagmansby, Gölby and Grelsby) and two cemeteries (Långängsbacken and Kvarnbacken) on Åland were geochemically characterised via energy-dispersive X-ray fluorescence spectrometry (ED-XRF) to investigate whether and to what extent the pottery was manufactured locally and/or imported to the archipelago from other regions. As there is a strong stylistic resemblance between the Late Iron Age Ålandic pottery and the Finnish ceramics, pots from a Viking Age site Anivehmaanmäki on the Finnish mainland coast were analysed for a comparison. Our data suggests that most of the Ålandic pots were locally produced on Åland. Manufacture of pots with certain decorative styles, zig-zag lines in particular, appear to be centralised in the archipelago, representing specialist products that were distributed to the consumer communities on Åland. When it comes to the ceramics, the sites and communities investigated in our study mainly relied on local products, apart from the Gölby settlement, where the ceramic record has a distinctively more international character. This, on the other hand, correlates well with other archaeological data from Gölby pointing towards import of materials such as iron and slate, and indicating that this settlement might have had a special function in the trade and redistribution networks of the period.

#### 5 CLAY PAW BURIAL RITE OF THE ÅLAND ISLANDS AND THE MEANING OF CLAY

**Abstract author(s):** Ilves, Kristin - Holmqvist, Elisabeth (University of Helsinki)

**Abstract format:** Oral

Clay paws are small paw-shaped figurines of clay found in the Nordic Late Iron Age burial mounds of the Åland Islands, interpreted as made in connection with the burial rite. Clay paws - that display considerable variation in the design - are distributed widely over Åland, but are documented in only about 12% of the excavated grave mounds. The clay paw burial rite seems to have emerged on Åland in the middle of the first millennium AD and the tradition was in use for over roughly four centuries. Outside of Åland, the rite is mainly attested along the rivers in north-western Russia, though it emerged there several centuries later. Clay paws are clearly bearers of symbolic meaning. Following the idea of this burial rite being connected to the creation of a new cultural identity developed in the wake of immigration to the archipelago, in this study, 25 paws from both geographically and chronologically different burials on Åland were subjected to geochemical analysis by non-invasive portable X-ray fluorescence spectrometry (pXRF). We aimed to compare and evaluate the clay geochemistry of the paws. For further provenancing purposes, mundane ceramic pots from multiple sites on Åland were included in the pXRF analysis as a comparative material. The results show that all the analyzed paws share compositional patterns suggesting that they originate from a single source area, presumably somewhere in Åland. It is curious, however, that the clay geochemistry of the analyzed ceramics is not a match with the paw material. This implies, following the fact that the pots were also produced locally, that the paw production was separated from the making of the everyday ceramics. Furthermore, our results are pointing towards clay paws being produced by following regulated practices in material processing and using a specific clay source for ritual artifacts.

#### 6 WHAT STABLE ISOTOPES TELL ABOUT THE EARLY MEDIEVAL PEOPLE BURIED INTO THE LUISTARI SITE IN FINLAND?

**Abstract author(s):** Etu-Sihvola, Heli (Laboratory of Chronology, University of Helsinki) - Salo, Kati (University of Helsinki) - Arppe, Laura (Laboratory of Chronology, University of Helsinki)

**Abstract format:** Oral

Luistari in Eura is a multiperiodic site that has a large, excavated inhumation cemetery (>1300 graves). This paper examines the early Medieval diet (ca. 600–1100 CE) in Luistari. Because human skeletal remains were most often preserved only near metal objects the temporal focus of the study is on the Viking Period graves that had the largest

number of burial artifacts. The results of carbon and nitrogen isotope analysis on bone and dentine collagen (37 individuals in total for CN) show a continuous reliance on freshwater fish. On the other hand, there is individual variation and some of the studied individuals with seemingly high status had more terrestrial isotope values compared to the mean. Sulfur isotope results for 22 individuals show that the mean for the local range is ca. +8.2 ‰ but there are also four individuals with distinctively low values. They can be considered isotopically as "outliers" but their burial artifacts are similar to others. Enamel carbonate carbon data for 65 Luistari individuals could be tentatively interpreted as showing a possible trend towards a more carbohydrate-rich diet during the Viking Period – potential explanations such as the change in livelihood are discussed.

## **7 ADAPTATION OF CULTURAL FEATURES IN A DECENTRALIZED NETWORK – BURIAL PRACTICES OF NORTHERN FENNOSCANDIA BETWEEN 9TH AND 16TH CENTURIES AD**

**Abstract author(s): Puolakka, Hanna-Leena (University of Oulu) - Kuusela, Jari-Matti (The Regional Museum of Lapland)**

**Abstract format: Oral**

The Late Iron Age and Middle Ages of northern Fennoscandia (ca. 800–1600 AD) have until recently been in many ways a problematic period to study due to scarce and poorly understood archaeological record. In the past, scholarly studies have followed a general pattern of interpretation where northern Fennoscandia has been utilised as a usufruct by people from the regions of southern Fennoscandia and modern-day Russia. Characteristic for these studies is the inherently passive role and the lack of agency they ascribe to local northern communities.

Recently this view has been severely criticized. As the local character of the northern communities has become evident, so has the observation that they clearly differ from the southern communities, while also exhibiting local variation indicating that the northern communities did not form a unified cultural group. This is most evident in the burial forms in use in northern Fennoscandia during the study period.

Burial sites offer a unique perspective on examining social structures and social change, as they are focused on the present of the community while still being rooted in tradition. We will present an overview of known burial practises in the region comprising of present-day northern Finland, Sweden, the Murmansk oblast and the White Sea coast in north-western Russia during the study period. We discuss how they represent the multicultural environment and the fluidity of adaptation of cultural features in the north, as well as the distinct similarities between the communities. We will also examine how the decentralized network, that the northern Fennoscandian communities formed, caused and maintained this multicultural environment during the Late Iron Age and the Middle Ages.

## **8 MEDIEVAL MOVEMENTS ALONG THE FJORD AND BEYOND IN ARCTIC ICELAND**

**Abstract author(s): Harrison, Ramona (University of Bergen)**

**Abstract format: Oral**

This paper presents on long-term archaeological investigations of centuries of farming and fishing activity in North Iceland. Special focus is placed on data sets from the Settlement Era in the late 9th/early 10th centuries to the High Middle Ages in the 14th century AD. Eyjafjörður Ecodynamics research addresses human-nature interactions in inland valley systems, fjord areas, and the very exposed coastal regions close to the Arctic Circle.

Scales of analysis range from land- and seascape investigations to site-focused chronologies to address localized cultural activities. Finally, data resulting from biochemical analysis of marine and terrestrial faunal remains are discussed. Scales of interpretation range from site context-level to North Atlantic-region impacts, providing insight into regional long-term exploitation of marine fish, mammals and birds, and the development of targeted codfish exploitation practices in Iceland connected to medieval international trade systems. Further focus is placed on the importance of chronology and context in establishing reliable baselines for multifaceted stories on settler communities in the North Atlantic Frontier.

## **9 MIGRATION, SETTLEMENT STRATEGIES AND MARITIME RELATIONS IN NW ICELAND DURING THE VIKING AGE**

**Abstract author(s): Guðmundsdóttir, Lísabet (Institute of Archaeology Iceland) - Ramstad, Morten (University Museum of Bergen)**

**Abstract format: Oral**

Iceland was settled around 870 AD by Norse settlers. Written sources indicate that the settlers were of predominantly Norwegian origin, however genetic and isotopic studies suggest a wider geographical background. General assumptions have been that the primary settlement sites were places optimal for agriculture while coastal sites were secondary and generally settled later. However, there has not been any systematic research to support these claims. It is important to take into account the fact that coastal sites are generally under-represented in the Icelandic ar-

chaeological record. Even though not always suited for animal husbandry, these sites had access to extensive marine resources– including fish, seal, whales, birds, and driftwood which were highly valued and sought-after commodities. This talk takes its starting point from an ongoing research project into early maritime sites in Strandir in NW-Iceland. The study has produced new data which highlights the importance of marine resources during the settlement period, giving a broader and more complex picture of subsistence strategies and trade networks. In order to understand local adaptation and technological development in Iceland we will draw attention to similar, earlier and contemporary maritime hunting-fishing sites from Øy garden, Western Norway. Our aim is to address the research bias in the study of the settlement of Iceland, where the extent and importance of maritime resources has not, in our view, been fully recognised. Furthermore, discuss the management and utilisation of these resources from a wider geographical perspective.

## 10 THE BASILICA OF EDSLESKOG - THE OLDEST BRICK BUILDING IN MEDIEVAL SWEDEN

**Abstract author(s):** Lazarides, Anton - Mühlenbock, Christian - Beckman, Anna (Lödöse museum)

**Abstract format:** Oral

The medieval basilica of Edsleskog was one of the largest and most impressive buildings in the late 12th century Scandinavia. The basilica was constructed as a response to a local cult of the Saint Nils, that drew worshipers from near and far. Located in the province of Dalsland, today a wooded, sparsely populated, and remote area of south-western Sweden, the church was built in a location that is rather unusual for such a grand building. Dalsland, during the early Middle Ages, has often been described as a no man's land in-between the emerging kingdoms of Norway and Sweden.

The church was constructed as a large Romanesque basilica made of brick. The lower destruction layers have been dated to the late 12th century. This makes the basilica the oldest brick building in medieval Sweden – several decades before the arrival of the Mendicant orders, previously acknowledged as the introducers of brickmaking in Sweden.

Extensive interregional networks, such as the catholic church and its bishops, must be considered as the driving force behind the erection of the brick-built basilica of Edsleskog. However, the manifestation of the church is also a testament of infrastructural, economic and religious centrality. Between the 12th and 14th centuries, Edsleskog was a hub for pilgrimage and ecclesiastical administration, in the areas of Dalsland and Värmland.

Based on the results of recent excavations at the site, we want to demonstrate how local and regional factors came into play when this important site was elevated to become an important religious site in the fringes of the Catholic world. Further, we aim to emphasize how archaeological research provides new knowledge about peripheral places that historically were of greater importance than previously known.

---

## 129 POPULISM, AUTHORITARIANISM, AUTOCRACY AND OTHER KIDS OF NEO-LIBERALISM – IN ACADEMIA AND ARCHAEOLOGY

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Karl, Raimund (Universität Wien; Forum Archäologie in Gesellschaft - FAiG) - Meier, Thomas (Käte Hamburger Center for Apocalyptic and Post-Apocalyptic Studies; University of Heidelberg, Institute for Pre- and Protohistoric and Near Eastern Archaeology; Forum Archäologie in Gesellschaft - FAiG) - Babić, Štaša (University of Belgrade, Department of Archaeology)

**Format:** Round table

Currently populism is debated as a political development in many countries. The meaning of the word differs between languages as does its connotation. For this RT, we adopt a formalist definition, considering populism as a style, which produces and uses general moods for its own purposes e.g. by polarisation, personalisation, arguments ad hominem and moralisation. It behaves anti-intellectual, anti-institutional and anti-elitist and claims to implement common sense; sometimes combined with conspiracy theories and an imagery of crisis and break down. Autocracy we take as the uncontrolled rule of an individual person, which is (almost) unlimited by institutional restrictions. The ruler legitimises themselves by their perfection and are hardly interested in consent or support by their subalterns.

These and other depraved forms of government seem to be in diametrical opposition to academic governance; explicitly not being based on competition for the better argument and on rationality – let alone predictability, reliability and legitimising institutionalism. But are we too quick ruling out that populism and authoritarianism play a growing role in academic governance? That they do not correspond to academic rules of research does not exclude their influence in governance structures. The neoliberal weakening of academic self-governance seems to foster if not produce a populist and/or autocratic functional elite. And the populist style in politics together with a growing demand for immediate, i.e. monetary „usefulness“ „outreach“ and „transfer“ promote populist production and presentation of knowledge among academics as well. Are such intra-academic populism, autocracy and authoritarianism threats to „proper“ research and academic freedom?

In this RT we want to critically reflect recent developments in academic governance and behaviour all over Europe. We invite short incentive contributions of about 5 mins. for stimulating discussion among participants. Case studies should be anonymised and pay proper respect to each individual's right to dignity.

## 130 NEW INTERACTIONS AND RELATIONS WITH HERITAGE. DIFFERENT APPROACHES BETWEEN HERITAGE AND STAKEHOLDERS

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Loy, Aida (Leiden University) - Martínez Espinosa, Isaac (Universidad de La Rioja) - Larrauri Redondo, Sergio (Instituto de Estudios Riojanos)

**Format:** Discussion session

Nowadays the dissemination of archaeology and heritage is as important and interesting as the research itself. New digital tools and projects focused on learning and teaching about heritage, archaeology and humanities are becoming increasingly participative, including immersive 3D models, interactive maps, and the use of video games. These new approaches to dissemination change the relationship between knowledge, stakeholders and communities. Through these approaches we can try to identify and share archaeological and heritage research in a more cooperative way, and involve a more diverse group of stakeholders.

Digital tools are an important part of the research process, but also part of its ability to present the results. Some digital methods are exclusive to a specific site, for example the digital record of an excavation, while others, like interactive maps or 3D models, can be utilised and reused in several scenarios, such as in schools, museums, and scientific meetings.

This session is aimed at those researchers who use new and diverse ways of sharing, disseminating and teaching archaeology and heritage, and who wish to share their knowledge and experience working with innovative dissemination methods.

## ABSTRACTS

### 1 UIST UNEARTHED: COPRODUCING AN AUGMENTED REALITY APP

**Abstract author(s):** Gal, Emily - Rennell, Rebecca (University of the Highlands and Islands)

**Abstract format:** Oral

Uist, in the Western Isles of Scotland boasts internationally-significant archaeological sites, many of which have been exceptionally well researched and published in academic terms. Nevertheless, Uist's archaeological resources remain poorly understood by Uist's communities and visitors, with a lack of on-site interpretation and limited material in museums. Led by archaeologists at Lews Castle College UHI, the Uist Virtual Archaeology Project developed in response to community desires to improve access, interpretation, and promotion of Uist's rich archaeological resources. There has long been an aspiration to see more benefits for local communities and economy developing from archaeological resources and research, as well as a keen interest for Gaelic language and culture to play a more integrated role in archaeological research and interpretation.

Central to the project is the creation of a mobile app, Uist Unearthed. Uist Unearthed reimagines important archaeological sites along the Hebridean Way in stunning Augmented Reality (AR). It is the first of its kind in Scotland – presenting location-based, GPS triggered, AR experiences of archaeological sites. The app presents complex archaeological data through a variety of media, from lifesize AR reconstructions of sites and bilingual information to animations, audio, and 3D models. Community participation and co-production has been central to this project since its inception, with school groups and local heritage organisations working alongside archaeologists to reimagine Uist's archaeology through the creation of digital content, and beta testing.

The project's success is due in no small part to the strong support it has received from local heritage organisations, community groups, local councillors, commercial archaeologists, and academics. This presentation will highlight the importance of cooperation and partnership in creating a collaborative multivocal archaeological resource. It will also highlight the potential of Augmented Reality as a tool for heritage interpretation in rural and island landscapes.

## 2 3D TECHNOLOGIES, CULTURAL HERITAGE AND PUBLIC OUTREACH: SHARING EXPERIENCES FROM THE MAYA AREA

**Abstract author(s):** Horcajada Campos, Patricia (Departamento de Historia de América y Medieval y Ciencias Históricas- Universidad Complutense de Madrid) - Vidal Lorenzo, Cristina (Departamento de Historia del Arte-Universidad de Valencia)

**Abstract format:** Oral

In 2012, as part of the La Blanca Project, we introduced the application of 3D digital technologies for the documentation, analysis, and valorization of the remains discovered during the archaeological digs at the ancient Maya urban settlements of La Blanca and Chilonché in the Department of Petén, Guatemala. We also developed a novel method consisting in the day-to-day digital documentation of the excavations. The application of these 3D digital tools in the fieldwork was an important innovation, since it was the first time that this methodology had been incorporated in the excavations carried out in the Maya area. The interest and value of the results obtained encouraged us to undertake other projects focused on the use of 3D technologies for research into the Maya archaeological heritage and its dissemination.

In this paper we present the results obtained so far, describing the data collection strategies and highlighting the advantages of this new method, which performs a 3D digital survey by combining photogrammetry and two different types of scanners: a laser scanner for architectural remains and a structured light scanner for artefacts. We stress its potential for generating new approaches in archaeological research. In addition, the high-precision three-dimensional models obtained can be used later to create immersive digital experiences designed to widen the interest in archaeology, thus contributing to the social dissemination of the rich Mayan cultural heritage.

## 3 ARCHAEOLOGY IN SWISS SCHOOLS. A WEBSITE ON ARCHAEOLOGICAL TOPIC AS DIGITAL TEACHING TOOL

**Abstract author(s):** Marti, Cynthia (University of Bern)

**Abstract format:** Oral

Archaeological topics like the Neolithic Revolution, early Mesopotamian civilizations and the classic antiquity are part of the history curriculum in most Swiss secondary schools. Nevertheless, these topics occupy a marginal position in the classroom and teachers therefore have only a limited selection of teaching materials available. As part of my master thesis, I explored the place of archaeology in schools and attempted to create a digital teaching tool that addresses both students and teachers. Digital tools are increasingly in demand and gained importance especially during the pandemic. Furthermore, they are free of charge and easy to access. The final product of the thesis is a website that provides teachers with teaching material (<https://archaeo4schools.wordpress.com/>). The website is intended as a digital teaching tool with essays on various topics related to archaeology that can be used by teachers for lesson planning or to be handed out to students directly. Since the target groups are secondary school students, the essays are written in a way that no previous archaeological knowledge is required. Since almost each secondary school in Switzerland has its own individual syllabus, the papers cover a wide range of topics including archaeological research methods, dating methods, activity of archaeological institutions as well as the legal situation of archaeology and illicit antiquities trade. Other topics cover an overview on epochs from the Palaeolithic to the Iron age, early Middle Eastern civilizations and the classical antiquity. The website is intended to provide teachers with a comprehensive teaching tool that they can use according to their individual lesson plans and to give students a deeper insight into archaeology. Since textbooks and learning aids on archaeology are rather rare in Switzerland, I aimed to make a contribution to archaeological education and to close this gap in the market to some extent.

## 4 A NEW MODEL OF ARCHAEOLOGICAL AND HERITAGE DISCLOSURE FOR SCHOOLCHILDREN

**Abstract author(s):** Espinosa, Isaac (Universidad Autónoma de Madrid & Instituto de Estudios Riojanos)

**Abstract format:** Oral

Archeology and Heritage are two issues that are being studied more and more and earlier in school curricula. The need to find diverse, attractive, original and understandable ways for archaeological and heritage disclosure have led to the creation of innovative systems for educational centers, museums, educational classrooms and even tourist places.

Due to the interest in these new dissemination methods based on transversality, innovation, inclusion and scientific precision aimed at schoolchildren of all ages, Urraca Historiadores in La Rioja has developed in recent years a new model based on the personalization of activities depending on the element to study.

This session will analyse some of his most innovative projects that have been carried out, such as the Davalillo Castle or the Fitero Monastery and the relationship with wine. In the same way, the most original and interesting activities for archaeological and heritage dissemination, their application and the results obtained during their implementation will be explained.

## 5 THE MONASTERY WHERE THE SPANISH LANGUAGE WAS BORN: EXCAVATIONS, RESTORATIONS AND DIDACTIC USES IN SAN MILLÁN DE SUSO

**Abstract author(s):** Jiménez Hernández, Enrique (University of La Rioja)

**Abstract format:** Oral

In the heart of the ancient medieval kingdom of Castile, a small monastery still remains: San Millán de Suso. This construction, created shortly after the collapse of the Roman Empire, was the place of retirement of the hermit San Millán, who founded a monk congregation between these walls. However, the true fame of the monastery comes from its scriptorium, where the first written words in Castilian appear in the 10th century.

Since the passing of San Millán, the monastery has experienced the turbulent times of the history of Spain: late antiquity collapse, visigothic kingdom, muslim conquest, born and expansion of the christian kingdoms, late middle ages crisis, abandonment, building deterioration, 19th century confiscations, civil wars, but also restorations in recent years.

The objective of this proposal is to analyze the criteria that have guided the restorations suffered by the monastery during the last decades, which have illuminated certain stages of the history of the building, while hiding others. Following this approach, a didactic proposal will be added in order to use the visit to the monastery as a didactic resource for high school students.

## 6 HERITAGE DIVULGATION AT THREE LEVELS. AN EXPERIENCE FROM A SMALL REGION (LA RIOJA)

**Abstract author(s):** Larrauri Redondo, Sergio (Instituto de Estudios Riojanos)

**Abstract format:** Oral

For some decades now, digital transformation has been the new scenario for human development. The cultural reality is marked by the revolution of Information and Communication Technologies (ICTs) that reach practically all areas of society and our private lives. In this new scenario, the social networks are a valuable tool that encourages conversation, dissemination, exchanges and reactions to scientific knowledge and cultural heritage.

From La Rioja, a small region in the north of Spain, has proposed a digital strategy in social networks based on three levels, from the most specific to the most general, without neglecting the activities of the territory in which they were born. The profiles for the dissemination of heritage are: "Urraca: History, Education and Innovation", "Rioxa Nostra" and "Taracea of History and Cultural Heritage".

The active presence in the networks allows us to create a community through contents of interest in Heritage, Archaeology and Culture. These virtual profiles allow us to generate spaces of current affairs, but also of knowledge and even pedagogical spaces through which people can connect with their heritage, get to know it, learn to value it and feel the need for its preservation.

## 7 HERITAGE AT YOURS FINGERTIPS - INNOVATIVE METHODS FOR DISSEMINATION OF ARCHAEOLOGICAL HERITAGE

**Abstract author(s):** Byszewska-Lasinska, Agata (National Institute of Cultural Heritage)

**Abstract format:** Oral

National Institute of Cultural Heritage is engaged in disseminating knowledge and promoting socially useful attitudes towards cultural heritage in order to support its protection and its use in sustainable social and economic development. In order to conduct effective projects and campaigns to increase awareness and interest in archaeological heritage, it's necessary to investigate people's knowledge and attitudes, as well as their expectations. It's also important to obtain data on the awareness of archaeologists themselves as to their responsibility for popularization and the effectiveness of the undertaken popularization activities. Last year a public survey was conducted, both among stakeholders and among archaeologists. Its interesting results allow to modify the current dissemination activities and choose the right tools to make the message more effective and reach the larger number of recipients.

One of the popularization projects carried out by the Institute is a website which great value lies in the fact that it's co-created by the Institute staff and its users. The possibilities of the portal make it possible to get acquainted with the historical resources not only in a passive way, but also to use its potential in an active way. Digital tools of the portal allow to search according to the interests, the chronology, themes, a particular region etc.. The integration with the map portal allows to plan e.g. thematic tours, which can be published on the portal or using a mobile device to navigate between the successive points of the trail. It's an excellent tool for the individuals as well as for e.g. cultural educators, all those who use new and different ways to disseminate knowledge about archaeological heritage.

Thanks to the abovementioned social research, it will be possible further refine the portal's capabilities to meet public expectations.

## 8 THE REGIONAL PRESS AS DOCUMENTARY HERITAGE: THE CONSTRUCTION OF THE AUTONOMOUS COMMUNITY OF LA RIOJA THROUGH NUEVA RIOJA

**Abstract author(s):** Galilea, Diego (Instituto de Estudios Riojanos)

**Abstract format:** Oral

The study of the press as an educational tool is essential to achieve a greater capacity for learning and understanding. Using the press as a documentary source is a tool with great application capabilities to disseminate heritage and make known elements of the society of each era, such as clothing, fashions, tastes, customs or ideologies.

Among the multiple forms of analysis that can be worked with the press, we can consider the regional question, especially in specific cases in which the development of democracy and regional autonomy had a great propaganda loudspeaker through the press.

The Nueva Rioja newspaper allows us to learn about the progress and development of the Rioja autonomic process, a small Spanish province that knew how to assert itself by mobilizing the population and using the press as the cause of jokes and popular demands.

Thus, in this communication we will try to bring the vision of the regional press closer to the analysis of a historical event such as the construction of the Autonomous Community of La Rioja, which involved the development of towns and people who never thought of reaching levels of freedom and independence stories that would allow them to self-govern.

## 9 SOCIAL MEDIA TO APPROACH THE HERITAGE. THE CASE OF AN ONLINE JOURNAL

**Abstract author(s):** Loy, Aida (Independent Researcher)

**Abstract format:** Oral

Social media has turned to be part of our daily life and one of the main ways to communicate with each other. Everything is accessible from our phones which allow us to spend more and more time on these networks.

Being known on social media has turned out to be an important part of public life. And Heritage is not an exception. Like many other experts, heritage professionals have found themselves working more and more with different social media, using them as part of the tools to share the heritage. For example, we all expect that our favourite museum has an Instagram account that informs us about their pieces and the tasks carried out by the curators.

But not only museums can be found in these digital spaces. Heritage projects have also found in the social media network a way to share and develop their work.

It is within one of these heritage projects that we can find the online journal European Heritage Times. This online journal presents, periodically, articles written in a journalistic way by authors from different professional and personal backgrounds. These authors write about different topics keeping in mind the common key that joins all the topics, the articles are always related to European Heritage.

## A. THE ARCHAEO TRAIL APP – OPENING A WINDOW INTO THE PAST

**Abstract author(s):** Loges, Luise (University of Glasgow) - Döpfer, Stephanie - Ludwig, Matthias - Gurjanow, Iwan - Oehler, Deng-Xin Ken (Goethe University Frankfurt)

**Abstract format:** Poster

Archaeological sites offer valuable insights into the past. Without a good presentation, however, it is difficult to communicate this knowledge to the general public. The newly developed ArchaeoTrail App does just this and offers the opportunity for visitors to discover the archaeological sites on their own.

The ArchaeoTrail App is based on the successful two-folded system of MathCityMap, which entails a web portal and an actual app for mobile devices. The portal aims at the scientists and research institutions that want to generate archaeological tours for sites all around the world. With just a few clicks, texts, photos, audio files and videos can be uploaded in the web portal. By doing so, a new tour is automatically created. In the smartphone app, visitors are guided by their GPS along a suggested route to the various stations of the tour. They receive brief information in the form of texts and multimedia and, for school groups and families, small quizzes are even provided.

ArchaeoTrail was initiated and is currently run by Stephanie Döpfer in collaboration with Matthias Ludwig and his team, who are responsible for the project's technical realisation. The project is sponsored by the Volkswagen Foundation within the framework "World Knowledge – Structural Support for 'Rare Subjects'". Luise Loges is the public relations officer of the project.

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Tejerizo, Carlos - Stagno, Anna Maria (Laboratorio di Archeologia e Storia Ambientale - Università degli Studi di Genova) - Svensson, Eva - Karlsson, Catarina (Karlstad University)

**Format:** Regular session

Since its emergence as an archaeological discipline in mid 20th century, Industrial Archeology has expanded its scope from the history of technological developments to the social implications of the process of industrialization in a global perspective. This development has, nonetheless, been regionally diverse, and there is still a lack of dialogue between different academic traditions regarding Industrial Archaeology. Moreover, only in the last decade and in close relation to the increasing social awareness of topics such as the Anthropocene, climate change or food sovereignty, has this discipline begun to tackle the social and environmental impact of industry as a historical (and political) process. From this point of view, the material and historical dimension that Industrial Archaeology provides may serve as a key element for present and future debates regarding the relation between production, consumption and the environmental milieu from the perspective of resilience, resistance and change of landscapes and human communities. This session will welcome papers and projects that deal with the archaeological analyses of the impact of industry both in the human communities and in the environment. Thus, it will tackle issues such as the material changes from pre-industrial to industrial communities, the transformation of prior environments and landscapes, the diversified preservation of historical common-lands or the role of industrial heritage in contemporary landscapes, among others. Furthermore, this session aims at establishing new networks for the analyses of Industrial Archaeology and Heritage.

## ABSTRACTS

### 1 AN ARCHAEOLOGY OF A MOMENT OF DANGER: THE IMPACT OF WOLFRAM INDUSTRY ON LOCAL SOCIETIES AND LANDSCAPES IN NORTHWESTERN IBERIA

**Abstract author(s):** Tejerizo, Carlos (Università degli Studi di Genova)

**Abstract format:** Oral

Traditional approaches to the process of industrialization have tended to analyse it as a long duration process, whose impact on local societies and landscapes developed as an extense (and tense) dialogue between resistance, resilience, acceptance and resignation. These analyses stem from the adoption of the English industrialization process as a paradigm, and thus generally understanding that the overall process developed from the Late Medieval Ages into the Modern and Contemporary Eras. However, although these models are not fully incorrect, they tend to blur other more traumatic processes by which the imposition of the industrial economy impacted local societies and landscapes in a very short period of time. It is precisely in these short-term processes where the analyses of materiality may offer an alternative narrative of the deeper dimension of the level of transformation that industrialization implied for local societies and landscapes. In this paper, based on the idea of "moments of danger" developed by archeologist C. Matthews, I will present an archaeological reflection of the deep transformation that the process of industrialization, within the general process of modernity, had to the local social and natural milieus through a case study based in northwestern Iberia. This case study is based at the local village of Casao (Ourense, Spain), one of the hot spots of the so-called "Wolfram War", an event which took place during the 1940s and totally transformed local economies and landscapes in less than one generation time.

### 2 WHEN INDUSTRY CAME TO THE COUNTRYSIDE. SOCIO-ENVIRONMENTAL IMPACTS OF THE IRON MILLS INDUSTRIES IN THE 17TH TO 19TH CENTURIES

**Abstract author(s):** Svensson, Eva (Karlstad University) - Petterson, Susanne (Norskt Maritimt Museum)

**Abstract format:** Oral

In this paper archaeological and paleobotanical traces of changes in landscape, environmental impact and growth of non-proprietor settlements due to industrial establishment will be presented. The 17th century saw a growth of the Swedish iron industry. In the Mining District the shortage of forests for charcoal burning and rapids for hydroelectric power became a bottleneck hampering further growth. Therefore, iron mills were increasingly moved out from the Mining District to other areas rich in forests and rapids. For the hitherto rural areas, the establishment of the iron mills meant great changes. The owners of the new iron mills often came from the urban bourgeoisie, and the employees at the iron mills consisted of both blue and white collar workers. Surrounding the iron mills, new non-agrarian villages with urban traits, and a manor for the patron of the iron mill, were established.

The iron mills, and the new villages, quickly changed life, economy, demography, social structure and environmental conditions in the so far rural areas in which the iron mills were established. New social groups became part of communities dominated by peasants, and the iron mills presented new economic possibilities. The iron mills and the people



in the new non-agrarian villages required food, transportation, charcoal and other necessities to keep both industry and workers with families going. Different strategies for subsidiary earnings such as providing transport of goods and people, charcoal burning and delivery of various commodities were quickly adopted. The new possibilities also opened up for crofters with only a little agrarian land to earn a living, and the numbers of crofters grew quickly. The growing number of people and the demands of the iron mills on natural resources, eg. for charcoal and hydroelectric power, had consequences for the environment and traditional economies previously relying on these resources.

### 3 **FEMALE PRESENCE IN ALENTEJO'S (PORTUGAL) INDUSTRY DURING "ESTADO NOVO": AN ARCHAEOLOGICAL ANALYSIS THROUGH PHOTOGRAPHS**

**Abstract author(s): Pacheco, Susana (Independent Archaeologist)**

**Abstract format: Oral**

The role women performed in industry is often forgotten in historiography and archaeology. It is usual to see authors that analyse working-class as a whole, but it is now common knowledge that several differences and particularities existed, especially between men and women, concerning their activities and the way they were treated/seen in industrial units.

This presentation aims to question that paradigm, analysing how women's lives were, the inequalities/discrimination they faced, their contributions to the proper functioning of factories, and how they were and still are seen by societies.

To achieve these goals photographs will be used as materiality, analysing them with archaeological methodologies, but never forgetting that they are extremely subjective objects, capable of telling us stories of the subjects represented on them, seen by the photographer's perspective.

Photography will also, inevitably, affect individual and collective memory of a situation, in this case of women's presence in industrial places, so the idea societies had and still have of these people is obviously conditioned by the photographs that we see.

In the Portuguese case special attention must be given to this question because photography was frequently used as propaganda during the dictatorship period called "Estado Novo", so this presentation will show that a photograph does not necessarily corresponds to reality, their use demands an extremely cautious analysis.

The case study will be Alentejo, one of the largest and less industrialised regions of Portugal (and one of the most affected by "Estado Novo"), where women's work is always associated (by historiography) with agriculture instead of industry, while it is now known that women from this region were present in both sectors.

### 4 **TRADITIONAL ARTISANSHIP IN INDUSTRIAL LANDSCAPES: POSTMEDIEVAL POTTERY AND TILE PRODUCTION IN LES GAVARRES (CATALONIA, SPAIN)**

**Abstract author(s): Travé Allepuz, Esther (Universitat de Barcelona) - Vicens i Tarré, Joan (Universitat de Girona)**

**Abstract format: Oral**

Pottery and tile production has been a major economic activity in many centres around the Gavarres Mountains, in north-eastern Catalonia, most of them extinguished during the 19th and 20th centuries. It is still important in some places where these artisanal activities shift between traditional practices and industrial production modes in emblematic centres as La Bisbal or Quart. In this contribution, we aim at understanding how this productive activity has shaped industrial and human landscapes from an archaeological perspective. Our research approaches the transformation of production processes and distribution strategies by means of landscape archaeology and within a diachronic framework, starting from the Late Middle Age and enduring until the present day.

Despite the increasing technification of workshops and processes within an industrialized world, potters, ceramicists, and tile-makers have preserved traditional expertise that is vindicated and upheld as an identity-building value for human communities in this area still today. The general decrease of pottery consumption due to the social change occurred in the second half of the 20th century has jeopardized such a production, while the production of tiles and other building materials has fulfilled its industrialization process and concentrated in specific areas. The impact of these societal changes in the landscape and the rich material culture generated by this activity are topics worth exploring.

Our contribution introduces an up-dated state-of-the-art about postmedieval pottery and tile production in Les Gavarres (Catalonia, Spain) in the Modern and Contemporary Ages as mean to [re]integrate the material culture and the industrial development of this area within archaeological studies. We also aim at addressing the strategies for the preservation of social and cultural heritage of these communities as a legacy for the 21st century."

## 5 **BUTTON - AN INCONSPICUOUS INDICATOR OF INDUSTRIALIZATION: ANALYSIS OF MODERN BUTTONS OBTAINED DURING ARCHAEOLOGICAL RESEARCH IN GDAŃSK**

**Abstract author(s):** Dobek, Mikołaj (3rd year student of Nicolaus Copernicus University in Toruń)

**Abstract format:** Oral

One of the fundamental issues at the heart of archaeology is the study of everyday objects in the context of cultural changes over the centuries. It is the evolution of what surrounds man every day that testified to the progress, changes in cultural thought and production. Despite the changes taking place in modern archaeology, the most frequently analyzed objects are still the most popular: ceramics and metal products.

In a way, on the sidelines there are other objects, also present in the life of every person, related to the everyday and festive clothes of the inhabitants of modern cities. These are not only fabrics, but also the inherently related fasteners - buttons and hook-and-eye closure. A large and representative collection of these items was discovered during archaeological works carried out in Gdańsk, in places closely related to the industrial sphere - in the former shipyard, in the place where rope workshops operated, and in the grounds of centuries-old granaries. The analysis of over a hundred items in terms of form and raw material allowed for the systematization of the fasteners, which made it possible to draw a number of conclusions regarding the changes taking place in the production of these products. The buttons turned out to be a perfect mirror in which we can find a reflection of the changes taking place in the dynamically developing, modern city.

## 6 **TOKENS AS A MEANS OF PAYMENT IN GDAŃSK**

**Abstract author(s):** Jasiak, Krzysztof (Nicolaus Copernicus University in Toruń)

**Abstract format:** Oral

Industrial archeology is an intensively developing branch of archeology, which includes the search, recognition, re-research, interpretation, protection and conservation of industrial-related material culture objects. It is safe to say that trade was developing in line with industry. In turn, along with trade, various types of payment systems, not always synonymous with monetary systems, developed.

In many urban sites, researchers discover items that have the characteristics of means of payment. These are finds that have been classified as tokens. During the archaeological work in the city of Gdańsk, many objects were found that testify to the intensive functioning of trade, including monetary funds, such as szeląg, liczman or półgrosz as well as the above-mentioned tokens. The analysis of this group of means of payment from selected archaeological sites located in the former Hanseatic city of Gdańsk contributes to a better understanding of how trade operated. The tokens in Gdańsk were found, among others, at Długie Ogrody Street, Szafarnia, Angielska Grobla, Św. Barbara Street and Lastadia shipyard.

## 7 **CHASING THE RED DRAGON: ARCHEOLOGICAL AND HISTORICAL TRACES OF WELSH QUARRYMEN IN NEWFOUNDLAND**

**Abstract author(s):** Spiwak, Alexa (University of Oslo)

**Abstract format:** Oral

The turn of the 20th century was a time of great upheaval for the North Wales slate industry, mired by bitter labour disputes and the social division which followed in its wake. Once the greatest exporter of slate roofing tiles on earth, the output of the quarries surrounding Eryri (Mt. Snowdon) was drastically reduced. Fearing that the industry would never recover, the quarrymen of Gwynedd county began to look elsewhere for work in the hopes of escaping poverty and finding better working conditions. The same bands of Ordovician and Cambrian slate which transformed the hinterland of northwest Wales, laid down before the separation of the Pangean supercontinent, were also found in the area of Trinity Bay on the island of Newfoundland, off the east coast of Canada. Welsh quarrymen and their families followed the stone and soon began to appear on Newfoundland's shores to work in the small quarries of the then-peripheral and rugged island. Houses and churches followed, and the population of the area grew as new workmen arrived and already-established families added to their numbers. Eventually, Newfoundland's slate industry suffered the same fate as many others, succumbing to low demand and economic depression, but the industry and its quarrymen had a profound local impact. So, too, did the unsuccessful modern attempts at reviving the dormant quarries, dashing hopes of economic recovery after the devastating collapse of the cod fishing industry. This presentation follows the journeys of quarrymen from Wales to Newfoundland, tracing both historical and archeological evidence from the small colonial slate quarrying ventures of the 17th century, through the boom of the 19th and 20th centuries, and culminating in the now-abandoned quarries perched on the edge of the continent.

## 8 HISTORICAL ARCHAEOLOGY OF INDUSTRIALISATION IN THE MOUNTAINS. THE SPACES OF PRODUCTION IN THE LIGURIAN APENNINES (ITALY, 19TH-20TH CENTURIES)

**Abstract author(s):** Cristina, Giovanni - Panetta, Alessandro (Università di Genova)

**Abstract format:** Oral

The aim of this paper is the analysis of the industrialization process in the Ligurian mountains (NW Italy) between 19th and 20th century, through a historical and archaeological cross study.

In this period the European mountains underwent important transformations, including an attempt of industrialisation and productive and economic rationalisation promoted by the central states. Taking a local point of view, it is possible to test the widespread idea of a marginalisation of this area, investigating the specificity of an area traditionally considered marginal both in a geographical sense and because of its distance from the major urban industrial centres that were emerging at that time (Genoa and Milan).

At the centre of the research are some proto-industries that had a local genesis (ice, tinder but also minor manufacturing productions such as damask and cheese) and whose relevance emerges clearly from the observation of their material traces. The aim is to study from an archaeological point of view the temporality and character of this industrialisation process also in relation to contemporary top-down industrialisation interventions carried out in the same areas, such as the construction of reservoirs for the production of hydroelectric energy, highlighting how the conflicts at local level generated by these different industrial perspectives and their social, economic and access to resources relations.

It will also be investigated if and how the modalities and rights of access to the environmental resources used have changed over time, the topographical connections of these production areas with the road network, the spaces inside and outside the settlement and the short and long range commercial circuits.

## 9 A QUESTION OF CHOICE: OBSERVING SHIFTS IN BUILDING MATERIALS AT THE MONTE FASCE UPLAND SETTLEMENTS BETWEEN 19TH AND 20TH CENTURIES.

**Abstract author(s):** Bizzarri, Giulia - Piu, Caterina - Stagno, Anna (Laboratorio di Archeologia e Storia Ambientale - Università di Genova)

**Abstract format:** Oral

While the discussion on the interconnectedness between industrial production and rural contexts has been expanded and simplistic assumptions have been increasingly challenged, the questions surrounding how wider industrial production and products have been integrated into rural, and hypothetically non-industrial, milieus are still numerous. As part of a broader archaeological study on processes of marginalisation of European uplands in the post-Medieval period, settlements and landscapes stretching out to the east of Genova (Italy) - on the hillsides of Monte Fasce and its surroundings, have been surveyed and investigated. Through the Modern Age, the area was characterised by the presence of common lands, owned and used by social groups belonging to downstream villages. Archaeological surveys have identified material traces of agro-pastoral and woodland management activities, hinting at a complex organisation of these hillsides during the late-Modern period. With the late-19th century privatisation of these lands, however, these spaces, and the activities carried out on them, were gradually redefined. The current study considers a sample of settlements and architectural structures identified on Monte Fasce, which present complex outlines and stratified building phases, some of which likely corresponding to actions taking place during these lands' privatisation. While most structures at these settlements are built in local limestone, shifts in the use of building materials can be observed, e.g., the introduction of late 19th century serially produced roof tiles or early 20th century cementitious mortars. While these elements offer useful dating tools, their presence should also be considered as the result of choices performed by local actors modifying and constructing these structures. The analysis focuses on these materials, contextualising their production and use, to start asking specific questions about how these shifts can be connected to changes in resources management practices and how they might have influenced or been the result of social interactions.

## 10 CHALLENGES AND OPPORTUNITIES TO ENHANCE THE MINING-INDUSTRIAL LEGACY OF THE REGIONS OF EL BIERZO AND LACIANA (LEÓN. SPAIN)

**Abstract author(s):** Martínez, Laura - Balado, Francisco M. (UNED)

**Abstract format:** Oral

The closure of the last coal mines in El Bierzo and Laciana regions (León), the dismantling of the thermal power plants of Anllares and Compostilla (León), re-establish the significance of the legacy of the mining industry in these regions. Its short history highlights its social value and container of living memories.

Banditry, institutional neglect and weariness on the part of a society that lost everything from one day to the next, are part of the challenges we are facing in order to implement value enhancement projects in which the inhabitants of the mining territories are the main beneficiaries.

This communication provides an overview for the implementation of initiatives to enhance the legacy of the mining industry developed in the regions of El Bierzo and Laciana, placed in León. The low volume of heritage measures implemented to date as a tool to save iconic facilities from demolition or to protect the recent documentary legacy are discussed. Finally, are presented the actions promoted by the Working Group on Mining and Industrial Heritage of the Iberian Northwest (PMNI) of the Chair of Sustainable Territory and Local Development UNED - ULE of Ponferrada.

## 11 AN ARCHAEOLOGY OF PLASTICS, PEARLS AND POST-INDUSTRIAL ETHICS

**Abstract author(s):** Simpson, Ian (Leiden University)

**Abstract format:** Oral

This paper is concerned with how archaeological and sensory approaches can contribute to understanding the modern materialities of industrial and post-industrial ecologies. In order to investigate and develop an understanding of ecotoxic archaeology and heritage, the approach explores toxicity as a modern materiality related to microplastics and plastics, and how an industrial archaeology can illustrate the construction of sustainability and fostering environmental ethics through the promotion of industrial cultural heritage as negative heritage. These contrasting themes serve to grasp the forsaking of toxic materialities achieved through promotion of tradition as heritage over and above modern waste as non-heritage, as modernity's marginalised toxic heritage. It focuses on early-modern and modern industrial contexts in Bahrain, Qatar, the UAE and Oman, and suggests how the themes and methodology might fruitfully contribute to theoretical understanding applicable to other contexts. It seeks to produce a theoretical and grounded understanding of the ecotoxicities of modern materialities and addresses how heritage discourses and archaeology foreclose or enable an ethics of care concerning the ecology of plastics and environmental citizenship.

## A. DREDGING, PEATS AND PANDEMICS: ARCHAEOLOGY OF THE CONTEMPORARY IN SETÚBAL, PORTUGAL

**Abstract author(s):** de Camargo, Paulo (Federal University of Sergipe) - Fraga, Tiago (Tiago Miguel Fraga, LDA) - Romão, Andréia (Neptune Search) - Marcos San Fulgencio, Jesús (Universidad de Cádiz) - Blázquez Martínez, Jorge (Asociación Nacional de Arqueología Subacuática) - Gómez Rivas, Luis (Universidad Nacional de Educación a Distancia)

**Abstract format:** Poster

Preventive underwater archaeological works are common in Portugal, given that the country has been a signatory of UNESCO Convention on the Protection of Underwater Cultural Heritage since 2006. It is not rare for these works to come across material remains of a recent past, which are indicative of the industrialization potentialized in the XX Century. However, the archaeological approach of these vestiges of the productive activities of the last 250 years is quite uncommon.

The objective of this poster is to present the result of the research Acompanhamento Arqueológico da Dragagem do Acesso Marítimo e Bacia de Estacionamento do Cais do Terminal Teporset, in the county of Setúbal, undertaken between 2020 and 2021. During this work, material remains of ethnological and archaeological interest were located isolatedly in a context already quite altered.

This poster will focus on a specific kind of vestige: the peat for fuel, simple remains which are widely found in underwater archaeological surveys of this sort. In the case here examined, we managed to identify the original peat deposit a few kilometres away from the works, which allows us to examine some aspects of the contemporary history of Portugal: the search for an energy matrix that would reduce the country's dependency on imported fuel in the end of the 18th century; the seasonal peat extraction by the local population; and its use during both World Wars.

---

## 135 THE MEDIEVAL MARKETPLACE IN EUROPE - INTERDISCIPLINARY AND THEORETICAL APPROACHES TO ITS BIOGRAPHIES AND DEVELOPMENTS

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Rösch, Felix (University of Göttingen) - Kalmring, Sven (Centre for Baltic and Scandinavian Archaeology) - Mordovin, Maxim (Eötvös Loránd University)

**Format:** Regular session

The marketplace is one of the most distinct features of the European medieval town. It underwent manifold developments resulting in complex life trajectories and biographies that have a direct effect on their archaeological content as well as visibility.

The reasons for this relate first of all to the changing concepts and significances of what it means to hold a market. In the early medieval period markets were held ad hoc in open air, in the framework of assembly and ceremonial meetings. To hold a market would result in individual pits with residues of craftsmanship, or dark earths with organic deposits. From the moment ports and emporia developed, markets get not only associated with semi-permanent

infrastructure and deposits related to this infrastructure. In the late medieval period, many markets evolved into the monumental public space of towns, as well as "shops" and warehouses. In the latter case, written sources enlighten us about the merchants and their policies and products, without a clear view on the materiality of the traded goods. In the other cases, the archaeological signal will stand alone without detailed written sources about merchants and their agency which makes it much harder to interpret them.

In this session, we will focus on interdisciplinary approaches, implying geoarchaeology and environmental archaeology, and the study of crafts and trade or the use of cultural anthropology which can help us to understand the life trajectories of marketplaces and what it means to hold a market. Furthermore, specific "marketplace landscapes" and their development over the course of the Middle Ages shall be discussed.

We are looking for studies and approaches from all over Europe, relating to markets and trade in the broad medieval period (4th c – 18th c).

## ABSTRACTS

### 1 MEDIEVAL MARITIME ROUTES AND ACCIDENTAL TRAVELLERS

**Abstract author(s):** Panagiotakopulu, Eva (School of GeoSciences, University of Edinburgh)

**Abstract format:** Oral

From the days of the earliest maritime transport, people have accidentally ferried insects in cargo, dunnage and ballast. Some, as human lice and other ectoparasites of humans and domestic animals, were inevitable travellers on their hosts. Others, as wood borers, pests of crops and dung beetles would hitch a hike. Most of the insect data from shipwrecks come from the medieval and post medieval period, when ships became larger and less likely to be thoroughly cleared out between voyages, allowing beetles and flies to become residents in the ballast and dunnage. At that point, various species, taking advantage of the foul conditions in ships' holds, started spreading geographically, following the routes of colonisers and traders and providing interesting information about itineraries, goods traded and conditions on board. A number of post-medieval references provide some information, from mentions of cockroaches on a galleon off the Azores, to the complaints of weevily bread from James Cook's crew in the late eighteenth century. The fossil insect record from wrecks and other assemblages from ports and relevant contexts during the medieval period, show the process and a range of accidental imports, which are often strongly associated with exchange networks, give an alternative record for transatlantic trade.

### 2 EXPECT THE UNEXPECTED – FIND PATTERNS LINKED TO MARKET AND OPEN SPACE ACTIVITIES

**Abstract author(s):** Rösch, Felix (University of Göttingen, Seminar für UFG)

**Abstract format:** Oral

Marketplaces are usually identified by their topographical location. Historical town plans as well as written and onomastic information are the main sources for the late medieval and early modern European town. However, marketplaces and fairs at early urban settlements are often significantly less obvious. Prominent open spaces, be it by an interruption in the development, extraordinary wide streets or free shores, can be considered as indicators. Commonly finds associated with trade and exchange, e.g. coins, scales and weights, and imported pottery, serve as further evidence.

However, the fixation on these "expected" finds distracts from other indications. As a result, such find categories and distribution patterns indicating marketplaces and open spaces may easily be overlooked, or only revealed only at a second or third glance. Marketplaces were not only dedicated to buying and selling goods but, as they often were the only larger open space in town, they served for a whole range of different activities too. Furthermore, seasonal gatherings at fairs were social highlights, which, for instance, entailed a special makeup. Accordingly, the material evidence at markets and open spaces is diverse. It ranges from proof of animal husbandry over concentrations of children's toys or dress accessories such as hairpins to highly fragmented pottery.

The aim of this presentation is to give an overview over those finds and distribution patterns whose connection with market activities is not immediately obvious. Or - to put it short - to raise awareness of the "unexpected".

### 3 CUMULATIVE FINDS OF COINS FROM THE MARKETPLACE OF POLISH CITIES

**Abstract author(s):** Milejski, Pawel (Institute of Archaeology, University of Wrocław; Numismatic Department, Ossoliński National Institute, Wrocław)

**Abstract format:** Oral

The main aim of the paper will be to present coins and tokens that have been found during archaeological excavation on eight marketplaces of Polish cities. The main sites will be the Hanseatic cities – Gdańsk and Wrocław. Additionally, coins found during the research of two other Pomeranian cities – Puck and Skarszewy, two Silesian cities – Gliwice

and Racibórz, and one from Greater Poland and one in Masovia – Kalisz and Pułtusk will be presented. In total, 2,263 coins and 191 tokens were registered from all marketplaces.

I would like to present the chronological range of coins, thanks to which we will be able to see at what time the most money was used in individual marketplaces. It will also be interesting to analyse the denominations that occurred at individual sites, which will certainly differ between Pomeranian and Silesian marketplaces. However, the common denominator for all sites should be a small change that dominated commercial transactions at marketplaces. Furthermore, what is worth emphasizing, we also note few thick silver coins and gold coins. The geographic analysis of the discovered coins will be equally interesting, thanks to which we will be able to confirm which coins circulated in a particular area and which cities and countries had trade contacts with each other. Among all finds, many counterfeit coins were identified – both coins from official issues, which for various reasons were not put into circulation, and coins from counterfeit mints, which were minted illegally from the very beginning.

Acknowledgements

The paper is part of the research program, National Science Centre's, Poland, Preludium 14 – Role and circulation of Prague groschen in East-Central Europe from 1346 to 1547 (UMO-2017/27/N/HS3/00899).

#### **4 THE CERAMICS OF THE MEDIEVAL MARKET PLACE OF STENDAL AND ITS (SUPER-)REGIONAL CLASSIFICATION AND SIGNIFICANCE**

**Abstract author(s): Feike, Timo (Martin-Luther-Universität Halle-Wittenberg)**

**Abstract format: Oral**

Stendal, located in the Altmark region between Berlin and Hanover, was the first town to be granted town rights under Magdeburg town law in 1160 and was thus allowed to hold markets. At the end of the 15th century it was a prospering hub of cloth trading and the biggest and wealthiest town of the March of Brandenburg.

Numerous dendro-dates from the middle to the end of the 12th century bear witness to the establishment in the area of the market place and the expansion of the surrounding urban area. In addition, various diplomatic sources exist. For example, an early market hall is mentioned only a few years later in 1188.

One third of the market place was excavated during renovations in 2016 and due to dendro-dates and diplomatic sources most of the features could be dated to the 12th to early 14th century, the phase of rise and growth of the town.

The early dating of the founding of Stendal, the discovery of brick foundations associated with the market hall and the possibility of connecting dendro-dates and features led to the excavation results being submitted in a dissertation. The ceramic findings were processed simultaneously by the author in his master's thesis.

The analysis of the ceramics leads to interesting findings, which prove the existence of far-reaching trade relations. A skilfully mastered pottery craft even at the earliest stages separates Stendal from older or far bigger towns like the close located Magdeburg.

Therefore, this presentation will show and compare the results of the early dated ceramic analyses of this master's thesis with other marketplaces of other settlements in context of the high medieval Ostsiedlung.

#### **5 MARKETPLACES AND MARKET SQUARES IN DANISH MEDIEVAL TOWNS – THE CASE OF RIBE C. 700-1580.**

**Abstract author(s): Søvsø, Morten (Museum of Southwest Jutland)**

**Abstract format: Oral**

When looking at a map of Danish market towns from the Middle Ages their even distribution across the landscape is evident. This homogeneous picture developed during the 12th and 13th C. The market squares within these towns were situated at the town center and very resilient to changes. In many cases historical maps from the 18th and 19th C. combined with historical sources allow precise reconstructions of medieval market squares or market roads dating back to the founding phases of the different towns. Before the 13th C. the network of towns was fundamentally different both in terms of number, functions and geographical distribution. Towns were few and far between. Administrative functions relating to the king, or the church were based in the diocese towns – civitates – while trade was concentrated and controlled at a few trading towns – emporia. The early development of the Southern Scandinavian marketplace is best studied in the emporia: Reric/Haithabu/Schleswig, Åhus and Ribe.

The paper presents the physical framework within which trade took place in Ribe from c. 700-1580. The early phase is well known through lots of excavations since the 1970's. Less data – though still some – are available between 850 and 1050.

Ribe's High Medieval market square is known from written sources. However, the extent, the exact position and the relation to the two succeeding medieval town halls was not clear. Recent GIS-based studies using historical maps and moving further back in time through written records allows the reconstruction of a 14th C. market square five

times larger than the market square laid out after the 1580 town fire. And some signs indicate this market square may have been even larger in the 13th C. The demise reflects Ribe's changing role within national and international trade networks.

## 6 A POSSIBLE FREEPORT IN VIKING PERIOD SIGTUNA?

**Abstract author(s):** Runer, Johan (Uppdrag Arkeologi)

**Abstract format:** Oral

At home with master Nicolaus and other literates. The people along the shoreline in Sigtuna (Sw. "Hemma hos herr Niklas och andra skrivkunniga. Människorna vid stranden i Sigtuna") is a joint project by Sigtuna museum & Lund university that intends to compile, analyze, and publish the archaeology of the quarter Professorn 1 in Sigtuna. The archaeological investigations in the years 1999 to 2000 of the property here, between the main street running through Sigtuna (Stora Gatan) and the shoreline, generated a large amount of data for the period from about 970. Remains of three medieval plots was unearthed, including traces of circa 150 succeeding buildings and houses. Due to the high quality and resolution of the Professorn 1 investigation, even empty spaces were clearly discernible. Apart from paved alleys and pathways, this is also true for sequences where parts of the plots were unbuilt and instead used in other ways, for example for animal husbandry. A special and very persistent "empty space", in the form of a square structured widening of the alley in between two of the plots, could be determined to have been established around the year 1000. The square was heavily paved, with comprehensive layers of stones in the foundation and logs and planks on top. The square space remained unchanged for a long time. The paved alley connected to the square ran from the shoreline, and a probable jetty/quay, to the south, and up to the main street (Stora Gatan) to the north. An interpretation of the square assumes a connection to the fact that the handling and sale of imported goods was heavily regulated in the early medieval period.

## 7 WHAT MAKES A MEDIEVAL MARKET-PLACE? 'GOING TO THE FAIR' ON THE ISLE OF MAN

**Abstract author(s):** Johnson, Andrew (Manx National Heritage)

**Abstract format:** Oral

Lying near the centre of the British Isles, the Isle of Man is a largely rural island of 580km<sup>2</sup>. It now has half a dozen larger settlements, but there is still clear recognition of the seventeen historical parishes which have existed since the twelfth century.

Most parishes held several markets in the course of the year, which served a number of purposes – particularly the sale of perishable fresh produce, livestock, and the trading of manufactured goods. A few of these gatherings still persisted into the twentieth century as hiring fairs for farm labour.

Metal-detected evidence is meanwhile beginning to indicate the existence of medieval coastal / beach markets, an aspect of trade and communications in the later Viking Age which has been significant by its absence on the island until now.

Central to the creation, persistence and survival of market-places are the criteria that make the location attractive in the first place; obviously these must include the produce itself and the means of bringing it, but to these should be added topographical features and man-made monuments – landmarks – that denote the place as special to the surrounding community.

These market places were either associated with the parish church or with other, earlier chapels and burial grounds that predated the establishment of the parishes. In a small number of cases, an association with medieval assembly sites can also be identified. Map regression analysis and historic landscape study is showing that the same accessibility that enabled church-going played a significant role in place-making and going to market.

## 8 THE MEDIEVAL TOWN SQUARE IN LÜBECK – AN INTERDISCIPLINARY APPROACH TO ITS TOPOGRAPHY, APPEARANCE, AND FUNCTIONS

**Abstract author(s):** Renn, Lisa (University of Freiburg i. Br.; Department for Archaeology and Preservation of monuments in Lübeck)

**Abstract format:** Oral

Town squares seem to be a typical element in the medieval city, giving space for markets, gatherings, proclamations etc., but by taking a closer look upon this urban phenomenon, it quickly becomes clear that this is not necessarily always the case. In fact, these squares can have different origins and histories in the medieval town, presenting us with a vast variety of developments. Therefore, it is interesting to examine the individual town square for its appearances and developments and thereby outline regional and transregional tendencies, similarities, and differences for possible "marketplace landscapes". Furthermore, by using an interdisciplinary approach, through consulting the archaeological, written and pictorial records, the various aspects of the square's topography, appearance and function can be traced, showing a differentiated picture of the urban feature. Thus, this area can give important insights into

the city's development and structure as well as a reflection of the economic, social, and political changes in the city as they manifest themselves on the square. Shifts in importance and perception concerning this urban feature give a picture of the social, physical, and functional dynamics in the city itself.

The main town square in Lübeck will be the focus of my presentation. As "Queen of the hanseatic league" the city had an important standing in the medieval urban landscape, functioning as a role model for later city foundations in the area. The central square of Lübeck is shaped in the early time of the city's history and slowly develops into a monumental public space. By combining different sources the diversity of this main square as well as its development and appearance through time can be uncovered, giving us a detailed picture of this important lived space in medieval Lübeck.

## 9 DATING THE REORGANIZATION. THOUGHTS ABOUT THE DEVELOPMENT OF THE MEDIEVAL MARKETPLACES OF HALBERSTADT AND THEIR SURROUNDINGS

**Abstract author(s):** Schoo, Tobias (Martin-Luther-University Halle-Wittenberg)

**Abstract format:** Oral

At a past lecture, the reorganization of the early medieval city centre of Halberstadt (Harz County in Saxony-Anhalt, Germany) from a formerly populated area to a temporarily inhabited centre for trading was described as a transformation process, which could only be roughly dated. At the end of this process, two marketplaces had emerged – the so-called wood market (1275 AD mentioned for the first time under this name) in the west and the fish market (1478 AD first mentioned) in the east – which were separated from each other by the town hall (completed by the end of the 14th century).

In this paper I would like to highlight the existing dating possibilities of the market development. For this purpose, the features and – to a greater extent – the dating finds of the surrounding excavation projects, which were carried out in the 1990s, shall be used. In particular, the sale booths, which are documented in written sources, are viewed from an archaeological perspective. It will be shown that since the 12th/13th century until the modern age, an almost unchanged room layout can be seen in the surrounding plot structure.

In my presentation I aim to retrace the development of both marketplaces of Halberstadt and highlight the special characteristics of the market ensemble.

## 10 WROCLAW'S NEW MARKET SQUARE. BIOGRAPHY OF URBAN SPACE FROM 12TH TO 20TH CENTURY

**Abstract author(s):** Sawicki, Jakub (Institute of Archaeology, Czech Academy of Sciences in Prague) - Piekalski, Jerzy (Institute of Archaeology, University of Wrocław)

**Abstract format:** Oral

Wrocław is the historical capital of Silesia, the largest city in the region and, in terms of archaeology, one of the most thoroughly researched urban complexes in contemporary Poland. In 2010–12 on the New Market Square (Nowy Targ Square), rescue excavations were carried out within an area of approx. 0.4 ha, in which over 4 m of stratified deposits were documented. The remains of an early medieval settlement (of the 11th century) were recorded as well as the remains of a settlement with timber-framed buildings and wooden communication paths, dating to the mid-13th century. In the second half of the 13th century, and more specifically around 1266, as confirmed by historical sources, the market was located in this area and served this function until the second half of the twentieth century, when it was turned into a car park.

In this paper, we will show how this specific urban area has developed in time, and how this process is visible in archaeological sources. To understand these changes we will also discuss the material culture found on the market square – from the possible metal production, through numerous finds, to the traces of stalls and shops as well as constructions probably used for sorting animals.

## 11 A MARKETPLACE THROUGH THE AGES – THE ARCHAEOLOGY OF THE SZÉCHENYI SQUARE IN GYŐR, HUNGARY

**Abstract author(s):** Kolláth, Ágnes (Bölcsészettudományi Kutatóközpont) - Bíró, Szilvia (Iseum Savariense Archaeological Collection and Research Centre, Savaria Museum, Szombathely) - Tomka, Gábor (Hungarian National Museum)

**Abstract format:** Oral

The sprawling modern industrial hub of Győr lies at the confluence of the Moson Danube, the Rába and the Marcal rivers in the Small Plains region of Northwestern Hungary. Its highest point is the Káptalan Hill, which had been once the Roman auxiliary fort Arrabona, used between the 1st-5th centuries AD, then transformed into an administrative, later episcopal seat of the Hungarian Kingdom in the 10th-11th centuries AD. The fortified hill with the late medieval Bishop's Castle dominated the suburbium, which had been built on the planed ruins of the vicus, and ultimately



became the quaint baroque downtown of Győr. Its regular street-plan is mainly the result of an extensive urban reconstruction in the 16th century, carried out because of the settlement's transformation into a fortress city to protect Vienna against the Ottomans.

However, the central Széchenyi Square has maintained its borders more or less since the 13th-14th centuries and functioned as a marketplace in every period of time, when a permanent settlement existed at the foot of the Káptalan Hill. This is a consequence of the geography of the area, as land traffic had limited options to cross the rivers and the surrounding marshlands, while the hill offered an ideal location to guard these routes. The paper aims to examine the establishment and changes of this marketplace, the break in its history with the abandonment of the Roman vicus and the formation of black earth layers, which continued well into the Middle Ages, until the levelling and paving works of the 13th century. We compare the industrial practises carried out on and around the Roman and Medieval marketplaces, their infrastructure and territorial shifts.

## 12 DEVELOPMENT AND RECONSTRUCTION OF THE 16TH-17TH-CENTURY MARKETPLACE IN PÁPA

**Abstract author(s):** Mordovin, Maxim (Eötvös Loránd University)

**Abstract format:** Oral

The excavation of the Main Square in the west-Hungarian town of Pápa revealed a 1000-year long development history of an urban marketplace. A 10th-11th-century rural settlement was replaced by a paved market, most probably during the first half of the 14th century. Since then, the overall boundaries of the market did not change. However, the inner structure of the market underwent quite radical alterations two times in its history. First, during the Ottoman wars in the first half of the 16th century and second, in the late 18th century. The first, 16th-century transformation resulted in a significant decrease of its territory. It was the consequence of emerging of several large timber-framed buildings. After their destruction in the 1597-siege, the easily flammable structures were replaced by stone buildings. The second radical change in the 18th century, in fact, meant the removing of these structures, reconstructing thus the late medieval appearance of the market. In this paper, I focus on the 16th and 17th-century structures, which temporarily occupied the central place of the square. My goal is to interpret the function and the architecture of those buildings using archaeological, written and illustrative sources.

---

## 142 GENDER ARCHAEOLOGY AT THE CROSSROADS: THE FUTURE AND ITS CHALLENGES [AGE]

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Gaydarska, Bisserka (Manchester Metropolitan University) - Mina, Maria (University of the Aegean)

**Format:** Regular session

Currently, there is little agreement amongst archaeologists as to whether gender archaeology is a mainstream part of our discipline or not. Moreover, in the light of approaches which favour an embodied approach, the relevance of gender as an analytical tool for the understanding of past societies and identities has been called into question. On the one hand there are numerous publications that explicitly (or less so) refer to gender issues. On the other hand, however, the effectiveness of these publications, and their underpinning research, remains limited and in recent years their assumptions have been challenged by neo-liberalist ideology.

The proposed session seeks contributions addressing the following questions:

- What is the current situation regarding gender archaeology taught courses, academic publications, or conference presence?
- Are traditional gender stereotypes and androcentric interpretations persisting to this day in archaeology?
- One of the scopes of gender archaeology is raising awareness about issues of equal opportunities and safety in the profession. Is there today a noticeable change in professional archaeology regarding equal access to employment, equal pay, and opportunities for career advancement for women and members of the LGBTQ+ community?
- Is the portrayal of a genderless past consistent with the scope of gender archaeology?
- How do we respond to approaches which replace the relevance of gender in archaeological interpretations in favour of unique embodied experiences of past identity?
- How effective is the influence of neo-liberalist ideology in minimising the relevance of deeply embedded social structures (such as gender) and the limitations imposed on social subjects by economic or political interests?
- How can we accommodate anthropological evidence for a predominance of binary gender systems in gender-focused archaeological research?
- How do we view the way forward for gender archaeology and what should its role be?

**1 NOW WHAT? GENDERING THE PAST IN A CHANGING PRESENT**

**Abstract author(s):** Skogstrand, Lisbeth (Department of Archaeology, Conservation and History, University of Oslo)

**Abstract format:** Oral

Nordic researchers were among the first to apply feminist theory and gender perspectives in archaeology already in the mid 1970'ties. During the next couple of decades the association between political concerns and archaeological gender research was close. By the early 2000's, third wave theories were incorporated in a number of studies, especially in Norway and Sweden, and during the last 10-15 years gender archaeology has expanded into a world-wide field of study. However, while inventive works within Classical or British archaeology question binarity in prehistoric societies and approach the intersecting identities of past individuals, archaeologists in the most equal countries in the world seem to have lost interest in gender studies. Is this a paradox, or is an inventive and progressive gender archaeology dependent on political engagement in the present? There is no doubt that the world from which Nordic feminism emerged has been changing and we need to re-think feminist theory and gender research.

In this paper I will explore how current discussions concerning gender have influenced Nordic gender archaeological studies the last ten years, discuss whether our research on gender in prehistory is still relevant in the present, and how we might revitalize gender archaeological approaches.

**2 FEMINIST GENDER ARCHAEOLOGY AND MAINSTREAM ARCHAEOLOGY: SHOULD THEY BE INCOMPATIBLE?**

**Abstract author(s):** Monton-Subias, Sandra (ICREA/Universitat Pompeu Fabra)

**Abstract format:** Oral

In this paper, I will discuss why I would respond with a nuanced “yes” to the previous question. I consider that “the mainstream” includes both hegemonic discourses about the past as well as the social logics that order the human relations that accompany their production. For years, gender archaeology has been considering how to become part of the mainstream. I propose to change this question and examine how not to become part of the mainstream. This is a challenge that many feminist archaeologists working within academia face today because they inhabit the uncomfortable juncture implied in working within an increasingly neo-liberal “fast academia” whose hegemonic research rationale is far from the ideal of a feminist depatriarchalization-decolonization of science.

Feminist gender archaeology has never been another “-ism” within the discipline. It was rooted in personal self-experience of sexism in the present, born in relation with others with the same experience, and situated in a commitment to subvert patriarchy and heteropatriarchy through investigations of the past. Discourses of the past are performative — they are instruments of socialization and practices of power that construct heteropatriarchy but can also subvert it. The old but vivid question, however, is how this drive may co-exist with working at institutions and programs of power-knowledge guided by antagonistic inner logics that sustain and recreate heteropatriarchy. How is it possible to navigate these structural discrepancies without being engulfed or politically deactivated by a high-speed academic culture of productivity whose rhythms and values are contrary to feminism? In my view, it is urgent to reflect on academic degrowth through a slow feminist archaeology that decelerates science and reunites, following feminist decolonial scholar Rita Segato, “what capitalism has disjointed”.

**3 NON AEQUAT OMNIS CINIS – OBSOLETE AND NEW APPROACHES ON GENDER IN MORTUARY ARCHAEOLOGY**

**Abstract author(s):** Schlegel, Valery (FU Berlin)

**Abstract format:** Oral

Death does not make us all equal – as is well known to Archaeologists; even in death wealth and health vary greatly, demonstrated in grave goods and human remains. Thus, on the question of replacing gender approaches with unique embodied experiences of past identities, there is to consider that the last decades of research brought developments to the study of identity in so far as identity is now seen in a holistic manner, as a combination of a number of social identities such as class/status/rank, ethnicity/multiculturalism, age, kinship, beliefs/religion as well as sex and gender. These aspects are inherent - to approach an experience of identity (unique or common) means to entail all or at least as many of them as possible. Still, it is certainly open to discussion how much weight should be given to each or one aspect, in this case gender; particularly because gender influences the interpretations of other identity traits heavily.

To support these preceding arguments and to nurture further debate, examples from Mortuary Archaeology are especially beneficial, since the interpretation of burials were and are often altered by assumptions of sex and gender. It poses a particular challenge to mediate between a biologically obtained sex of the bodily remains and the construed gender via grave goods. As the contribution aims to show, burials offer new approaches on gender, because

the latter is performed and presented in these staged rites, not only by the deceased but even more so by the kin responsible for the interment. Selected inhumations from different cultures, e.g. the Scythian burial of Ostrogozhsky, Maiden V, Mound 9, shall concisely elucidate obsolete, current and future methods on gender in Mortuary Archaeology.

#### **4 NEANDERTHAL RESEARCH, EARLY HUMAN HISTORY AND THE ISSUE OF MASCULINITY. THE ROLE OF GENDER IN NEANDERTHAL DISCOURSE.**

**Abstract author(s):** Peeters, Susan (Erasmus School of Philosophy - ESPhil, Erasmus University Rotterdam; Institute for Science in Society - ISIS, Radboud University Nijmegen) - Zwart, Hub (Erasmus School of Philosophy - ESPhil, Erasmus University Rotterdam)

**Abstract format:** Oral

Recently, Neanderthals have metamorphosed from the losers of the human family tree to people like us, full-fledged humans. However, the persistent quest for a minimal difference which separates them from us continues. Palaeoanthropology primarily studies ancestors from a distant past, but its findings also affect the identity and self-image of us, modern humans, defining what it means to be human today. This raises several questions, ranging from more general ones (e.g. How have we used Neanderthals to conceptualize ourselves as human beings?) up to more specific ones (e.g. How are gender issues constructed in narratives about Neanderthals and what does that reveal about current implicit views about gender identities?). This is not only visible in academic discourse, but also in popularisations of research. Popularised versions of Neanderthal research function as spotlights, conveying and amplifying the stereotypes and ideologies which are also at work in scholarly discourse more explicitly. Explicit attention will be given to how males and masculinity are presented. Implicit biases underlying our ideas and ideals of human and humanness, we argue, should be acknowledged and addressed. This will allow us to become open to more inclusive visions of the past, and of what it is to be human.

#### **5 ARCHAEOLOGICAL HERITAGE FEMINIST (RE)READING IN THE BASQUE COUNTRY: WALKING TOWARDS EQUALITY THROUGH ARCHAEOLOGICAL RESEARCH**

**Abstract author(s):** Campos-Lopez, Teresa (University of the Basque Country - UPV/EHU) - Aloria, Itziar (Deusto University) - Castrillo, Janire - Odriozola, Onintza - González, Aitziber (University of the Basque Country)

**Abstract format:** Oral

This proposal aims to present a project based on a research-action methodology, which proposes not only a (re)reading of the presence of women in history and historical discourse, but especially of the activities associated with women. How they are interpreted in terms of historical relevance, visualization in the generated discourse, exhibition notability, as well as its presence in research and in heritage education in three museums of the Basque Country.

Therefore, it analyses the assessment of why and based on what parameters the selection and interpretation of archaeological materials is done, and whether the archaeological reality documented in field work is adequately represented in museum exhibitions, in divulgation or in texts.

Thus, in this project we advocate for the (re)elaboration of a history in equality, with equal participation for women and men, far away from the one we know, in which part of its protagonists have been erased and stripped of a role and participation in historical facts that is not scientifically demonstrable.

It is proposal with a gender perspective, but above all, feminist, whose purpose is to be a true agent of socialization, proposing tools and lines of action to transform the discourses associated with the different historical periods, new patterns of approach to archaeological materials and for their divulgation.

#### **6 GENDER EDUCATION IN ARCHAEOLOGY. CASE STUDIES FROM BULGARIA, GERMANY AND THE UK**

**Abstract author(s):** Gutmiedl-Schuemann, Doris (Universität der Bundeswehr München, Department of Social Sciences and Public Affairs, Historical Institute) - Gaydarska, Bisserka (Manchester Metropolitan University)

**Abstract format:** Oral

In our paper, we will analyse archaeology study programs from 3 different countries (Bulgaria, Germany, UK), and search for lectures and courses with topics like gender, diversity, or identity especially in undergraduate study programs. University education in the chosen countries is part of the Bologna Convention, which makes them comparable; furthermore, they give a good geographical spread across Europe.

Our aim is not to discuss education in archaeology/gender archaeology in general or methods of teaching. By focusing on topic related to gender archaeology and their appearance in study program descriptions as well as in advertisements and syllabi of lectures and seminars, we want to discuss if study programs challenge students to question their perception of past societies, past people and gender roles, in order to participate in modern day discussions on gender, diversity and identity.

Our results show that gender teaching in archaeology in the UK is in decline, while it seems to be stable in Germany as well as on the low baseline of gender teaching we found in Bulgaria. As study programs are shaping future archaeologists and therefore the future of our profession, it is vital for the future of gender archaeology that this important topic is not side-lined during study time, but discussed from the beginning onwards.

## 7 GENDER, ARCHITECTURE, AND ARCHAEOLOGY: NEW CHALLENGES IN RESEARCH AND TEACHING ACTIVITIES OF THE ARSMAYA RESEARCH GROUP

**Abstract author(s):** Vidal Lorenzo, Cristina - Meijde Jansen, Erika - Feliu Beltrán, Núria (Universitat de València) - Horcajada Campos, Patricia (Universidad Complutense de Madrid) - López Bertran, Miriea - Marfí Bonafé, Àngels (Universitat de València) - Muñoz Cosme, Gaspar (Universitat Politècnica de València) - Parpal Cabanes, Esther - Vázquez de Ágredos, María Luisa (Universitat de València)

**Abstract format:** Oral

Gender archaeology has generated numerous publications that seeks to break down gender stereotypes based on androcentric worldviews. One of these views is the relation between women and architecture. From a patriarchal point of view, it is assumed a clear dichotomy between private, associated to women, and public associated to men. Although several studies have challenged this perspective in the academic sphere, we are aware that these gender bias division is still assumed by our students.

From the Arsmaya Research Group of the University of Valencia (Spain), we are challenging this topic by several actions both in research and teaching activities. In this contribution, we will present them to discuss the future of gender archaeology and its role. On the one hand, we will illustrate the different strategies and research questions to engender the use of architectural space in Antiquity (mostly in Maya culture and Ancient Mediterranean) and the research tools we are using to visualize the role of the community (women, men, elderly, children) in the process of building houses. On the other hand, we will present the teaching activities (Workshops, creative and reflexive writing, etc.) that our students prepare in relation to this topic. Finally, we will share how archaeology, ethnoarchaeology, arts, and teaching are unified by creating a series of drawings that recreates the construction process of a Mayan traditional thatched roof house based on verifiable and fairly accurate historical data where the involvement of all the community is highlighted.

## 8 ARCHAEOLOGICAL MUSEUMS AND GENDER ARCHAEOLOGY: CONTRIBUTING TO THE CONSTRUCTION OF A MORE EGALITARIAN SOCIETY. A SPANISH PERSPECTIVE

**Abstract author(s):** Romagnoli, Francesca - Prados Torreira, Lourdes - Castelo Ruano, Raquel (UAM - Universidad Autónoma de Madrid) - López Ruiz, Clara (INJUVE - Observatorio de la Juventud y la Mujer Joven, Instituto de la Juventud) - Gutiérrez Usillos, Andrés - Robledo, Beatriz (Museo de América, Madrid)

**Abstract format:** Oral

In the last two decades, Feminist Archaeology fostered an increasing awareness of gender issues in Spanish archaeology and museum studies. However, several biases are still limiting the narrative of past societies in the museums to truly be inclusive and make visible all the diversity of gender as it is mediated by age, ethnicity, and sexuality. That is especially the case with childhood, women, elders, and different ethnicities. On the one hand, it is about making visible such diversity in the exhibition design (they 'should be there'). On the other hand, it is about the construction of archaeological and museological narratives that highlights the active role of women, children and elders in the society and their participation in tasks that are essential in the collective development and social wellbeing. This challenge is crucial not only because the scientific data are clearly showing that our current narrative does not correspond to the complexity contained in the archaeological records, but also because the museums are thus neglecting their duties as inclusive and socially responsible spaces that have the role of educate in democracy, diversity, and equality.

In this presentation, the authors will present a novel research project aimed at analysing the current biases in archaeological and anthropological museums and proposing viable solutions and practical guidance to museums sector. The project is focused on Spain and Latin America to build a common perspective and shared solutions taking into account the intertwined history between these areas and the need for a decolonial archaeology. In this presentation, examples from Spanish archaeological museums will illustrate the current biases in the narrative of prehistoric, protohistoric and classical archaeology. Furthermore, in progress activities to improve gender and ethnicity perspectives in museums and promote an egalitarian social education will be discussed.

## 9 'MAKE MAPPINGS, NOT MUDDLES': GENDER ARCHAEOLOGY AND THE NEW MATERIALISMS

**Abstract author(s):** Kay, Kevin - Eriksen, Marianne Hem (University of Leicester)

**Abstract format:** Oral

New materialist approaches have promised a transformative approach to gender, placing analytic focus on difference rather than sameness or identity. While more conventional feminist and new materialist approaches converge on many paths (i.e. challenging 'Man' as the measure of all things, challenging assumed universal and essentialising

binaries such as male-female), there are also points of tension. Conventional gender archaeology has seen diverse application in archaeological epistemologies, whereas to date most new materialist approaches remain at a rather more conceptual level. New materialists in turn warn about seemingly pragmatic concepts (e.g. 'gender', 'identity') smuggling old binaries back into our narratives without sufficient reworking.

This paper argues that without serious pragmatic consideration of archaeological methods, new materialist gender 'revisionism' will only ever amount to a reminder that gender, like everything else, is relational. Drawing on Deleuze and Guattari's concept of mapping, we recommend a playful (yet dead serious) alternation between epistemes, even those with binary baggage. A refusal to retreat from the practice of gender archaeology—or to settle into methodological comfort zones—will help us to remain focused on the task at hand: to identify and understand gender difference as it shaped past lives and past worlds. Drawing on our work in Neolithic Turkey and late prehistoric Scandinavia, we will preview a mapping approach to gender, tying together epistemologies without losing sight of the stakes of the matter for people past and present.

## 10 BEFORE, DURING AND AFTER GENDER: TOWARDS A NON-ESSENTIALIST HISTORY OF RELATIONAL DIFFERENCE

**Abstract author(s):** Robb, John (University of Cambridge) - Harris, Oliver (University of Leicester)

**Abstract format:** Oral

This paper proposes a thought experiment, an adventure in ideas. Archaeologists often question gender: the bread and butter of gender archaeology is asking what it meant in an ancient society to be "male" or "female" or something else. But where should questioning stop? Are there things that are definitionally fixed about gender, that we can say are universal and unquestionable? This is clearly related to the scale of analysis: all gender analyses black-box their subject in a historical moment in which important definitional qualities of gender can be presupposed and analysis can focus upon the "content" of gender. But on the largest historical scale, we argue that gender cannot have fixed qualities; that insisting there is a fixed essence to gender reifies it as an ahistorical category. Taking our starting point from feminist theoretical critiques of the sex/gender (nature/culture) divide, from queer theory, and from intersectionality studies, we develop an alternative approach which sees gender as relational, as a protean, continually shifting form of difference which has a variable rather than fixed relationship to bodily difference. We exemplify this analysis with three brief examples: the potential pathways for the evolution of gender, the mutual relations between politics and gendered identities, and reconfigurations of intersectionality or the contextual constitution of gender difference. In this perspective, gender is not only continually redefined all the way down to its very definition; it is also a historically productive and generative form of difference.

## 11 THE FUTURE OF 'GENDER' IN ARCHAEOLOGY: INTEGRATING GENDER-APPROACHES INTO MAINSTREAM ARCHAEOLOGICAL PRACTICES

**Abstract author(s):** Pape, Eleonore (Georg-August-Universität Göttingen)

**Abstract format:** Oral

The concept of gender is becoming more and more relevant throughout the various archaeological disciplines and across borders. This is attested by the increasing number of national and international scientific publications focusing on gender and gender roles, as well as by the increasing visibility of archaeological gender-research disseminated through popular media.

The various publications deal with different aspects of gender, depending on the authors' expertise and the archaeological sources used. Some offer complex deconstructions of past theories and approaches, or present innovative, highly specialized interdisciplinary methods, while others illustrate occasional inconsistencies in specific small-scale archaeological contexts of different prehistoric eras and regions. Further others call out the marginalization of female and diverse researchers, and common stereotypes within past and present archaeological research environments. All these particularistic approaches are crucial and urge to think differently. However, they also struggle to implement the concept of gender into mainstream archaeological practices.

With this paper, I will focus on the challenges we are facing when attempting to grasp gender-conceptions of prehistoric social systems based on burials. I will demonstrate that these challenges do not only include theoretical, cultural or ideological issues, but foremost methodological problems that need to be addressed on a large scale to move forward and to integrate gender – one of the fundamental proxies for the understanding of prehistoric societies – more sustainably into common practice.

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Kapahnke, Sheri (Independent researcher) - Zak, Claire (Texas A&M University)

**Format:** Regular session

There is little doubt that climate change will continue to threaten many coastal archaeological sites globally, and it is equally known that humans have always thrived and depended on this boundary between land and sea. Some of archaeologists' most precious information about past interaction and trade comes from these sites found on the coast, such as harbours, trade settlements, and sites of production and ship construction. Changing coastlines have always affected archaeological sites, although today climate change threatens coasts on a larger scale and more rapidly. Submergence and coastal change take many forms, whether from purposeful water manipulation (to our benefit or detriment), to settlements that have been changed by erosion or sea-level rise. In addition to rising sea levels, coastal sites can be affected by an increase in sedimentation and extension of the coast line.

This session welcomes papers that discuss the significance of preserving and learning from coastal sites and that examine the effects of coastal change from societal adaptation in the past, to plans for managing change in the future. How have past societies purposely manipulated the coast? How have perspectives towards maritime landscapes fluctuated throughout time? What (and how much) can we learn from submerged archaeological sites? How do we bridge the gap between terrestrial and underwater features of a single settlement to approach it holistically? What approaches are being employed today to preserve and document sites threatened by coastal change, and what role do underwater archaeologists have?

Coastal communities are an incredibly rich study area to discern interactions between cultures, economic systems, and social structure beyond the readily visible elite. Coastal sites can be viewed as catalysts for cultural and social change, but also areas of rapid physical change, and therefore, deserve our immediate attention.

## ABSTRACTS

### 1 ANCHORAGES, WAYPOINTS: A PLACE TO REST YOUR WEARY BOW

**Abstract author(s):** Zak, Claire (Texas A&M University) - Kapahnke, Sheri (Independent Researcher)

**Abstract format:** Oral

In the ancient Mediterranean, the transport of people, goods, and ideas was facilitated primarily through seafaring. Ship's crews required places to dock; the coastline of the Mediterranean provided many natural harbors as protected access points to land. Some of these began as simple anchorages - waypoints that grew in importance as the Mediterranean cultures entered into complicated systems of exchange and trade. As sea levels rise and coastlines change through environmental factors such as sedimentation change, these anchorage sites became partially submerged. It is unreasonable to ignore the underwater portions of the site. While terrestrial archaeologists have excavated coastal sites for decades, it is only in recent years that attention has turned towards the submerged portions of these sites. Just as these collaborative spaces were important for the passage and transport of people and goods in the past, they remain valuable opportunities for terrestrial and underwater archaeologists to initiate interdisciplinary cooperation to gain holistic perspectives of ancient anchorages.

### 2 HUMAN-ENVIRONMENTAL INTERACTIONS IN THE GRADO-MARANO LAGOON (NE ITALY)

**Abstract author(s):** Vinci, Giacomo (Dipartimento di Scienze Storiche e dei Beni Culturali, Università di Siena) - Fontana, Alessandro (Dipartimento di Geoscienze, Università di Padova) - Mercuri, Anna Maria (Laboratorio di Palinologia e Paleobotanica, Università di Modena e Reggio Emilia) - Campana, Stefano (Dipartimento di Scienze Storiche e dei Beni Culturali, Università di Siena)

**Abstract format:** Oral

The Grado-Marano Lagoon, at the head of the Adriatic Sea, represents the northernmost sector of the Mediterranean Basin. The area is a low-lying coast that experienced a submerging evolution of about 10 m in the last 8000 years because of eustatic rise and land subsidence.

Since Neolithic communities interacted with amphibious environments and faced the sea-level rise in a long-term perspective. Several sites have been submerged by lagoon waters and deposits and/or eroded by coastal dynamics. The reclamation carried out in the 20th century drained about 400 km<sup>2</sup> of the lagoon rims between the Karst and Venice and led several sites to emerge and crop out. Currently, some archaeological settlements in the study area crop out at surface up to -2.5 m below sea level (bsl). Stratigraphic cores documented other buried sites up to -4 m bsl. The ongoing coastal retreat and near-future scenarios for sea level rise in the North Adriatic indicate that many documented archaeological sites are already at risk and urgently require investigation and protection.

Multi-proxy analyses carried out in the Grado-Marano Lagoon mainly based on remote sensing, historical cartography, geo-archaeological corings and pollen sampling allowed to integrate archaeological and paleo-environmental data in order to assess the human impact on the area and compare landscape and environmental changes with shifts in the settlement strategies.

By examining some case studies spanning from late Prehistory to Middle Ages, we propose a preliminary reconstruction of the modes of interaction between community and the environment which enlightens different ways of adaptations and manipulation of the coast through time. In particular, the data presented allow to reconstruct part of the history of coastal retreat and the lagoon submersion.

### 3 **Tsunami-Derived Sediments Identified in the Destruction Sequence of an 8th Century Warehouse in Caesarea Maritima, Israel**

**Abstract author(s):** Everhardt IV, Charles - Goodman-Tchernov, Beverly (Dr. Moses Strauss Department of Marine Geosciences, University of Haifa) - 'Ad, Uzi - Sharvit, Jacob (Israel Antiquities Authority) - Gendelman, Peter - Barkai, Ofra (Israel Antiquities Authority) - Jaijel, Roi (Dr. Moses Strauss Department of Marine Geosciences, University of Haifa) - Roskin, Joel (Ben-Gurion University of the Negev) - Robins, Lotem (Department of Geography and Environmental Studies, University of Haifa) - Dey, Hendrik (Department of Art and Art History, Hunter College, City University of New York)

**Abstract format:** Oral

Coastal archaeological sites have the potential to preserve evidence for past geological events in well-confined anthropogenic contexts. According to nearshore sedimentological records, a tsunami struck the coast of Caesarea Maritima, likely coinciding with a major earthquake in 749 CE during the early Islamic period. Archaeologists have found anomalous sand and shelly layers from the same time period during excavations of structures near the shore, and variously interpreted them as construction fill, dune development, or general abandonment. Recently, an excavation of a warehouse adjacent to the harbor uncovered this same deposit, allowing it to be analyzed in detail to determine its taphonomic history. The deposit is comprised of a thick, well-sorted sand layer with semi-articulated sequences of building stones followed by independent matrix-supported building stones. The entire deposit is sandwiched between an underlying abandoned early-eighth century floor and from above by a late-eighth century floor; thereby constraining its age to sometime mid 8th c. CE. Two sediment cores from the deposit, as well as reference samples representative of various nearby depositional environments, have been analyzed for grain size distribution, foraminiferal assemblage, and relative age by portable luminescence (POSL). The combination of results indicates that the sandy deposit was formed from the transport of offshore marine sediments during a single high-energy inundation event. The results of this study will contribute to the understanding of high-energy tsunami deposits preserved on land in Caesarea Maritima, and more broadly contribute to the understanding of tsunami sedimentological studies in geoarchaeological contexts.

### 4 **Seagrasses, Invasive Species, and the Changing Mediterranean: Protecting Our Maritime Heritage**

**Abstract author(s):** Kapahnke, Sheri (Independent Researcher) - Zak, Claire (Texas A&M University)

**Abstract format:** Oral

Seagrasses, specifically *Posidonia oceanica* (L.) Delile, are immensely important for the preservation of submerged archaeological remains. Swaths of *Posidonia oceanica* are present around the coastlines of the Mediterranean and create an anoxic environment and sealed protection for archaeological remains through naturally formed layers of grass mats and sediment. This creates the ideal environment to protect fragile artifacts such as wood and iron from degradation, as well as shelter a site from looters. However, the balanced ecosystem that supports the seagrasses ability to create ideal states of preservation is being threatened. Archaeologists are aware of the danger to seagrasses by rising water temperatures and acidification caused by climate change, but the Mediterranean has also experienced a drastic increase in invasive species which are threatening local species populations. Invasive species travel freely into the Mediterranean, moving through the Suez Canal and hitching a ride in ballast water of cargo vessels. The effects on seagrass by alien algal species are well studied in the environmental sciences, but archaeologists have yet to bring this, and many other environmental conversations, into our excavation and education plans. The Mediterranean Sea is undergoing drastic changes, and through discussing the threats to seagrasses, we hope to insight change in our responsibilities as archaeologists to protect not only known archaeological sites, but also the material culture still tucked away by including environmental education in our university programs, participating in community outreach, and collaborating with environmental specialists.

## 5 STEPS FORWARD REGARDING THE DEVASTATION OF TRAWLING ON ARCHAEOLOGICAL SITES AND FISH POPULATIONS

**Abstract author(s):** Jarvis, Charlotte (Ocean Foundation; Texas A&M University)

**Abstract format:** Oral

Since its first mention in a fourteenth-century parliamentary petition, trawling has been regarded as a catastrophically damaging practice with lasting negative consequences on seabed ecology and marine life. Trawling has also had dramatic impacts on maritime archaeology sites, though that side of trawling does not get enough coverage. All three trawling revolutions—invention, mechanization, and later deep-water expansion—have been met with controversy and pushback by the public and environmentalists alike. The practice has enabled humans to exploit the sea and destroy their own history at the same time. Maritime archaeologists and marine ecologists need to communicate and work together to lobby for trawl bans. Shipwrecks are as much part of the marine landscape, and thus of importance to ecologists, as they are to the cultural, historical landscape.

Yet nothing has been done to seriously limit the practice and protect the underwater cultural landscape and archaeological impacts and data are missing from biological reports on the process. No underwater policies have been formulated to manage offshore fishing based on cultural preservation. Some trawling restrictions have been placed after backlash in the 1990s and ecologists, well aware of the dangers of trawling, have lobbied for more restrictions. This research and advocacy for regulation is a good start, but none of this stems from concern or activism by archaeologists. UNESCO has not raised concerns, and, if anything, has policies that harm the trawling ban efforts. They advocate for in situ preservation yet have nothing in place to protect those wrecks from trawling damage. If in situ preservation is to be supported, moorings can be added and shipwrecks, if left in place, can become artificial reefs and places for more artisanal, sustainable hook-and-line fishing.

## 6 GIS MAPPING MARITIME CULTURAL LANDSCAPES IN LIBERIA AND SIERRA LEONE

**Abstract author(s):** Crutcher, Megan (Texas A&M University)

**Abstract format:** Oral

ArcGIS mapping can be a powerful tool to illustrate the history and importance of maritime cultural landscapes. This paper describes the use of ArcGIS to depict historic networks of contact and trade on the coast of West Africa from the 15th to 20th centuries, with a focus on modern-day Liberia and Sierra Leone. This region was home to many groups of indigenous seafarers. Prior to European contact and colonization, these groups had been manipulating the coast, creating and inhabiting what archaeologists would now call maritime cultural landscapes. Their interactions with land and sea encompassed economic, cultural, social, and political spheres. Indigenous seafarers utilized longstanding traditions and existing networks to broker trade with Europeans and to seek employment as laborers or navigators on European ships. Europeans, in turn, created maps and drawings that depicted these coastal networks and the people they encountered, and these records became more detailed and geographically accurate through time. Geographic information from multiple historical periods can thus be overlaid using ArcGIS. GIS maps can reveal spatial and temporal change and continuity in a rich maritime cultural landscape and show how the colonial legacy of inattention and inequality continues to affect heritage preservation in these coastal regions. Using GIS to document past coastal change allows us to implement plans for sustainable heritage management in the future, while digital dissemination removes barriers to access that have often prohibited stakeholder involvement and collaboration in formerly colonized regions.

## 7 PREHISTORIC COASTAL SITES IN BARBADOS, WEST INDIES. EROSION, SUBMERGENCE AND COASTLINE CHANGE

**Abstract author(s):** de Waal, Maaike (Faculty of Archaeology, Leiden University)

**Abstract format:** Oral

This presentation focuses on Barbados, a Small Island Developing State in the Caribbean. The earliest heritage of Barbados involves remnants of prehistoric, Amerindian occupation (ca. 3000 BCE and 1500 CE). These include permanent and temporary settlements, characterized by, often scattered, distributions of fragments of pottery, lithics, shell, and/or coral at the surface. As result of the fact that the sites are difficult to recognize for the untrained eye, and of the fact that the interest of Barbadians, tourists and archaeologists is strongly focused on the island's colonial heritage, the prehistoric sites go largely unnoticed. However, these sites are testimony of how the earliest inhabitants of the island used, inhabited, and modified the landscape, and of how they adapted their socio-economic organization strategies when environmental conditions changed.

Many prehistoric sites are located directly on, or very close to, today's coastline. Coastline changes, for example as a result of rising sea levels and extreme weather events, seriously threaten the conservation of these sites. Archaeological contexts get perturbed, materials are washed away, and complete sites disappear in the sea. Probably, this often happens without being noticed.



As coastal processes were also taking place in the past, site distribution patterns as archaeologists reconstruct them, are incomplete per definition, and settlement locations as we observe them today look very different compared to how they may have looked in the past. The question is: what did these prehistoric settlement locations and settlement patterns look like? What (and how much) information do we miss, when it comes to coastal, prehistoric, occupation? How can we fill in the blanks? And how can we test our ideas?

## 8 **ERODING COASTAL SITES IN SOUTH-CENTRAL VERACRUZ, MÉXICO: CHALLENGES AND SIGNIFICANCE**

**Abstract author(s):** Ensor, Bradley (Eastern Michigan University)

**Abstract format:** Oral

Coastal communities are integral to regional political economies. However, Mesoamerican "Gulf Coast Archaeology" is traditionally informed by investigations of interior areas rather than the actual coastlines. In addition to subsidence and sea level rise, a concern for coastal archaeology is the accelerating erosion of non-submerged sites from increased storm frequency and intensity. This paper describes the challenges of documenting eroding uplifted coastline sites in South-Central Veracruz, México and illustrates how their investigation can contribute new understandings of social, economic, and political organization. A 2021-22 survey of the Camaronera Lagoon margins and adjacent Gulf of México shoreline is presented. Many of the sites - covered by tall dune formations - are situated on volcanically-uplifted marine beds several meters above sea level where erosion cuts vertical cliff faces - a situation requiring portable scaffolding for documentation yet without the opportunity to observe site areas (only lengths along the erosional cuts). The results suggest a densely populated coastal landscape. Furthermore, the highest density is associated with a minor elite site, possibly suggesting a larger supporting population than around the better investigated minor centers of the interior alluvial plains. An additional discovery is textile processing tools and oysters at the Gulf shoreline, indicating economic integration among the inland farming, lagoon, and marine settlements separated by kilometers. Though imminently threatened and challenging to document, the investigation of coastal sites contributes new understandings of prehispanic Gulf Coast societies.

## 9 **SHELL DEPOSITION IN IRELAND: A PROCESS OF THE PAST AND OF THE FUTURE**

**Abstract author(s):** Howle Outlaw, Carolyn (University College Cork)

**Abstract format:** Oral

There has been c. 8000 years of near continuous coastal resource exploitation in Ireland, which remains little understood. Not long after Ireland was first inhabited by humans, shells began to be deposited in middens as a result of this exploitation. In 1912, Johanna Brunnicardi (Ní Holland) sought to investigate and catalogue these midden sites. She recorded 56 sites and interpreted the majority as 'Stone Age' food refuse sites and the remainder as evidence of a regression to a similarly primitive lifestyle, a theory which stunted midden interpretations in Irish archaeological research for some time. Over 100 years later, my current research has resulted in a new catalogue of over 600 shell bearing deposits at over 500 sites. Due to improved dating methods and less restrictive interpretations, the deposits have been dated from the Mesolithic through to the Modern Era, indicating that shell middens are a continuous aspect of the Irish cultural landscape. Using available dating evidence, my research has evaluated these sites diachronically in order to understand how the deposits have changed using statistical analysis of artefactual, ecofactual, and associated structural remains found in or around these features. Through an improved understanding of past coastal resource exploitation in Ireland, we can encourage the cultivation of a more widespread respect for this vulnerable landscape in the face of climate change and human interference and the erosional threats they bring. This paper aims to outline the findings of my chronological analysis, the current state of preservation of the sites, and future research and mitigation potential.

## A. **PRISM: PRESERVATION BY RECORD OF IRELAND'S SHELL MIDDENS**

**Abstract author(s):** Howle Outlaw, Carolyn (University College Cork) - Connolly, Rory - Moucheron, Martin (University College Dublin)

**Abstract format:** Poster

Coastal shell middens are an important archaeological resource with the potential to shed light on many aspects of human interaction with coastal environments over time. Over 500 sites containing these shell deposits can be found at various locations along the c. 7500km or so of the Irish coastline, dating from c. 6000 BC during the Irish Mesolithic to the modern era. Understanding past human-coastal interaction may assist researchers, policy makers, and community leaders in developing new approaches and building resilience along the coast today. However, these shell middens are rapidly being lost due to both natural — sea-level rise, coastal erosion, increased storm surges, and isostatic shift — and anthropogenic factors — trampling by footfall, removal of shells and other archaeological material, certain agricultural practices, and encroaching development.

The PRISM project, Preservation by Record of Ireland's Shell Middens, is a citizen science participatory mapping scheme devised to assist volunteers in recording midden sites and the effects of erosional factors in their own communities. An interactive website has been developed to include digital mapping tools and information for assisting such recording. The project aims to foster pride in local coastal heritage for the volunteer citizens along with creating a more complete record of shell middens for future research and mitigation. This poster will show the website and how to interact with it to continue to spread PRISM throughout the research community and the interested public. As the impacts of climate change are increasingly felt in coastal regions globally, the participatory mapping approach which will be shown will be of interest beyond the island of Ireland.

## 149 INTERACTIONS, INNOVATION AND COMMUNICATION IN THE LATE NEOLITHIC AND COPPER AGE

**Theme: 2. [Re]integration**

**Organisers: Siklósi, Zsuzsanna (Eötvös Loránd University) - Hofmann, Daniela (University of Bergen) - Szilágyi, Márton (Eötvös Loránd University)**

**Format: Regular session**

The period from the 5th to the mid-4th millennium BC in Central and South-Eastern Europe is a time of fundamental change. Larger-scale cultural entities fragment into small regional groupings, yet trends and innovations are shared widely and across such cultural boundaries. Due to this duality, our understanding of the period in question can be very diverse depending on whether we focus on the diversity of cultural entities or on the large networks outlined by for example copper or jade objects, stone knapping technologies, circular enclosures or formal cemeteries.

At this time, very different social formations were in intensive and sustained contact with one another, implying considerable personal and group mobility and intense social interactions. An ever increasing portfolio of methods and approaches means that we can now integrate a much wider range of information for understanding these than ever before, integrating site-based narratives and supra-regional connections. Our session aims to discuss the recent research directions in Late Neolithic and Copper Age studies along the following main axes:

1. Innovation, craftsmanship and specialized knowledge – the development of new technological systems, the networks behind them and societies' reaction to them;
2. Burials, cemeteries, ritual activities – the social importance of ritual spaces and landscapes and the purposeful deposition of human remains, animals and selected material culture;
3. Settlements and economy – organization of everyday life, the spread of economic innovations which enable life in new landscapes;
4. Cooperation and collective action – on a site-based, microregional, regional or supra-regional level;
5. Connections and boundaries – what form did long-distance connections take, what were the routes and actors involved, and at what times/points were boundaries created?

All contributions dealing with any of the above mentioned topics from Central Europe, the Carpathian Basin and the Balkan peninsula and adjacent areas are welcome.

## ABSTRACTS

### 1 INTRODUCTION: INTERACTIONS, INNOVATION AND COMMUNICATION IN THE LATE NEOLITHIC AND COPPER AGE

**Abstract author(s): Siklósi, Zsuzsanna (Eötvös Loránd University) - Hofmann, Daniela (University of Bergen) - Szilágyi, Márton (Eötvös Loránd University)**

**Abstract format: Oral**

In the 5th to the mid-4th millennium BCE widely shared innovations in burial, economy, technology, monument building and settlement organisation are established which cross-cut the increasingly confusing plethora of small-scale 'culture' groups which archaeologists have defined on the basis of pottery. Yet how these very different societies coped with the available innovations is still being hotly debated, with interpretations oscillating between large-scale narratives of increasing hierarchisation throughout the continent and small-scale studies concerned with the peculiarities of particular sites.

In this introductory paper, we want to outline some of the main themes and controversies that have shaped the debate during the last decades highlighting the theoretical and methodological milestones. After the traditional oversimplified "culture" interpretation of migrations, the obscure and often-invoked, but rarely specified "impacts" of archaeological cultures, and the generalized and scientific-based models of New Archaeology, the multidisciplinary research efforts of the last decades mean that our current knowledge about the social interactions between South-

east and Central Europe, as well as areas beyond, offer a more colourful and detailed view than ever. How to deal with this diversity is much less clear. We will use selected case studies to introduce some of the main models.

## 2 INNOVATIONS AND INTERACTIONS IN THE LATER NEOLITHIC FROM THE DNIEPER TO THE VOLGA

**Abstract author(s):** Vybornov, Alexander (-) - Doga, Natalya (-) - Kulkova, Marianna (-)

**Abstract format:** Oral

At the end of the 6th millennium BC in the Lower Volga basin, the Cis-Caspian culture appeared. The vessels of this culture have "collar" corollas and comb ornamentation. The quartzite tools made of the technique of strong push-up have characterized this culture. These innovations are evidence of the migration of carriers of this cultural tradition. Such technological traditions belong to the Azov-Dneprovskaya and the Nizhnedonskaya cultures from the Dnieper and Don steppes. Probably, at the end of the 6th-millennium carriers of these cultures began to move toward the southeast because they have husbandry animals. In the ceramics of the Northern Cis-Caspian, there is noticed the combination of local pricked made ornamentation with the "collar" corolla. This is evidence of local people and newcomer interactions. According to the Oroschaemoe I excavations, in the last of 5th ka BC the carriers of the Cia-Caspian culture moved to the North in the steppe zone. The artifacts which are analogies to the Cis-Caspian materials were found in the northern regions like the forest-steppe zone of the Middle Volga basin. It is the first stage of Samarskaya culture which is dated to the same period. In the Middle Volga region, the contacts between carriers of the first stage of the Samarskaya culture and the local Srednevolzhskaya culture took place. The second stage of the Samarskaya culture is the result of these interactions. As a result of the collaboration of different people groups at the turn of the 6th and 5th millennium BC the spreading of innovations including domestication took place from the Dnieper to the Volga.

## 3 WHERE THE WILD THINGS ARE

**Abstract author(s):** Csippán, Péter (Eötvös Loránd University) - Tóth, Zsuzsanna (Hungarian National Museum)

**Abstract format:** Oral

The role of large games definitely changed during the Late Neolithic in the Carpathian Basin. This fact is mirrored in both animal bone finds and raw material selection of the worked hard osseous tools. On one hand, this phenomenon ties closely to intensive agriculture: the defense of the fields and the herds of domestic species. On the other hand, it connects to the secondary Holocene wild fauna income into the Carpathian Basin. Both of these processes undoubtedly caused an extremely intensive effect, such as the role of large games changed in this period parallel to the more and more frequent contact between animals and human populations.

Our goal is to represent these special roles through the groups of grave finds from the Late Neolithic site of Polgár – Csószhalom, a unique site complex of a tell and a horizontal settlement in the 5th Millenium BC.

According to the meat-eating processes the proportion of venison almost equaled meat of domestic species on the horizontal settlement. Red deer and wild boar played the main role based on the analyzed NISPs, also the most represented species in the worked hard osseous grave goods. Red deer canine beads and their imitations appear in a great number reflecting a special connection of these communities to deer as a game animal and probably endowed with special meaning. On the other hand, tools made of wild boar and deer appear often at the horizontal settlement, too, showing increasing influence of wild species as chosen raw materials for hard osseous tools. The transformation of these animals seems to be general, not only based on the number of their bone fragments but also on their repetitive and conscious selection.

## 4 PATTERNS OF CULTURAL INTERACTION AND GROUP IDENTITY FORMATION AS REFLECTED BY A LATE NEOLITHIC COMMUNITY IN THE MIDDLE TISZA REGION

**Abstract author(s):** Sebok, Katalin - Csippán, Péter - Faragó, Norbert (Institute of Archaeological Sciences, Eötvös Loránd University, Budapest) - Hajdu, Tamás - Köhler, Kitti (Department of Biological Anthropology, Eötvös Loránd University, Budapest) - Kreiter, Attila (Laboratory for Applied Research, Hungarian National Museum, Budapest) - Mörseburg, Alexander (Department of Archaeology and Anthropology, University of Cambridge, Cambridge) - Siklósi, Zsuzsanna (Institute of Archaeological Sciences, Eötvös Loránd University, Budapest) - Szécsényi-Nagy, Anna (Institute of Archaeogenomics, Research Centre for the Humanities, Budapest) - Tóth, Zsuzsanna (Hungarian National Museum, Budapest)

**Abstract format:** Oral

The unique character of the Late Neolithic settlement unearthed near Pusztataskony about a decade ago was apparent from the beginning. While the site is located on the western fringes of the Tisza culture's distribution area, a relatively high number of characteristic Lengyel-style vessel fragments have been found in its ceramic record. Furthermore, a fundamental element of the early Lengyel culture's distinct funerary practice was an integral part of the local rite. An interdisciplinary project was conducted to learn about the factors and actions behind the formation of this archaeological record, the connection network maintained by the community, and the character of social

identity on both personal and settlement levels. The results of independent analyses from diverse fields: anthropology and palaeogenetics, strontium and nitrogen isotope analyses, radiocarbon dates, archaeozoology, ceramic and lithic statistics, and ceramic technology were combined to provide answers. The three-year-long project ended in 2019. The results' relevance seems to go beyond the local level, contributing to understanding social relations and interaction of the communities residing in the Middle and Upper Tisza Region and the Northern Mountains around 4800–4500 cal BC.

## 5 PERIPHERY AND THE CENTRE: SOUTHEASTERN ALPS IN THE FIFTH MILLENNIUM BC

**Abstract author(s):** Mlekuž Vrhovnik, Dimitrij (University of Ljubljana; Institute for the protection of the cultural heritage of Slovenia)

**Abstract format:** Oral

The paper discusses the relationships between the Neolithic “core area” in Carpathian basin and the historical processes in South Eastern Alps in the fifth millennium BC.

Early Neolithic expansion into the Carpathian basin halted when it reached the Alpine foothills. This resulted in a stable frontier, with little evidence of interaction with local foraging groups.

Around 4700 BC there is a pronounced change in the settlement systems in the Carpathian basin with the appearance of stratified tell sites, large nucleated settlements and extensive cemetery grounds. This process is very well documented on sites like Alsónyék-Bátaszék in south-west Hungary, where the settlement experiences sudden large-scale expansion around. It is just one of several substantial Lengyel culture sites in the neighbourhood which include both cemeteries and settlements. These settlements became a large aggregations of people. However, those aggregation stayed in place for only one generation, followed by an equally fast dispersal.

This process coincides with the rapid Neolithic expansion into the SE Alps, especially area of modern Slovenia, which reached its peak around 4700 BC. It is marked by fast expansion along Sava river, establishment of settlements in the river valleys and plains. This is followed by the expansion along Drava and Mur river valleys deep into the Alps. Same pattern of breach of long standing frontiers is visible also elsewhere in the Eastern Alps.

The transition from Late Neolithic to Copper Age in the Carpathian basin is marked by a change from nucleated to a dispersed settlement pattern. Previous nucleated sites were replaced by smaller, flat settlements, largely characterised by shallow single-layer occupation deposits. In the SE Alps this process can be also detected, however it takes the form of an expansion from lowlands into the drier Karst hinterland and formation of enclosed upland sites and hillforts.

## 6 WE TURNED OUR GAZE FROM THE CASTLES IN THE DISTANCE: MAGNETIC PROSPECTION AT BODROGKERESZTÚR SITES IN SOUTHEASTERN HUNGARY

**Abstract author(s):** Ridge, William (University of Illinois at Chicago) - Sarris, Apostolos (“Sylvia Ioannou” Chair for Digital Humanities, University of Cyprus)

**Abstract format:** Oral

The Copper Age Bodrogkeresztúr culture found throughout the Great Hungarian Plain is best known from large, organized cemeteries and for the splendid metal artifacts, including gold pendants and heavy copper axe-adzes recovered from graves. However, these characteristics have overshadowed the fact that little is known about the settlements and social aspects of the period. To date, very few Bodrogkeresztúr settlements have been investigated and there is a significant dearth of domestic data. Over the last few years, an overarching goal of the Copper Age Settlement Project (CASP) has been to identify and investigate the settlements belonging to the Bodrogkeresztúr culture.

Together with colleagues from the Foundation for Research & Technology Hellas (FORTH) and the University of Cyprus, we conducted surface collection and magnetometry survey at three Bodrogkeresztúr sites in Békés County in south-eastern Hungary. From this work we were able to approximate the size of the settlements and to identify potential domestic structures. The magnetic features identified as potential structures were much smaller and less distinct than those associated with houses at nearby Neolithic settlements. The differences are due, in part, to changing strategies at the more ephemeral Copper Age settlements, such as less regular house burning and the possible use of subterranean structures.

## 7 THE FAINT TRACES OF AN ECONOMIC AND POLITICAL HUB AT 4000 BCE IN CENTRAL EUROPE

**Abstract author(s):** Gronenborn, Detlef - Antunes, Nicolas (Leibniz Research Institute for Archaeology - RGZM)

**Abstract format:** Oral

Today the Rhine-Main region is one of the major economic foci and indeed hubs in Central Europe with river-bound and land-bound long-distance networks interconnecting with the global world through Frankfurt Airport.

Looking back 6000 years, it well appears that the region has played a similar hub role, albeit obviously on much lesser scales. Nevertheless, it was tied into overland and likely river-bound networks, interconnecting with the surrounding regions in Eastern and Southern Central Europe.

Most of the major sites, like Urmitz and Schierstein are gone, with no accessible archaeological traces left. But one site, situated on a Taunus Mountain range promontory, is well preserved and has been the focus of continuous research attention.

The most recent results from the ongoing project at Kapellenberg are presented, together with an improved internal site age-model, connecting the various building and wall phases with the little information we have on the Michelsberg occupation of the surrounding eco-cultural niche.

## 8 CONNECTIONS AND INTERACTIONS: LASINJA CULTURE AND ITS NEIGHBORS

**Abstract author(s):** Cataj, Lea (Croatian Conservation Institute)

**Abstract format:** Oral

Lasinja, or Balaton-Lasinja is a well-known Copper age culture, which occupied parts of Central Europe at the end of the 5th millennia. Although it is usually considered that it developed from preceding Lengyel and Sopot cultures, some finds suggest it also had a little help from the East. At what rate did this influence happen is still a question unanswered. It is indicated by several aspects of Lasinja culture that it might have been a part of a bigger complex. Similarities in the way pottery were shaped and decorated can be seen in a wide area of central and southeast Europe, in cultures such as Jordanów/Jordansmühl and Ludanice but even in Bodrogkeresztúr and Bubanj-Sälcuța-Krivodol cultures, implying wide-range connections and interactions. At the same time, local differences can also be noticed. A detailed analysis of Lasinja culture in the central part of Croatia brought several new insights into this Copper age phenomenon. Large-scale excavations and calibrated radiocarbon dates have also helped to prove some „facts“ need to be reconsidered.

## 9 DISTRIBUTION OF RAW MATERIALS OF THE CHIPPED STONE INDUSTRY DURING THE 5TH MILLENNIUM BC IN THE MORAVA RIVER BASIN

**Abstract author(s):** Trampota, Frantisek (Institute of Archaeology of the Academy of Sciences of the Czech Republic)

**Abstract format:** Oral

Thanks to decades of specialization in the determination of stone raw materials, we now have over a hundred settlement sites with a relevant number of determined raw materials from the collections of the chipped industry in Moravia in the 5th millennium BC. In this paper I analyze diachronic changes in the raw material composition of the chipped stone industry in the area of the Morava river basin during ca 4900 - 4000 BC. Raw materials of non-local origin are then selected and their proportions compared with the settlement density. The amount of imported raw materials is also compared with the frequency of occurrence of radiocarbon data, which roughly corresponds to the frequency of population activities. Using these methods, we can find out to what extent the distribution of exogenous raw materials was conditioned by population density or another factor. Lastly, it is possible to compare how is the change in ceramic style associated with the character of the distribution of stone raw materials.

## 10 CONNECTING FRAGMENTS. BAVARIAN LATE NEOLITHIC POTTERY AND ITS NETWORKS

**Abstract author(s):** Szilágyi, Márton (Eötvös Loránd University) - Dunne, Julie (University of Bristol) - Helfert, Markus (Goethe University Frankfurt) - Ramminger, Britta (University of Hamburg) - Hofmann, Daniela (University of Bergen)

**Abstract format:** Oral

The Later Neolithic of southern Bavaria is characterised by an unusually elaborate pottery tradition, that of the so-called Münchshöfen culture. Compared to earlier and later traditions, we observe a profusion of shapes and sizes, as well as elaborate decoration and the deposition of pottery in special circumstances, for instance at enclosure sites. It has also long been appreciated that there are definite links to the south-east and east, as well as more mooted parallels with western traditions.

In this paper, we trace the development and use of the pottery from one particular site, the enclosure of Riedling, to explore the changing social importance of this material. By combining evidence on chronology, pottery use (through lipid analysis) and the likely local origins of the vessels (examined through XRF analysis), we uncover the role of pottery within conspicuous consumption events, which appear to be crucial theatres for the introduction of novelties. By putting these pieces of the mosaic together, we are able to construct a bottom-up model of the use and role of pottery at a single, but seemingly special site. We also reflect on the implications of this pattern for the mobility and connections of the Riedling inhabitants.

- 11**      **BETTER THAN OUR NEIGHBOURS? THE RIEDLING ENCLOSURE AS A SIGNIFICANT PLACE IN THE YOUNGER NEOLITHIC**
- Abstract author(s):** Hofmann, Daniela (University of Bergen) - Szilagyi, Marton (Eotvos Lorand University Budapest) - Griffiths, Seren (Manchester Metropolitan University) - Husty, Ludwig (Kreisarchaeologie Straubing-Bogen)
- Abstract format:** Oral
- The Münchshöfen culture of Lower Bavaria has long stood out as a somewhat exotic phenomenon. Although its pottery shows clear connections to the east, there are hardly any known copper artefacts, and few other signs of incipient hierarchy (such as rich burials or diversified domestic architecture). In contrast, enclosures and structured deposits of humans, animal remains and objects are an increasingly important part of the material record. As our models of the later Neolithic and Early Copper Age are becoming more complex, this leads to the question of whether some societies or regions underwent alternative historical trajectories in which the accumulation of individual status was absent, or at least partly masked.
- In this paper, we explore the biography of one such enclosure, that of Riedling, in order to address these questions. Pulling together the economic, artefactual and anthropological evidence, and on the basis of Bayesian statistical models of radiocarbon dates, we ask how enclosures could have functioned in a context of potentially unstable social relations and short-term aggregations at the local and regional level. Finally, we discuss how this pattern fits into our wider view of emerging hierarchies at the cusp to the Copper Age.
- 12**      **DEPOSITIONAL PRACTICES AT THE RONDEL-TYPE ENCLOSURE OF STAMBOLIYSKI IN BULGARIAN THRACE**
- Abstract author(s):** Katsarov, Georgi - Nikolova, Nikolina - Tsurev, Atanas - Bacvarov, Krum (National Institute of Archaeology & Museum, Bulgarian Academy of Sciences)
- Abstract format:** Oral
- In advance of a gas pipeline construction in 2019, large-scale rescue excavations were carried out at the early Copper Age site of Stamboliyski in Bulgarian Thrace (early fifth mill. cal. BC). Three successive enclosure ditches were uncovered as well as the remains of several palisades that are closely comparable – both chronologically and typologically – to the Central European rondels: complexes of one or more enclosure ditches, usually featuring V-shaped cross-sections and one or more palisades within the enclosure. Nearly 50 pits of various shape and size were excavated in the area enclosed by the ditches.
- This presentation will discuss the different types of deposits revealed both in the ditches and the pits and their possible significance. The structured deposits in the ditches were located mostly around the enclosures' entrances but also in different places on their bottoms. They usually consisted of burnt house debris, disarticulated human remains, animal skulls and horn/antler cores, whole and fragmented pots and grindstones. Some of the pits display almost identical contents and arrangement of their deposits; they were sealed with a thick layer of burnt house ruins and a large number of ceramic sherds. On the basis of the deposits' position, it seems possible to identify features that mark the beginning or the end of the enclosure's use.
- 13**      **A QUANTITATIVE EXPLORATION OF FUNERARY ASSEMBLAGES AS AN ARCHIVE OF MORTUARY INEQUALITY IN THE CHALCOLITHIC**
- Abstract author(s):** Brummack, Sven (Freie Universität Berlin)
- Abstract format:** Oral
- Methodological accesses derived from Economic Sciences have made a firm impact on the study of Inequality in Archaeology. This has been exemplified by studies to track and map out relative inequality of mortuary assemblages (Schulting 1995, Grossman 2021), exposing and quantifying finely graduated differences in relative concentration present in the archaeological record. Because the Lorenz curve in its essence is a cumulative graph (the Gini-coefficient is a function derived from it), it naturally relates to the cumulative character of the burial sites studied. Those, too, represent imperfect and opaque outcomes of essentially iterative practices, which accumulated funerary assemblages over protracted times. Differences in taphonomy, source quality and the underrepresentation of formal burials varies over different regions and time-domains and compounds to the archaeological problem. While relative concentration measures do not necessarily depend upon the presence of a complete sample to describe the distribution encountered, the degree of information improves with enhanced data resolution as well as deeper understanding of the data structure. Presently, our information from formal relative inequality analysis in South-Eastern European burial sites within the period ca. 4800-3800 calBC was largely limited to Durankulak (Windler et al. 2012) and Gomolava (Porčić 2012). From such a limited number of case studies, a general increase of social inequality has been drawn (Kohler et al. 2017, Scheidel 2018). Therefore, the relative inequality analyses were expanded to mortuary assemblages from 60 burial site-units extending from Eastern Slovakia along Tisza and Danube to the western Black Sea coast. From this database, the degree of variance and conformity could be assessed, shedding light on

scales of inequality and how they developed along spatial-temporal frames of reference. This in turn allows forming ideas about the spatial extent of communally shared conceptions expressed through the mortuary domain and ultimately, helps constraining our social interpretations.

## 14 THE RISE OF METALLURGY AND 7000 YEARS OF ANTHROPOGENIC METAL POLLUTION IN SOUTHEASTERN EUROPE

**Abstract author(s):** Veres, Daniel (Romanian Academy, Institute of Speleology, Cluj-Napoca) - Longman, Jack (Marine Isotope Geochemistry, Institute for Chemistry and Biology of the Marine Environment - ICBM, University of Oldenburg) - Chauvel, Catherine (Institut de Physique du Globe de Paris, University of Paris, CNRS) - Tamas, Calin (Faculty of Biology and Geology, University Babeş Bolyai) - Haliuc, Arifina (Romanian Academy, Institute of Speleology, Cluj-Napoca) - Gogaltan, Florin (Institutul de Arheologie al Academiei, Cluj-Napoca)

**Abstract format:** Oral

Archaeological data document early cultural traits in southeastern Europe linked to ancient metalworking, but lack of data precluded a precise understanding of their long-term environmental impact. Here we report geochemical results from several Carpathian peat profiles showing evidence of lead (Pb) excess denoting anthropogenic metal pollution already by ca. 5200-4300 BCE. Our find directly corroborates the archaeological evidence, as the dazzling array of early metal artifacts considerably exceeds evidence from elsewhere making this a phenomenon largely exclusive to southeastern Europe. Using also Pb isotopic constraints and calculations of Pb accumulation, we conclude that the rise in Pb by ca. 5200-4300 BCE represents a direct record of environmental pollution during this era of primitive but widespread smelting and protometallurgical experimentation in the Balkans. We also observe another period of anthropogenic Pb pollution during the Late Copper/Early Bronze Age ~3,600 years BCE, to date one of the earliest such evidence documented in European environmental records. By 1000 BCE the environmental signal of excess Pb became ubiquitous in the Balkans, peaking during the Iron Age and the Roman period. A steady, almost linear increase in Pb concentration after 600 BCE, until ca. 700 CE is observed, documenting the development in both sophistication and extent of southeastern European metallurgical activity throughout Antiquity and the Roman period. A sustained medieval Pb pollution spanning 10th to 16th centuries AD reached pollution levels and a Pb flux comparable to the modern period.

Our reconstruction of environmental pollution contrasts and complements evidence from western Europe. We advocate this reflects regional variability in metal pollution output linked to developments attained by the different European societies for last millennia. Our results add crucial evidence to the long-range and long-lasting legacy cast upon the environment by past metal processing in Europe already from the Late Neolithic, c. 7000 years ago.

## 15 FIFTH MILLENNIUM BC MINIATURE CERAMIC BOTTLES FROM THE SOUTH-EASTERN PREALPS AND CENTRAL BALKANS: THE RESULTS OF THE MULTI-DISCIPLINARY STUDY

**Abstract author(s):** Kramberger, Bine (Institute for the protection of cultural heritage of Slovenia) - Berthold, Christoph (Eberhard Karls Universität Tübingen, Competence Center Archaeometry – Baden-Wuerttemberg CCA-BW) - Spiteri, Cynthia (Eberhard Karls Universität Tübingen, Institute of Prehistory, Early History and Medieval Archaeology)

**Abstract format:** Oral

The aim of this paper is to present the results of a study of miniature ceramic bottles with perforated handles, which entered the pottery repertoire of different Late Neolithic and Chalcolithic communities across the south-eastern Prealps, south-western Transdanubia and the Balkans in the 5th millennium BC. The starting point of our study was the realisation that some of the miniature ceramic bottles discovered in Slovenia in the last 15 years have preserved parts of their former contents, either as a solid filling or as residues on the inner surface. 14 of miniature bottles recovered from sites attributed to the Lasinja Culture in the south-eastern Prealps and the Vinča Culture in the Central Balkans were studied, by analysing the remains of their contents. A multi-method approach was applied, using local high-resolution X-ray microdiffraction ( $\mu$ -XRD2) and micro-X-ray fluorescence ( $\mu$ -XRF) to analyse visible residues in eight bottles, and Gas Chromatography-Mass Spectrometry (GC-MS) to test the absorbed lipid content in nine of them. The analysis showed that cerussite (lead carbonate) was the main component of the white material found in the bottle from Zgornje Radvanje, Slovenia. In the visible residues found in the bottles from Turnišče and Popava 1, the lead minerals plumbogummite and pyromorphite were identified as crystalline components. The identification of lead-containing minerals in this study coincides with the earliest use of lead in south-eastern Europe (ca. 4400–4300 BCE), as described in Hansen et al. (2019). Lipid analysis identified beeswax as the content of three of the vessels, which, together with the detection of lead minerals found in the same vessels, suggests its use as an organic binder, perhaps to form pigments as previously hypothesised, for cosmetic and/or medicinal purposes.

## SHAPING THE METAL. NEW WAVES OF DEVELOPMENT IN THE ENEOLITHIC PERIOD IN THE KODŽADERMEN-GUMELNIȚA-KARANOVO VI AREA

**Abstract author(s):** Darie, Adelina (Bucharest Municipality Museum) - Lazăr, Cătălin (Research Institute of the University of Bucharest - ICUB, University of Bucharest)

**Abstract format:** Oral

This study refers to the development of metallurgy in Southeastern Europe in the 5th millennium BC, focusing on the Kodžadermen-Gumelnița-Karanovo VI cultural complex.

During the early stages of metallurgy in the Balkans, the Eneolithic people started to learn how to produce metal items. The copper mining technology was based on previously existing know-how applied, for example, in the flint mining process. At first, the technological process was based on the cold working of the native copper (hammering, cutting, wrapping, perforating, polishing) (awls, beads, pins, bracelets). Then, significant innovations in the metallurgical process appear, such as the metal casting technique, the lost-wax technique, or serial production (e.g. gold beads, appliques, bucrania found in grave no. 36, Varna I necropolis).

The exchange networks in southeastern Europe have been known since the Early Neolithic (Boian, Hamangia cultures) by the exchange of Spondylus, flint, malachite, graphite.

The emergence of new raw materials (copper, gold) determines the intensifying of production and exchange of metal items, which is demonstrated by the many discoveries of copper tools or ornaments in Southeastern Europe (the first metal ornamental pieces appeared during the early Neolithic and the production of large-sized copper and gold pieces intensifies towards the end of the Neolithic period).

While various metal artefacts were used in everyday activities, some were deposited in the funerary context. Therefore, it is essential to discuss the particular examples of copper and gold items deposition in the KGK VI area (e.g., the copper tools assemblages, the Vidra type hammer-axes, the gold assemblages) and their possible significance to the prehistoric communities.

This work was supported by a grant from the Ministry of Education, CNCS - UEFISCDI, project number PN-III-P4-ID-PCE-2020-2369, within PNCDI III.

## SPREAD OF THE PRODUCTS AND TECHNOLOGY OF METALLURGY VIA THE CARPATHIAN BASIN IN THE 5TH MILLENNIUM BCE

**Abstract author(s):** Siklósi, Zsuzsanna (Eötvös Loránd University) - Virág, Zsuzsanna (Budapest History Museum) - Villa, Igor (Institute of Geology, University of Bern; Centro Universitario Datazioni e Archeometria, Università di Milano Bicocca) - Mozgai, Viktória - Bajnóczi, Bernadett (Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences, Eötvös Loránd Research Network - ELKH) - Hornok, Péter (Vas County Government Office Department of Construction and Heritage Protection) - Kiss, Péter (Savaria Museum) - Kraus, Dávid - Tóth, Márton (Budapest History Museum)

**Abstract format:** Oral

During the 5th Millennium BCE, copper metallurgy considerably changed in the Carpathian Basin. At the beginning of the period, during the Late Neolithic, malachite and small copper ornaments were found primarily in burials and hoards as prestige goods. These items were the products of the Balkan metallurgical centres and no trace of local metallurgy was found. Although potential use of local sources, e.g., Mecsek Mountains, was suggested even in the 1980s, this has never been explored further. At the end of the period, the Middle Copper Age is the time when the first traces of local metallurgy were revealed on settlements. Therefore, the studied period covers the timespan when communities, living in Transdanubia and on the Great Hungarian Plain, had learnt the technology of metallurgy. And this period is not only the time of learning and transmission of knowledge but the heyday of heavy copper axes and adzes in the Copper Age.

The presentation, based on the results of chemical compositional and lead isotope analyses and radiocarbon dating, discusses the potential raw material sources of copper artefacts in specific periods; the feasible communication routes via the artefacts and their technologies had spread; lastly the social interactions behind the spread of copper metallurgy from the Balkans to Central Europe via the Carpathian Basin.

The project is financed from the NRD Fund (NKFI-FK-124260 'The spread of the products and technology of metallurgy in the Carpathian Basin between 5000 and 3000 BC' PI: Zsuzsanna Siklósi).



## PROVENANCE, CHRONOLOGY AND POSSIBLE DISTRIBUTION ROUTES OF THE EARLY ENEOLITHICAL COPPER ARTEFACTS FROM LESSER POLAND. NEW FACTS, NEW INTERPRETATIONS

**Abstract author(s):** Wilk, Stanisław (Jagiellonian University in Krakow, Institute of Archaeology; The Karkonosze Museum in Jelenia Góra) - Stos-Gale, Zofia (University of Gothenburg Department of Historical Studies: Archaeology) - Schwab, Roland (Curl-Engelhorn-Centre of Archaeometry gGmbH) - Sych, Dawid (Independent Researcher)

**Abstract format:** Oral

The Early phase of the Eneolithic period in Lesser Poland, considering the new chrono-typological analysis, is dated between 4050/4000 BC and 3700 BC. It corresponded with the late stage of the Bodrogkeresztúr culture and the Hunyadhalom-Lažňany culture in the Carpathian Basin. The archaeological equivalent of the first groups of people representing an Eneolithic stage of development in Lesser Poland are the so-called the Lublin-Volhynian culture and the Wyciąże-Złotniki group. Both are characterised by the social system modelled on the Bodrogkeresztúr culture. In the funeral rites they emphasized gender and social differentiation of the deceased. The first feature was mainly demonstrated by the specific way the body was arranged inside the grave pit, while the second related to the special selection of grave goods. There is no doubt that the copper tools, weapons and jewellery were the most prestigious kind of grave goods used by the described cultures. In order to identify the possible provenance of the Early Eneolithic copper artefacts discovered in Lesser Poland, as well as the possible routes of their distribution, we analysed for their lead isotope and chemical compositions a set of 17 copper artefacts from 6 cemeteries (Kraków Nowa Huta-Wyciąże 5, Kraków Nowa Huta-Cło 7, Złota Grodzisko I and Grodzisko II, Książnice 2, Koniecmosty). Among the selected items, there were massive copper tools and weapons, such as the Şiria and Jászladány types of axes, the Szakálhát type of hatchet, a chisel, a dagger of the Cucuteni type and copper jewellery represented by 8 bracelets and 4 earrings. The interpretation of the analytical results has been based on comparisons with the published lead isotope and geochemical properties of the European and Near-Middle Eastern copper ore deposits. The results indicate good consistency with the ores and contemporary artefacts from the Western Balkans.

## A MISSED INNOVATION OR A COLLAPSED NETWORK? A "NEW" COPPER HOARD FROM NEUENKIRCHEN (NORTH-EASTERN GERMANY)

**Abstract author(s):** Skorna, Henry (Institut fuer Ur- und Fruehgeschichte Kiel; Cluster of Excellence Roots, Kiel University)

**Abstract format:** Oral

A major innovation in European Prehistory is the introduction of copper as a new material for tools, jewellery and weapons. One centre of metallurgy is the Carpathian Basin where the earliest hints for smelting can be traced back until roughly 5000 BC. In contrast, the regular use of copper/bronze in Northern Europe starts at roughly 1800 BC with the Nordic Bronze Age. As a result, it appears that this region is cut off from the innovation in South-East Europe but between 4600 and 3300 BC a range of copper objects can be found within the Funnel Beaker culture. While early on this limited to imports, also a local production formed around 3750 BC, which then came to a sudden halt with the end of the Funnel Beaker Culture. Metal finds became the exception until the beginning of the Nordic Bronze Age.

A prominent example of the "neolithic" copper is the hoard of Neuenkirchen (North-eastern Germany). During archaeological investigations for the construction of a highway, a hoard of several metal objects was found in 1998. It became clear that this was not a Bronze Age hoard but a much older one, and, thus the largest of such finds in the south-eastern Baltic region for 100 years. So far, however, only a short article had been published on the subject. Further scientific analyses were conducted within the framework of a master thesis in 2017. The results of the typological, trace element and lead isotope analyses are presented within this contribution. Following the topic of this session, these results will be discussed in the context of the innovation of copper metallurgy and possible reasons why that innovation didn't persist beyond the Funnel Beaker Culture. Furthermore the origins and possible routes through which the material and/or objects travelled to Northern Europe will be traced.

## THE LITTLE COPPER AGE OF SOUTHERN SCANDINAVIA

**Abstract author(s):** Johannsen, Niels (University Of Aarhus, Section For Anthropology)

**Abstract format:** Oral

The mid-4th millennium BCE saw a relatively sudden, remarkable peak in the import and cultural consumption of copper in southern Scandinavia. While this phenomenon in itself testifies to the integration of this region in a supra-regional network of exchange, particularly towards the south and southeast, the import of copper was only one of several manifestations of cultural exchange taking place on this geographical axis. Moreover, these clear aspects of supra-regional interaction coincide with a phase of internal and notable, almost dramatic economic, demographic and cultural expansion and growth within the Funnel Beaker communities that inhabited southern Scandinavia. Together, these elements comprise what we might - both in the narrower sense relating to metal, and in the wider sense relating to cultural dynamics - refer to as the "little" Copper Age of southern Scandinavia. This paper a) provides an overview of the import and role of copper in this region during the 4th millennium BCE, especially its second half,

along with other, potentially connected supra-regional exchanges of culture, including style and technology; and b) discusses the relationship between levels of supra-regional interaction and of internal cultural dynamic at a regional level. In addition to shedding light on the development in 4th millennium southern Scandinavia, this may also provide an interesting case for comparison and contrast with the antecedent, larger-scale Copper Age phenomenon of Southeast and Central Europe.

## 21 RECENTLY DISCOVERED MIDDLE COPPER AGE SETTLEMENT IN BUDAPEST

**Abstract author(s):** Kraus, David - Virág, Zsuzsanna - Tóth, Márton (Budapest History Museum) - Siklósi, Zsuzsanna (Eötvös Loránd University)

**Abstract format:** Oral

Budapest is located alongside the River Danube in a central position in the Carpathian Basin. The life of this area's populations has always highly depended on the river, which functions as an informational channel, transportation route and important base of everyday life as well. These statements are proved by a good example from prehistory discussed in this paper.

In 2019, archaeologists of the Budapest History Museum had a chance to investigate almost the entire area of a previously unknown Middle Copper Age settlement close to the Danube (Növény street, Budapest XXII, Hungary). The analysis of the excavated phenomena provided us with significant new information about settlement structure, buildings, economy and spatial activities of the period. The mentioned little village or rather a farm-like settlement was circled by a massive ditch interrupted by many entrances where traces of probable wooden gates or other unknown structures were found. Four houses with rectangular ground-plan and a few outbuildings stood in one group in the same period evidenced by postholes and foundation-trenches. Different economic activities can be presumed in the settlement by the density of pits and postholes. Pits in a dry river fork out of the rounded area can be interpreted as well-like water sources.

The analysis of the <sup>14</sup>C samples and the metal objects is financed from the NRD Fund (NKFI-FK-124260 'The spread of the products and technology of metallurgy in the Carpathian Basin between 5000 and 3000 BC').

## 22 INTERDISCIPLINARY ANALYSES OF LATE COPPER AGE CEMETERIES FROM SOUTHERN TRANSDANUBIA (HUNGARY)

**Abstract author(s):** Gerber, Dániel (Institute of Archaeogenomics, RCH, ELKH, Budapest) - Jakucs, János - Rácz, Piroska (Institute of Archaeology, RCH, ELKH, Budapest) - Somogyi, Krisztina - Honti, Szilvia (Rippl-Rónai Museum, Kaposvár) - Mende, Balázs (Institute of Archaeogenomics, RCH, ELKH, Budapest) - Bondár, Mária (Institute of Archaeology, RCH, ELKH, Budapest) - Szécsényi-Nagy, Anna (Institute of Archaeogenomics, RCH, ELKH, Budapest)

**Abstract format:** Oral

Microregional studies became more prominent in the past few years of archaeogenetics. In these, not large scale, but fine-scale and complete site analyses help recovering population histories and structure in detail. For this study, we sampled more than 70 individuals from southern Transdanubia, mostly connected to the prevailing Eneolithic Baden culture (3600-2800 BCE) of East-Central Europe. We were not only interested in the population structure of these individuals, but we aimed to recover social connections within and between archaeological sites, trace inheritable genetic diseases and to make assumptions on their biological appearance. Our preliminary results indicate surprisingly far travel distances of certain families within Europe most likely connected to the formation of high prestige elite casts, while we can observe on the spot arrival of steppe ancestry to the region, although the presence of other southeastern components yet can not be disclosed. Irregular mortuary practices, such as mass graves are also included in our research, for which bioarchaeological analyses could shed light on the causative reasons. In summary, our research provides valuable information on the social and economic situation of these communities in the Transdanubian region. This study was funded by the National Research, Development and Innovation Office: NKFIH K-128413 research program.

## 23 „THERE AND BACK AGAIN” – FROM PITS TO THE ECONOMY. SITE-BASED RESEARCH IN THE LATE COPPER AGE, CARPATHIAN BASIN

**Abstract author(s):** Rajna, András (Ferenczy Museum Center) - Fábrián, Szilvia - Berente, Zoltán - Czifra, Szabolcs - Klinga, Flóra (Hungarian National Museum) - Marton, Tibor (Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Research Network) - Priskin, Anna (Museum Déri, Debrecen)

**Abstract format:** Oral

Within the framework of our research project "Changing horizon..." funded by the NRD (NRDI Fund K\_129332), our team investigate the various practices associated with and carried out in Late Copper Age households.

The investigation is based on the analytical examination of the excavated settlement materials from the Baden Complex. All the examined sites represent different regions of the Carpathian Basin, our final goal of the research will be to draw micro-regional and regional connections and networks.

The present research interprets pottery finds and other artifacts associated with everyday activities (tools, utensils) from qualitative, quantitative, and semiotic aspects, with a special emphasis on the spatial distribution and density of the finds, and the relation between them. Through the analysis, we can draw higher-level regional conclusions, above the connections of everyday life of the settlement level.

The unified data recording process makes it possible for us to compare the sites in different geographical zones. We hope, that the comparative analysis of our project will help to reveal the knowledge of settlement organization and economic processes in the Late Copper Age, which served as a background of many innovations.

## 24 LIVING WITH CATTLE IN THE ENEOLITHIC OF EASTERN CROATIA

**Abstract author(s):** Pasaric, Maja (Institute of Ethnology and Folklore Research)

**Abstract format:** Oral

Disarticulated cattle remains, cattle burials and figural representations of bovine features (such as figurines, bucrania or vessels decorated with bovine heads or horns) have been registered on a number of Eneolithic sites in Eastern Croatia (e.g. Vučedol, Aljmaš- Podunavlje, Osijek-Retfala and others). Though the importance of cattle beyond their strictly economical value for Eneolithic human communities has been acknowledged, there is a need for new narratives about the prehistory of human-animal relations in the region with a focus on animal agency and inter-species socialities. The paper will reflect on settlements as contextual arenas of human-animal interactions and explore how cattle and humans might have affected each other. The contribution will examine human-cattle interactions, embodied shared experiences and affective encounters (such as joint working activities, everyday shared rhythms, care, the practice of burying the animals) negotiated and acknowledged through different forms of material culture (e.g. figural representations, architecture, burials patterns etc.).

## 25 INVENTIONS, INNOVATIONS AND THE ORIGINS OF SPELT WHEAT

**Abstract author(s):** Lechterbeck, Jutta (Arkeologisk Museum University of Stavanger) - Kerig, Tim (Roots CAU Kiel) - Bevan, Andrew (Institute of Archaeology University College London)

**Abstract format:** Oral

What turns an invention into an innovation? How, if at all, might we observe this process archaeologically? Loosely put, new varieties of plants or animals might be considered as inventions (whether from deliberate breeding or by chance), but ones that are only taken up by humans more systematically as innovations when certain social, demographic, economic and environmental factors encourage such take-up. The archaeobotanically-observed history of spelt wheat (*Triticum spelta*) is an interesting case in this respect. Prior to 3000 BCE, spelt is occasionally found in very small amounts at sites in eastern Europe and south-west Asia, but is usually considered to be a crop weed in such contexts, rather than a cultivar. However, rather suddenly across Central Europe around 2500 BCE, spelt appears more consistently at multiple Bell Beaker and contemporary sites, in quantities which suggest a shift to its use as a deliberate crop. By the full-scale Bronze Age in this region, spelt becomes one of the major crops. This paper discusses this Central European process in greater detail via macro-botanical evidence. It argues that demographic factors during the Neolithic may have inhibited the spread of Asian spelt into central Europe, and that while small amounts of local European spelt were probably present earlier on, it was only at the very end of the Neolithic, in tandem with human population increases and major technological changes such as the introduction of the plough that spelt was taken up as a cultivar. In particular, a shift by some communities in the region ~3000-2500 BCE to more extensive (and sometimes plough-enabled) agricultural strategies may have favoured deliberate cultivation of spelt on less productive soils, given this variety's relative robustness to harsher conditions. In other words, a combination of conditions was necessary for this innovation to really take hold.

## A. A UNIQUE MEGALITHIC FIND FROM THE GREAT HUNGARIAN PLAIN

**Abstract author(s):** Bóka, Gergely (HNM) - Gyucha, Attila (University of Georgia)

**Abstract format:** Poster

Large, complex megalithic monuments erected in great numbers on the Atlantic coast and in northern Europe during the 4th-2nd millennia BC have never been found in Hungary, and the architectural forms and decorative arts of passage and chamber tombs, dolmens, stone circles, and menhirs have not been linked to the archaeological heritage of the Carpathian Basin. This is what renders a stone stele, with engravings evoking some megaliths in western Europe, found near Kevermes in the southeastern Great Hungarian Plain so extraordinary. In this poster, we report the results of our research related to this unique object to clarify the circumstances of its discovery, to examine the possibility of forgery, to specify the raw material and provenance of the stele, and to explore the original context and discuss the

interactions and networks that may have led to the appearance of the motifs on the Keevermes stele on the Great Hungarian Plain.

## **B. THE DIETARY IMPACT OF THE YAMNAYA HORIZON ON CONTEMPORARY AGRICULTURALIST POPULATIONS IN THE BALKANS**

**Abstract author(s):** Sandoval, Elena (University of Bristol; YMPACT project)

**Abstract format:** Poster

The migration of Yamnaya people in the Early Bronze Age, ca. 3,300 BCE–2,800 BCE, into the Pontic-Caspian steppe changed the genetic fabric of Europe. However, how much of the existing societal fabric, if any, was influenced by this migration and subsequent genetic mixing has not been thoroughly explored. Determining the extent of the Yamnaya influence on prehistoric Europe requires an interdisciplinary approach that combines multiple lines of evidence.

This poster presents how this potential cultural flow is being investigated through the lens of diet, via both organic residue and stable isotopic analysis. As Yamnaya are represented exclusively by burial mounds, faunal bones and pottery are rare. Heavily pastoralist subsistence patterns of Yamnaya are generally assumed, based on the lack of settlement evidence. Here, dietary practices within the Yamnaya are directly reconstructed using bulk and compound-specific stable isotope analysis of human skeletal remains. Faunal baseline carbon isotope values will be modelled based upon lipids extracted from pots from local contemporary non-Yamnaya settlements, and Yamnaya faunal bones where available. The analysis of pottery sherds from a diachronic perspective also allows for an investigation of potential cultural exchange between migrating Yamnaya and Balkan societies. Samples of 166 skeletal remains and 238 pottery sherds were chosen to reflect this angle of inquiry creating a sample group that is comprised of Copper Age, Early Bronze Age, and Middle Bronze Age pots and skeletal remains from across modern day Bulgaria and Romania, creating an in-depth study of both spatial and temporal dietary trends.

This study will provide the first detailed picture of the subsistence patterns and change throughout the Yamnaya migration and subsequent contact with Copper Age Balkan societies.

---

## **153 APPS AND ARCHAEOLOGY. USE OF APPS AS ARCHAEOLOGICAL TOOLS**

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Espinosa, Isaac (Universidad de la Rioja) - Madrid, Aida (Leiden University) - Larrauri Redondo, Sergio (Instituto de Estudios Riojanos)

**Format:** Regular session

Archaeology as a science and discipline has evolved remarkably from its birth to the present day. It has gone from being an auxiliary discipline of History to a science with its own entity and personality. In recent years, new technologies have offered us a huge number of tools to facilitate our archaeological work.

In this session we would like to explore some of the most interesting mobile apps for the archaeologist's work, from photogrammetry to GIS systems, exploring which of them are suitable for each archaeological necessity, the implication of new mobile technologies in daily work, current dependence on many of these apps and the democratization of archaeology thanks to them.

Carrying out this session collaboratively in a regular session will help us to share experiences, learn about other uses that can be given to everyday applications that, a priori, are not intended for archaeology, as well as assess and create synergies and possibilities for developing new applications in the future based on the needs of professionals.

## **ABSTRACTS**

### **1 AN APP USING ARTIFICIAL INTELLIGENCE IN CERAMIC IDENTIFICATION**

**Abstract author(s):** Santos, Joel (NOVA University of Lisbon) - Nunes, Diogo (Technical University of Lisbon, Instituto Superior Técnico)

**Abstract format:** Oral

How do archaeologists identify the vast quantities of artifacts of Human Past? Why do archaeologists need to invest so much time in artifacts identification? Do I need to be able to identify each single artifact on the field? These questions are the starting point for our project, that intends to provide archaeologists automatic, reliable, and quick methodology for classifying ceramic sherds directly on the field using an App.

By using Deep Learning and CNN (Convolutional Neural Networks) based on a ceramic photos data base, our App and algorithm is a tool that may well represent one of the possible futures of methodology in Archaeology. We would like that the archaeologist's investment of time would change in a more intellectual and interesting direction instead of "wasting time" in counting and identifying sherds.

This project started by testing amphoras sherds, but in the meanwhile has evolved to other ceramic typologies. The first extended results shall be presented, as well as the perspectives of further uses of this technology in other archaeological problems.

## 2 VISITING ARCHAEOLOGICAL SITES FROM OUR PHONES

**Abstract author(s):** Loy, Aida (Independent Researcher)

**Abstract format:** Oral

The developing and spreading of new technologies have opened the door to their use within archaeological work. This work does not only mean that the in site register is done in a more digital way, but also, it means that the dissemination of the results happen digitally now more than ever.

These new archaeological tools have created new specialisations and experts. One of this specialisations is the 3D reconstruction of archaeological sites or artifacts, and the Virtual Reality models associated with them.

VR models are more and more common, and, when at first this type of reconstructions needed of expensive hardware to be useful, now they can be reproduced with a mobile phone and a VR adapteur that can be found in most everything-stores.

This project focus on the 3D reproduction of some of these archaeological sites and their adaptation to a VR model with the following digitally visitable archaeological site.

## 3 INNOVATIVE TECHNOLOGIES FOR THE USE OF MUSEUMS: THE CASE OF THE CIVIC ARCHAEOLOGICAL MUSEUM A C SIMONINI, CASTELFRANCO EMILIA (MO)

**Abstract author(s):** Neri, Diana (Museo Civico Archeologico A C Simonini; Soprintendenza Archeologia Emilia Romagna; Diorama snc)

**Abstract format:** Oral

On the basis of the Uniform Levels of Quality for the Quality Museums of the Emilia Romagna Region, the Municipality intended to increase the turn-out to the Museum by making it accessible to a large and young public: in this way the recent archaeological discoveries of the area can be enhanced by applying interactive technologies (NFC, animated 3d videos in videowall) and allowing a better reception.

The multimedia installation was created with the aim of recounting the historical, urban and anthropological transformations of the Via Emilia and its surroundings from the Roman age to the Middle Ages.

The start up included a projection from PC in 3D Real-Time rendering narrated with the Via Emilia axis that crosses the territory in the eras (Roman and medieval). It was accompanied by depictions / settings of the everyday in close relationship with the city, which depicts individuals dressed according to the style of the epochs, means of transport and significant subjects to understand the ancient population and the development of the territory. The installation consists of an initial menu that represents the map of the Castelfranco area and surrounding areas on which three sites of interest are highlighted:

- Necropolis of Madonna degli Angeli (Roman era)
- Mansio di Forum Gallorum (mansio in Roman times)
- Portaia tower (Modena side) and part of the city walls (medieval era)

NFC stickers have been applied in three showcases that convey texts and images by reading the smartphone. Visits are underway, greatly increased, by schoolchildren.

## 4 WHAT'S UP, INTRASIS?

**Abstract author(s):** Westergaard, Bengt (The Archaeologists, National Historical Museums)

**Abstract format:** Oral

Apps are getting more and more inevitable in everyday life. The world of archeological fieldwork is no exception, nor are the related offices and labs.

Apps are traditional software applied to mobile units such as surf tabs and smartphones. Intrasis is a software running on two decades now (intrasis.com), a powerful tool for creating and mapping information in a GIS environment - by archaeologists, for archaeologists. As such, it needed to be adapted to meet new demands from a change in environments and methodologies in our archaeological world. One such demand could, for example, be the need for lab specialists, or historians, to immediately interact with the staff in the field, and vice versa. Another example could be the use of 3D-models or historical maps while mapping in the field.

An example will be given from ongoing large scale excavations in the early modern town Gothenburg/Göteborg, Sweden. Being the first time in a major mobile environment, the methods used turned out to be not only time saving but making the complete documentation accessible to the users in a true real time fashion.

Gothenburg/Göteborg was founded as a fortified town in 1621. So far the excavations have yielded fortifications, maritime constructions, households and 9 shipwrecks.

## 5 DEPOPULATION AND HERITAGE LOSS: GIS AND APPS AS HERITAGE DOCUMENTATION TOOLS

**Abstract author(s):** Larrauri Redondo, Sergio (Instituto de Estudios Riojanos)

**Abstract format:** Oral

Depopulation resulting from rural exodus is a complex phenomenon suffered by many territories in Europe. Its dramatic consequences affect society as a whole, which is why it is one of the main concerns for the EU: territorial and generational imbalances and marginalisation, population ageing, demographic gaps, degraded landscapes... and loss/pillage of Cultural Heritage in rural areas.

In mountain areas such as in south of La Rioja, the loss of population is continuous and its harshest expression is uninhabited villages. The disuse and lack of life lead to the abandonment, ruin and gradual disappearance of an important immovable heritage, an example of a rich traditional architecture. The inventory and cataloguing of this heritage makes sense as witnesses and collectors of the current situation of a heritage which, like its inhabitants, is gradually disappearing. They are the main instruments for heritage management and assessment.

Geographic Information Systems (GIS) technology and numerous Apps offer a series of very useful tools for this type of heritage research in both field and laboratory work. GIS software (QGIS, Google Earth, Iberprix, etc.) as well as various Apps (GPS, altimeters, compass, maps, photography, Instant Messaging, etc.) serve as instruments for heritage documentation in rural secondary areas of complicated topography.

## 6 CO-CREATING KNOWLEDGE WITH THE INHABITANTS ULLDEMOLINS VILLAGE (SPAIN), DEVELOPING AND IMPLEMENTING A COLLABORATIVE SURVEYING WEBAPP

**Abstract author(s):** Carracedo Recasens, Robert (Universitat Autònoma de Barcelona; Universidad Austral de Chile Sede Puerto Montt) - Berrocal Barberà, Anna (Universitat Autònoma de Barcelona) - Palomo Pérez, Antoni (Museu d'Arqueologia de Catalunya) - Terradas, Xavier (Consell Superior d'Investigacions Científiques - IMF, Barcelona) - Piqué Huerfía, Raquel (Universitat Autònoma de Barcelona)

**Abstract format:** Oral

This paper presents the results of the development and application of a WebApp in the village of Ulldemolins (Priorat, Tarragona, Spain), being part of the project of citizen science funded by Fundación Española para la Ciencia y Tecnología (FCT-20-16076) "Citizen participation and archaeology in rural areas". The archaeological team with the support of the city council, Lypsum-Enterprise and citizenship, which were involved during co-creation, led its construction. The aim was to link the new technologies with the population in order to build historical identity with the archaeological remains.

The village of Ulldemolins has multiple flint outcrops that are easily accessible as well as a rich archaeological heritage. Agriculture has been the main source of subsistence in the village for many centuries and the families know well the landscape where they usually find archaeological materials that appear during the agricultural fieldwork.

The involvement of citizenship has become a key for the documentation and preservation of this rich archaeological heritage of the village. In order to provide a new tool for the involvement of citizenship in heritage documentation and protection, we have developed a web application. This program allows interested people in the village to register their findings and enter them into the archaeological team's database. The collection of information includes GPS position, a photograph of the artifact and location, as well as different drop-downs (quantity, type, description) that help in its identification.

The project has shown the need to create links and listen to people's needs with the territory, at the same time that the population feels that it is developing an active role in some policies of recognition and preservation of the archaeological heritage associated with its cultural landscape. Technology should be used for a better archaeological record but also to democratize and create new collaborative knowledge of our past.

## 7 EVERYDAY APPS AND THEIR APPLICATIONS IN ARCHEOLOGY

**Abstract author(s):** Espinosa, Isaac (Universidad Autónoma de Madrid & Instituto de Estudios Riojanos)

**Abstract format:** Oral

Can we substitute our notebook for Whatsapp in our excavations? Is it necessary to waste a lot of time and money with expensive photo editing programs? Can we turn our phone into a precision scanner for old documents? The objective of this proposal is to solve all these questions and to facilitate new and original uses of the most popular Apps, focusing on archaeology. Some of them will be analyzed, proposing free solutions for the development of archaeological practice. This novel approach arises from the need to obtain fast, innovative and economic solutions to be able to develop heritage documentation or safeguard projects such as the one we develop in the La Rioja Biosphere Reserve (northern-centre of Spain). Conditions such as distance, the physical environment, difficult access

or time limitations entail the need to apply simple, effective, innovative and economical solutions for archaeological and heritage work thanks to the use of well-known Apps.

## A. **ÊTRE À LA TEMPS! THE USE OF MOBILE APPLICATIONS DURING FIELD SURVEYS IN YAMBOL DISTRICT, BULGARIA**

**Abstract author(s): Valchev, Todor (Regional historical museum)**

**Abstract format: Poster**

During the last decade the mobile computers such as tablets and smartphones conquered the world and at the moment the life without them is unthinkable. The development of mobile applications opened a lot of new opportunities also for scientists and we may say without hesitations that the mobile computers with their varied apps became the Swiss knives of the researchers.

The aim of the poster is to present two GIS-based applications used during archaeological field surveys in Yambol district. They are "Locus Map" and "UTM Geo Map". Both applications are freeware running on Android system. During the field survey the both apps are used simultaneous on one tablet. Bu this way they provide more information about the terrain and eliminate the risk of measuring mistakes.

The development of computer technologies, especially mobile GIS applications in the last decade, allows us to record both the precise position of archaeological sites as well as the status of these sites. Systematic documentation in combination with precise geolocation of archaeological sites is essential for culture heritage protection during development and infrastructure projects.

---

## 154 **TOWARDS AN ARCHAEOLOGY OF HOUSEHOLD PRACTICES – CURRENT ARCHAEOLOGICAL AND SCIENTIFIC CONTRIBUTIONS**

**Theme: 6. A Decade after the 'Third Science Revolution in Archaeology'**

**Organisers: Kienlin, Tobias (Institut für Ur- und Frühgeschichte, Universität zu Köln, Germany) - Fischl, Klára (University of Miskolc, Hungary) - Kovács, Gabriella (Hungarian National Museum, Budapest) - Röpke, Astrid (Institut für Ur- und Frühgeschichte, Universität zu Köln, Germany) - Pető, Ákos (Szent István University)**

**Format: Regular session**

Contrary to a widely held perception that associates methodological advances and the archaeological sciences with broadly speaking Processual Archaeology and its current successors in the so-called 'Third Science Revolution', it is the contextualised understanding of past social practices as already outlined by Post-Processual Archaeology back in the 1990s that imposes the much higher demands on the archaeological data at hand. It is the detailed reconstruction of social practices, invariably bound to practical understandings and the expedient manipulation of a material world, that requires application of the more fine-grained excavation techniques and scientific analyses – a prominent example being, of course, Ian Hodder's fieldwork at Çatal Höyük, whatever one may think about the specifics of his ensuing interpretations.

In this session, therefore, we will ask from a long-term, comparative perspective – from the Neolithic, via the Copper and Bronze Ages – what is our current state of knowledge on the various practices associated with and carried forward by the members of prehistoric households in the Carpathian Basin and South-Eastern Europe. Adopting a micro perspective, we employ a heuristic definition of household as the basic unit of social and economic life in prehistoric communities. Whether these were integrated by kinship or co-residence etc., that are often beyond our grasp, using a wide array of archaeological and scientific techniques we can reach a detailed understanding of their daily activities, decision making and consumption etc. from subsistence practices, raw material procurement, housing and architecture to the various crafts such as pottery making or metallurgy. We see here actually, in every specific case, a plenum of practices, that contains innumerable practices and countless material arrangements, and whose development through time we can trace including the numerous cross-linkages among such activities all too often discussed separately for purely heuristic reasons.

## ABSTRACTS

### 1 **KINSHIP AT ÇATALHÖYÜK**

**Abstract author(s): Ensor, Bradley (Eastern Michigan University) - Souvatzi, Stélla (University of Thessaly)**

**Abstract format: Oral**

Kinship is a most significant organizing principle of human grouping, social relations and identity cross-culturally. The kinship practices at Neolithic Çatalhöyük have been the subject of speculation using dubious associations between material culture (architecture, burial data, and artifacts) and social organization, leading to questionable interpretations of matrilineal or patrilineal descent (ancestry) and even moieties. Others who misunderstand "kinship" as solely

biological relatedness have rejected its role in structuring social relations across space and time. This paper applies archaeological kinship analysis of residence and descent to the sequence of five occupation levels at the northern summit of Çatalhöyük's East Mound (7100-6000 BCE). The repeatedly tested and confirmed strong cross-cultural associations between practices and dwelling configurations supporting this method lend high degrees of confidence to the inferences. The results rule out both matrilocality and patrilocality but correspond exceptionally well with the cross-cultural associations with cognatic practices. There was flexibility in negotiating residence: extended bilocal groups, neolocal groups, and stem families. Descent analysis was less conclusive. Though unilineal descent groups (e.g., lineages) could be inferred, the data at hand suggest bilateral descent was more likely. The results demonstrate the flexibility and agency involved in the negotiation of residence, affiliations, identity and time (e.g. continuity or discontinuity), and offer new explanations for patterns observed previously, including 'neighborhoods', 'history houses' rituals/burials and the co-ordination of socio-economic relationships.

## 2 EXPLORING THE MATERIALITY OF HOUSEHOLD AND COOKING PRACTICES AT THE NEOLITHIC SITE KLEITOS 1, GREECE. EVIDENCE FROM ORGANIC-RESIDUE ANALYSIS

**Abstract author(s):** Kalogiropoulou, Evanthia - Roumpou, Maria (University of Crete) - Ziota, Christina (Ephorate of Antiquities of Florina)

**Abstract format:** Oral

From the post-processual era to the advancements of the contemporary 'third science revolution', household has been holding a key place as seminal analytical concept of archaeological interpretations. It has been employed as a basic unit of social complexity, membership and status, as an indicator of community developments and settlement longevity, as an agent of economic strategies, and a producer of change. In this framework, approaches for the materiality of the household were integrated in architecture and the various craftsmanship operations.

This paper presents the case of a diverse assemblage of cooking facilities from the Late Neolithic site Kleitos 1 in Kozani (North-western Greece), through the lens of current approaches in household practices and the implementation of an integrated scientific methodology. Our study profits from the potential of organic residue analysis in the investigation of cooking practices, to re-approach questions of peoples' daily activities and consumptions practices in the context of household configurations. We aim at better understanding the use of cooking facilities -and also possible specialization in their use- through the application of organic residue analysis. Material was sampled from hearths and ovens found both indoors and outdoors to assess the nature of food processing activities including possible dominant cooking activities. We therefore, anticipate reconstructing part of the culinary preferences of Neolithic inhabitants at a local scale and adding an elaborate variable to the social practices of household. This research is conducted in the framework of BONDS - 'Beyond Oikos: Outdoor spaces, daily life and sociality in Neolithic Greece' Project (Number: 00229), funded by H.F.R.I.

## 3 DOMESTIC PRACTICES AT LEPENSKI VIR: LOCAL DEVELOPMENTS OR OUTSIDE INTRODUCTIONS?

**Abstract author(s):** Brami, Maxime (Johannes Gutenberg University Mainz)

**Abstract format:** Oral

Today, it is widely accepted that agriculture and settled village life arrived in Europe as a cultural package, carried by people migrating from Anatolia and the Aegean Basin.

The putative fisher-forager site of Lepenski Vir in Serbia has long been acknowledged as an exception to this model. Here, the Mesolithic-Neolithic transition - possibly inspired by interaction with the new arrivals - was thought to have taken place autochthonously on site.

While recent biomolecular studies point to the arrival of Aegean early farmers around the time of construction of the trapezoidal houses, ~6,200 BC, the newcomers' identification as predominantly female has given rise to a surprising narrative, in which Neolithic women 'married' into an established Mesolithic community.

This paper revisits evidence for interaction between early farmers and foragers at Lepenski Vir during the transitional phase, demonstrating how ancient DNA and stable isotopes alter the interpretation of the site to a far greater extent than currently accepted in the literature.

Here too, house construction, early village society and agriculture appear to be primarily associated with Europe's first farmers, thus challenging the long-held interpretation of Lepenski Vir as a Mesolithic community that adopted Neolithic practices.



#### 4 HIGHLIGHTING ECONOMIC AND SOCIAL INTERACTIONS WITHIN LINEARBANDKERAMIK HOUSEHOLDS: THE HOMES PROJECT.

**Abstract author(s):** Hamon, Caroline (CNRS - UMR 8215 Trajectoires) - Allard, Pierre (CNRS - UMR 8068 TEMPS) - Aubry, Laurent (CNRS - UMR 8215 Trajectoires) - Cayol, Nicolas (INRAP - UMR 8215 Trajectoires) - Couderc, Florian (CNRS - UMR 8215 Trajectoires) - Denis, Solene (Masaryk University; UMR 8068 TEMPS) - Gabriele, Marzia (CNRS - UMR 8215 Trajectoires) - Gomart, Louise (CNRS - UMR 8215 Trajectoires) - Hachem, Lamys (Inrap - CNRS - UMR 8215 Trajectoires) - Illett, Michael (Paris 1 Pantheon Sorbonne University)

**Abstract format:** Oral

The Neolithic Linearbandkeramik (LBK) colonisation is an exceptional phenomenon in European prehistory, in terms both of its wide geographical scope and of the cultural stability it displays over five or six centuries. Different theories have been put forward to explain the structure of LBK settlements and how this might help understand the social system of these first farming populations. Depending on viewpoints, a wide variety of factors have been underlined, ranging from migration, demography and economy to society and ideology. Several models of LBK social organisation have been proposed, based on spatial analyses of houseplans, settlements and waste from associated activities.

The interdisciplinary HOMES project (ANR funded, France) further explores LBK social and economic rules by modelling the interaction between and within the most basic units – the households. The focus is on nine settlements in the river Aisne valley, located in the Paris Basin (France), on the western margin of LBK expansion. Through a systemic approach, the ultimate goal is an anthropological definition of the multiple levels of economic, cultural, social and symbolic interactions within late LBK societies. This approach fully integrates a wide range of archaeological, technological and bioarchaeological evidence. The project tracks production and consumption among households, and examines how their organisation and relationships are reflected in village structure. Different aspects such as subsistence practices, raw material supply and technological know-how are integrated to explore household functioning and interrelationships.

By addressing the notion of household in its material, ideal, individual and collective dimensions in a geographically limited study zone, the project will test hypotheses centred on different levels of village integration. These hypotheses will be compared with previously proposed models, as well as with ongoing research into LBK settlements in central and eastern Europe.

#### 5 PLEASE TAKE OFF YOUR SHOES BEFORE COMING IN. GEOCHEMISTRY AND SEEING INVISIBLE HOUSEHOLD SPACES

**Abstract author(s):** Kovacik, Joseph (Eveha études archéologiques; Terrascope Thin Section Slides) - Save, Sabrina (Amélie études archéologiques; Terrascope Thin Section Slides)

**Abstract format:** Oral

All human activity generates waste and pollutes the environment, with this waste the stuff of archaeological investigation: broken ceramics, cut animal bones, or charred plant remains deposited in pits or scattered across sites. Activities, such as cooking, fabricating objects, storing 'stuff', tending crops, or even walking and sleeping, also produce waste. These wastes illustrating people's daily life become incorporated into the earthen floors of buildings and the non-built surfaces around them, and even the fields from which they obtained their food. From this waste and its interaction with the sediments on/in which it is deposited, a wide range of unseen chemicals penetrate, contaminate and transform – pollute – those same sediments, leaving chemical 'ghosts' of human activities which we can now detect.

Various geochemical techniques have been used to investigate archaeological sites and their internal organisation for more than a hundred years, but only during this third scientific revolution, with the advent of relatively affordable instruments, in particular portable X-ray fluorescence, have these tools become democratized. Used at landscape, site or building scales, geochemistry can make the invisible visible, evidencing the ghosts of human activity, determining and defining spaces, both indoor and outdoor, its uses, and transformations.

In this paper we present a series of buildings from sites across eastern France dating between the Neolithic and the Iron Age which illustrate the potential of the science of geochemistry in social archaeology. We show where people placed their ceramic storage jars within a room, how they transformed spaces with partitions, or where they cooked and made things (perhaps even identifying what was prepared), all within buildings that consist only of post-holes, pits, and trenches. Perhaps also we can 'see' that people took off their shoes before going inside.

## 6 JUST RUBBISH! SPATIAL DISTRIBUTION PATTERNS OF EVERYDAY MEAT PROCESSING DURING THE LATE COPPER AGE CARPATHIAN BASIN

**Abstract author(s):** Csippán, Péter (Eötvös Loránd University) - Daróczy-Szabó, Márta (Budapest History Museum) - Klinga, Flóra (Eötvös Loránd University) - Fábíán, Szilvia (Hungarian National Museum)

**Abstract format:** Oral

There wasn't any archaeological culture in the Carpathian Basin whose members didn't eat the meat of wild and/or domestic animals. The way from a living animal to edible meat is a special process.

Processing animal body is a culturally defined act, just like eating their meat. But these processes weren't stopped with cooking and eating. This is the point where they were connected to other systems, like rubbish management. In our research, we focused on the spatial aspects of the everyday life of the Copper Age settlements, like the management of rubbish. These latent systems have patterns that characterize the whole settlements through the handling of organic rubbish by contemporary households. In this presentation, we would like to show these patterns (similarities and differences) in the case of three sites from different parts of the Carpathian Basin.

The presentation is a part of the Changing Horizons of Material Culture: Spatial Aspects of Symbolic and Everyday Activities in the Late Copper Age Settlements research project (NKFIH 129332).

## 7 A MICROSCALE APPROACH TO HOUSEHOLD ARCHAEOLOGY: SOIL MICROMORPHOLOGY AND PHYTOLITH ANALYSIS

**Abstract author(s):** Kovács, Gabriella (Hungarian National Museum) - Pető, Ákos (Hungarian University of Agriculture and Life Sciences, Institute for Wildlife Management and Nature Conservation, Department of Nature Conservation and Landscape Management) - Vicze, Magdolna (Hungarian National Museum)

**Abstract format:** Oral

Households are one of the important scenes of everyday life. Our knowledge of everyday life of past societies is predominantly derived from the excavation findings, that are mainly in the macroscopic level. However, microscopic traces can add a new range of evidences to enlarge our knowledge of past activities. The traces of the choices of materials, space use, construction and maintenance techniques together with the remains of daily routines (e.g. cooking, threshing, firing etc.) can all be effectively studied under the microscope. By adding details of such a high resolution, everyday practices within the households can become visible from a new perspective. Thin section soil micromorphology and phytolith analysis will be used to demonstrate the effectiveness of studying the microscopic level. The Bronze Age tell settlement of Százhalombatta-Földvár, Hungary will be used as an example, where the detailed on-site work is conjoint with the microscopic techniques during the investigation of households. The methods can be applied to any era and settlement type so similar research of this type is encouraged.

## 8 HOUSEHOLD ACTIVITIES AS SEEN BY FLOORS – A COMPARISON OF TWO BRONZE AGE TELL SITES IN HUNGARY

**Abstract author(s):** Röpke, Astrid (Ur- und Frühgeschichte, Universität zu Köln, Germany) - Kovács, Gabriella (Hungarian National Museum, Budapest) - Fischl, Klára (University of Miskolc, Hungary) - Pető, Ákos (Szent István University) - Kienlin, Tobias (Ur- und Frühgeschichte, Universität zu Köln, Germany)

**Abstract format:** Oral

Analysing the composition and construction of floors by micromorphological, phytolith and archaeological analyses has been a meaningful tool to understand use of space and aspects of social life. Especially the study of floor sequences in multilayered settlements such as tells and tell-like mounds turned out to be promising due to its good preservation conditions. In this interdisciplinary study we compare floor sequences of two Bronze Age tell settlements in Hungary with different cultural background. The Bronze Age tell of Százhalombatta-Földvár belongs to the Vatyka culture while the Bronze Age tell Borsodivánka-Nagyhalom is related to the Füzesabony culture. They also differ in size and the environmental settings. Százhalombatta-Földvár was built at river bank above the river Danube and Borsodivánka-Nagyhalom is located in a swampy region in the wider area of the floodplain of the Tisza river.

We intend to explore to which extent the study of floors can be used to characterize household activities and to evaluate differences and or similarities between these two tell settlements sites.

## 9 HOUSE LAYOUTS AS MEANS OF UNDERSTANDING HOUSEHOLD ACTIVITIES

**Abstract author(s):** Lie, Marian (Iasi Institute of Archaeology; University of Cologne) - Cordos, Cristina (Institute of Archaeology Iasi)

**Abstract format:** Oral

It is not a novelty for archaeologists that the layout of dwelling structures can reveal valuable insights in regards to household practices. Building materials and techniques, dimensions, compartments, storage features or heating

sources, as well as the overall inventory, are only a few aspects which offer precious clues pertaining to daily household activities. However, the preservation of prehistoric structures is seldom ideal and interpreting such fragmented traces can be challenging.

Due to their particular formation process, prehistoric tell settlements offer the excellent opportunity to study the diachronic evolution of household features within a given community. With this in mind, in this presentation we will try to distinguish the transformations which occurred in time within the dwelling structures discovered at the Bronze Age tell site from Toboliu Dâmbu Zănăcanului and to understand if and how these transformations are related to changing household activities. As in most cases, the preservation of dwelling structures varies within the seven documented habitation phases of the tell settlement. For this reason, our focus will be on the better-preserved older phases and in particular on the spectacular dwelling of Phase 3.

## 10 FAUNAL RECORD AND TAPHONOMIC PROCESSES IN A MIDDLE BRONZE AGE HOUSE AT TOBOLIU (ROMANIA)

**Abstract author(s):** Nolde, Nadine - Zickel, Mirijam (Institute for Prehistory, University of Cologne)

**Abstract format:** Oral

During excavations at Toboliu-Dâmbu Zănăcanului, a Middle Bronze Age tell settlement in Bihor County in western Romania, house structures with special structural features were discovered, including wooden floors built upon compressed clay layers. In addition to large quantities of pottery, faunal remains were uncovered from homogenous layers with greyish sediment above the wooden floor, indicating domestic activities. As an expression of human diet, husbandry, and exploitation strategies, as well as references for the economic and social background of the inhabitants respectively the surrounding settlement, these animal bones also may act as indicators of site formation processes. Taphonomic features on faunal remains such as trampling and biting marks as well as fracture patterns allow conclusions about the genesis of the layers. This also includes the use of micromorphological methods, which primarily provide information about the general structure, composition, and formation of the greyish layer, but also may allow the evidence of taphonomic features such as decay and fragmentation of bones due to postsedimentary soil processes and trampling. Furthermore, the presence of special skeletal elements or butchery traces demonstrates the spectrum of activities from which the remains originate and thus offers possible explanations for their accumulation. Is it butchery waste brought into the house with other sediments from the settlement area to raise the habitation level, which is so typical for tell settlements? Or is it just kitchen or food waste that accumulated over time during the activities in the household itself?

## 11 METALWORKING AS A HOUSEHOLD PRACTICE ON THE BRONZE AGE TELLS

**Abstract author(s):** Gavan, Alexandra (Institut für Ur- und Frühgeschichte Universität zu Köln)

**Abstract format:** Oral

The aim of this paper is to present and discuss the find context of the archaeological evidence for metalworking uncovered within the Bronze Age tells in the Carpathian Basin. The data on which the discussion is based are the residues of non-ferrous melting and casting activities (tools and waste such as moulds, crucibles, tuyères, casting debris and installations) recovered from excavated contexts. Although the data regarding the find context of artefacts related to metalworking uncovered within these sites is scarce, whenever this information is available, it suggests that metalworking remains in Bronze Age tells were scattered in a variety of domestic contexts such as houses and refuse pits as well as other settlement features. This seems to indicate that metalworking was mostly practiced within domestic workspaces on Bronze Age tells, which matches the expected criteria for small, household production units. Moreover, there is no evidence of specialized bronze-casting workplaces set apart from the main settlement area. The absence of clear, auxiliary domestic workshop quarters or specialized areas dedicated to metalworking suggests that melting and casting happened mostly in a household context within the tell settlements.

The thorough contextual analysis of metalworking evidence provides the basis for a detailed reconstruction of the scale, context and organization of metalworking in the Bronze Age tells from Carpathian Basin. This in turn allows a re-examination of current theoretical paradigms and existing models (many of which have been based on ethnographic parallels or a limited selection of archaeological examples) starting from a strong empirical foundation.

## 12 MIDDLE BRONZE AGE HOUSEHOLDS AND DAILY LIFE AT THE WESTERN FRINGE OF THE CARPATHIAN BASIN (NORTH-WESTERN ROMANIA)

**Abstract author(s):** Zsolt, Molnár-Kovács (Babes-Bolyai University, Cluj-Napoca)

**Abstract format:** Oral

The presentation focus on the culturally-diverse Middle Bronze Age Carpathian Basin, the region incorporating the north-eastern part of Hungary, south-east Slovakia and the north-western part of Transylvania (Romania). This region sets the scene for the development of a specific culture displaying marked similarities in its bronze working, pottery production and the habitat system. In this so called 'tell society' the main unit of the settlement networks are repre-

sented by a fortified and multi-layered central settlements known as tells, surrounded by a satellite plain sites forming an economic and social unity with the tell. The tells are not only multi-layered settlements, but a 'package' connecting together central settlement structure, social, economic and certain environmental factors. The well-organized, fairly hierarchic tell-communities, with a complex social structure, composed of cooperating modular household units had mixed intensive farming economy based on agriculture and animal husbandry. The presentation analyzes a household found in Carei -Bobáld, north-west of Transylvania. Using different archaeological and scientific techniques we traced the patterns of housing and subsistence practices. The socio-economic and cultural phenomena of the less complex communities are multifunctional and have a strong dynamic interaction between each other. A given space such as outdoor activity areas, a house or part of it can be the place of cyclically changing ritual and profane events. Changing the place's function periodically shows the community's view about time and space.

### 13 PUTTING PEOPLE IN THEIR PLACE: PRIVACY AND COMMUNITY IN THE NEW KINGDOM EGYPT.

**Abstract author(s):** Rocha da Silva, Thais (University of São Paulo; University of Oxford)

**Abstract format:** Oral

Archaeological research about houses in ancient Egypt focused on typologies. Social life was explained based on artefact distribution and the division of internal spaces. This approach narrowed the possibility of understanding community life as it privileged house unities, usually framed according to a 19th-century Victorian fashion. In this paper, I explore how the investigation of the Amarna Workmen's Village, a special-purpose settlement from the New Kingdom (1550-1069 BCE), offers a new model to understand privacy and community life in ancient Egyptian settlements. This village housed the workforce engaged with royal building projects and it was maintained and supervised by the Egyptian administration. This presentation highlights privacy as social practice. I demonstrate how a holistic approach to the dataset allows scholars to a more nuanced interpretation about the presence of the state in the settlement. Furthermore, domestic life was dynamic, and individuals developed creative responses to specific conditions in which they lived. This model of investigation is being tested in other similar settlements in the ancient Egyptian domain during the New Kingdom, as part of a collaborative project that I intend to share some preliminary results.

---

### 157 FINDS STORIES: ARCHAEOLOGICAL BIOGRAPHIES IN CONTEXTS OF MOBILITY

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Marini, Christina (Australian Archaeological Institute at Athens) - Trimmis, Konstantinos (Department of Archaeology and Anthropology, University of Bristol)

**Format:** Regular session

Material artefacts across the various stages of production and circulation become intertwined with social processes, acquire layered histories, and affect in diverse ways how humans act, interact, and perceive themselves and the world around them. Formed at the intersection of anthropology and ethnographic studies, and grounded especially in Appadurai's and Kopytoff's influential concepts of the "social life" and "cultural biography of things", biographical approaches have been integrated in archaeological analytical frameworks and are a well-established tool in material culture analysis.

This session explores biographical approaches to contexts of mobility, such as mobility of ideas, styles, technological know-how, or in fact people. It is targeted towards papers addressing the current theoretical and methodological discourse in archaeological research on the topic of object biography and associated themes of entanglement and ontology. It seeks to introduce innovative cross-disciplinary perspectives into the broad scope of interactions between objects and humans across social, cultural, temporal, and geographical space. We welcome discussions on metanarratives, case studies applying biographical, life-history, and genealogical methodologies, as well as novel ways of writing and sharing object histories, including but not limited to object-biographical narrative structures and creative representational forms.

## ABSTRACTS

### 1 THE MANY LIVES OF CHIKABA'S JAR: BIOGRAPHY OF AN 18TH CENTURY POT FROM A CONVENT IN SALAMANCA, SPAIN

**Abstract author(s):** Canós-Donnay, Sirio (Incipit-CSIC) - de Groot, Beatrijs (University of Edinburgh)

**Abstract format:** Oral

Tucked away in a small cabinet in a convent in Salamanca (Spain) is a finely crafted little jar. Originally a filtered water jar of Islamic origin, it has since had a wide and diverse range of lives, from utilitarian object to Christian relic. In its life trajectory, it has woven together people, things, and historical processes across cultures, borders and religions, from its maker Halim to its most famous owner, the 18th century afro-hispanic nun, former slave, and renowned writer Teresa Chikaba. The jar's long and complex life trajectory thus illustrates and embodies a web of entangled lives,

material processes, and global encounters. Through a combination of archival research and the reconstruction of the jar's chaîne opératoire, we have started to untangle these complex webs and traced some of the diverse past lives of this curious object and the stories it tells about the slave trade, relics, islam, Christianity, court intrigues, politics, and racism in 18th century Spain and beyond.

## 2 UNWRAPPING THE GALLOWAY HOARD: OBJECT-BIOGRAPHY AND THE NARRATIVES OF A COMPLEX ASSEMBLAGE

**Abstract author(s):** Goldberg, Martin - Davis, Mary (National Museums Scotland)

**Abstract format:** Oral

The stereotype of Viking-age hoards in Britain is that they are products of an international context of mobility, migration and raiding, buried at times of stress or under duress. Initially heralded as a 'Viking' hoard par excellence, the ongoing conservation and research on the Galloway Hoard from southwest Scotland continues to surprise and disrupt expected narratives. An unusual variety of materials and artefact types beyond the silver bullion so often found in Viking-age hoards provides the basis: there are Anglo-Saxon runes with Old English name elements on the Hiberno-Scandinavian silver bullion; there are ecclesiastical items; feminine artefacts; relics and heirlooms; and the rare preservation of organic materials. The unusual structure of parcels within the deposit, bundled and wrapped with those organic materials, allows narratives to be created for distinct elements as well as inter-relationships between the different groups of materials. Through an object-biographical approach the 3-year project at the National Museum of Scotland, in partnership with the University of Glasgow, entitled 'Unwrapping the Galloway Hoard' will weave together narratives about this complex assemblage and the new stories it allows us to tell about Viking-age Britain and Ireland, and beyond.

## 3 THE UNEXPECTED JOURNEY OF A STONEWARE BOTTLE: WAYS OF APPROACHING THE BIOGRAPHY OF A SURFACE FIND

**Abstract author(s):** Marini, Christina (Australian Archaeological Institute at Athens)

**Abstract format:** Oral

The role of circulation and mobility in imbuing objects with meaning or transforming the ways they become entangled with the lives of people has been established ever since the introduction of the object biographical approach and has expanded even more with the growing recent discourse on the concept of object itineraries. The present paper explores this interplay of materiality, mobility, and agency, using as a case study a surface find from the survey project of the Australian Archaeological Institute at Athens on the remote island of Kythera in south-western Greece.

The paper delves into the life-history of the object, by examining its relational connections and the social interactions it was embedded in from its manufacture and its involvement in long-distance exchange networks, to finding its way to an island under British Imperial rule, and until its afterlife as a subject of ongoing research. We address the challenges posed by its nature as a surface find, the theoretical and methodological considerations in the documentation of its biographical parameters, as well as the potential community engagement can hold for producing richer and multi-layered biographical narratives.

## 4 TEXTILE BIOGRAPHIES IN CONTEXT OF MOBILITY. THE CASE OF ARCHAEOLOGICAL FINDS FROM PALMYRA.

**Abstract author(s):** Zuchowska, Marta (Institute of Archaeology, University of Warsaw)

**Abstract format:** Oral

Textile production is a complex process involving a series of production stages: sourcing of fibres, diverse ways of fibre processing, weaving and finishing. The product of each stage, starting with floss, through yarn, woven fabric, decorated textile (embroidered, stamped etc.) and ending with the ready textile products such as pieces of garment, blankets, or wall hangings could be traded, processed, used and reused in other locations. This is especially visible in early 1st millennium Eurasia where textiles were traded through the whole continent to cover the unlimited demand for luxuries.

Palmyra was an important trading post close to the eastern frontier of the Roman Empire and at the same time a textile production centre. Due to the very dry climate, over 500 fabrics dated to the 1st century BC – 3rd century AD were found on the site. They constitute one of the most important collection of textiles from the Roman period. Unravelling the biographies of individual textile finds from Palmyra gives an unparalleled glimpse into the complex processes related to textile production and trade in the first centuries AD.

## 5 STORIES BEHIND PERSONAL OBJECTS AS MUSEUM NARRATIVES: A PERSPECTIVE FROM THE YMCA BASKETBALL MUSEUM OF THESSALONIKI

**Abstract author(s):** Theodoroudi, Eleftheria (YMCA, Basketball Museum Thessaloniki; Aristotle University Thessaloniki) - Soumintoub, Valentina (YMCA, Basketball Museum Thessaloniki) - Kasvikis, Konstantinos (University of Western Macedonia)

**Abstract format:** Oral

The YMCA Basketball Museum of Thessaloniki opened its doors to the public in 2013 as part of an INTERREG "Greece – Bulgaria" project titled "Youth Mobilization – Cultural Heritage and Athletic Valorization". It is the first Basketball Museum in Greece and one of a few around the World. Since its beginning the Museum developed an open collecting policy to enrich the surviving collection and archive of the YMCA; the collection of the Museum hosts various types of material and immaterial traces. It also works as an arc of the history of basketball in Thessaloniki, and to that end as part of the sports', as well as, the social history of the city.

YMCA volunteers, veteran and active athletes have donated material from their own personal collections and also they have shared their stories and their memories enriching the archives of the Museum. This paper will explore selected objects of the collection, using biographical approaches as methodological tools. The different stories behind the objects navigate our understanding and interpretation, but also the narratives and the memories of those who once owned them. Within an interdisciplinary context, an exhausting recording of the selected material took place, followed by personal interviews of the people involved. Alternate narratives reveal to the public, through storytelling techniques, hidden stories that highlight the role of YMCA to the diffusion of basketball to Greece. The material identities could work as a trigger point to the understanding of social practices and manifestations of the palimpsest of the sports' and social history of Thessaloniki.

## 6 WHY TO DECORATE A POT? OBJECT BIOGRAPHIES IN IBERIAN CONTEXTS OF THE UPPER GUADALQUIVIR (SPAIN)

**Abstract author(s):** Moreno Padilla, María Isabel (Instituto de Investigación en Arqueología Ibérica. Universidad de Jaén)

**Abstract format:** Oral

The development of new theoretical and methodological approaches linked to Sensory Archeology (Skeates and Day, 2020), the Actor-Network Theory (Olsen et al., 2012) and ceramic sociology (Shanks, 1999; Gosden, 2005), has favored a profound renewal of studies on materiality in Archeology. Focusing our attention on Protohistoric ceramics, this proposal is based on the study of their iconography, also understood as an essential element for the study of mobility in the past. For this, our object of study focuses on the potteries of the Iberian societies of the Western Mediterranean during the Iron Age. Our analysis has shown that the different styles documented in this territorial area constitute a faithful reflection of the broad social biography of these objects, especially significant in the resignification that decorations acquire in certain symbolic contexts, such as necropolises and sanctuaries. These biographies, which range from the production and design of the decorations, their continued use (or not) in a given domestic space, and/or their amortization in discard processes or symbolic context, acquire greater complexity in those cases in which there is a second decorative program. This process is closely linked to the Iberian aristocratic ideology and aims to underline the legitimacy of the lineage through the history of use and reuse of the container.

On the other hand, the shape of the containers and the decorative motifs that make up their decorations become significant elements for the study of ceramic mobility in a broad sense: technological know-how, exchanges of aristocratic gifts or family inheritances, commercial exchanges or territorial iconographies that moves within its border limits. Thus, ceramic decoration acquires a profound complexity that goes beyond mere ornamentation, including itself in a complex framework associated with the social, territorial and cultural narrative of the object."

## 7 MOBILITY OF IDEAS: TWO ARCHAEOLOGISTS IN TOTALITARIAN CONTEXTS

**Abstract author(s):** Martins, Ana Cristina (IHC - Polo da Universidade de Évora; Uniarq - Centro de Arqueologia da Universidade de Lisboa; Proyecto 'ArqueologAs' - Universitat de Barcelona)

**Abstract format:** Oral

Between the late 1940s and the 1950s, during the 'Estado Novo' regime, Portuguese archaeology began to observe a greater internationalisation, especially with the award of scholarships to study abroad. João M. Bairrão Oleiro (1923-2000) and Maria de Lourdes Costa Arthur (1924-2003) can testify to that, both having specialised in Madrid and Barcelona, during the Franco regime, with some of the most important archaeologists of the respective archaeological museums and universities.

On their definitive return to Portugal, these two young researchers manifest similar ideas and procedures that are reflected in a concrete way of producing archaeological knowledge and heritage. A circumstance that contributed significantly to the development of archaeology in the country, especially regarding the methodology of fieldwork,

as well as the conservation and restoration of archaeological materials and their presentation, including musealization.

Using biographical approaches, we propose to analyse, comparatively, the contributions of these two Portuguese archaeologists to the increment and affirmation of science in the country according to some of the main international parameters. This contribution includes, among other aspects, ideas and methods learned on the international courses of archaeology of Ampúrias that they attended, in an obvious testimony of scientific mobility. A scientific mobility that, although of individuals, was mainly of theories and methods that ended up influencing the way of investigating, preserving, and disseminating the material culture in their country of origin.

## **8 THE ADOPTION OF THE IZALCO-USULUTÁN STYLE IN NORTHERN CENTRAL AMERICA AS A REFLECTION OF SOCIAL COMPLEXITY IN THE LATE PRECLASSIC**

**Abstract author(s):** **Martinet, Adrien (University of Bonn)**

**Abstract format:** **Oral**

The ancient communities beyond the southern fringe of the Maya world are seen as small cultural units loosely connected to their immediate neighbours. Their long-distance trade network mainly moved obsidian and jade. Starting in the middle of the last millennium BC and ca. AD 400, it began trading so-called Usulután Style ceramic ware, prominently featured in archaeological sites from El Salvador and western Honduras, also called the Uapala Ceramic Sphere. These vessels were most likely used during elite-oriented feasts and consumption rituals. The Usulután style found an excellent reception outside of the Uapala Ceramic Sphere: among the Maya communities of southern Mesoamerica, but also in some of the smaller communities of northern Central America.

This study investigated the spread of Izalco-Usulután style, a sub-type of particularly high quality, and its emulation during the Late Preclassic (ca. 200 BC to AD 250) in northern Pacific Nicaragua using methodologies borrowed from Classical Archaeology. Locally produced Usulután style ware proved to be almost indistinguishable from Salvadoran Usulután wares, thus suggesting an extension of the Uapala Ceramic Sphere in the south, but also a high cultural affinity among their elites. The Central American communities were much better connected than previously assumed.

Through its multitude of sub-types, Usulután style wares offer many research opportunities to understand the complex cultural patchwork of Central America. Further investigations will be essential in understanding these inter-regional relationships, especially at the non-elite level.

## **A. HEARTHES AS A CENTRAL FEATURE FOR THE SOCIAL ORGANISATION OF PAST AND PRESENT PEHUENCHE GROUPS IN SOUTH CHILE**

**Abstract author(s):** **Toro, Oscar (University College London; Universidad Alberto Hurtado)**

**Abstract format:** **Poster**

A defining characteristic of the Pehuenche, an indigenous people of Andean South America, is that some families divide their annual residence between lower valleys into colder seasons, and highland pastures in summer, where they take their livestock and collect pinenuts from the Araucaria trees. This research developed in the community of Cauñicú (Alto Biobío) and aims to reveal how socio-political organisation, economy, state policies and people's perception of the landscape and their own past influence the material culture arrangements and their functions within and between settlements, considering the multi-temporality of those material characteristics. This generates a landscape in which present and past material culture co-exist and can be explained from and through their mobility cycle and the sense of identity embedded in this aspect of Pehuenche culture. One of the materialities considered for the analysis were hearths, which are central in the daily life among past and current mobile groups. These features are possible to track back to archaeological contexts in the same area, although the surveys on the archaeology of mountainous areas are scarce to the west of the Andes. By adopting a diachronic and a multi-disciplinary perspective, including ethnographic, archaeological, and historical sources, from where I obtained several images that illustrate different contexts of use, I show how hearths played an important role for Pehuenche identity and their social organisation. Fireplaces are one of the sources from where the ancestral knowledge is transmitted, and although still do play this role, nowadays is being shared with the school. Also, these combustion elements are key to linking auto-determined identity feelings to concrete materiality located in domestic and ritual places. Another identified role of fireplaces, which supersede the previous two, is that they congregate people in their surroundings, marking the spatial organisation of settlements in which they are present

## B. "A HORSE! A HORSE! MY KINGDOM FOR A HORSE!" (WILLIAM SHAKESPEARE, RICHARD III)

**Abstract author(s):** Christakopoulou, Olga (Hellenic Ministry of Culture and Sports - Ephorate of Antiquities of Achaia) - Giamalidi, Maria (Hellenic Ministry of Culture and Sports - Ephorate of Antiquities of Piraeus and Islands)

**Abstract format:** Poster

The discovery of a complex of vases of the late Geometric period in Voula, Attica, consisting of a funerary amphora and a kantharos, with figurative representations of a horse, is the means by which the population and its culture, and specifically the ethnography of its daily life, are projected. At this time, metalwork and pottery are dominated by the ideal type of the warrior/hero, the charioteer and the horse which are symbols of power and nobility.

A mere means of transport or a means of conducting a war activity in which the dead was involved? Depiction of equestrian feat of the deceased or prize in a corresponding activity in which he participated? Representation of a mythological cycle and connection of the deceased with a mythical personality or a simple representation of the daily cycle of the deceased's life?

Apart from the figurative representations, however, it is the complex of vessels itself that exalts the status of the deceased, as both refer to vessels for pouring and drinking, indicative of the participation of the deceased in "symposia", thus indicating the range of his qualities on a political and social level. Therefore, whatever the interpretation of the illustration of the horse on the kantharos under study, its symbolic significance is indisputable as it does not only refer to the skill of the craftsman, but also to the classification of the deceased, in a symbolic way.

The complex of vases of Voula Attica constitute biographical evidence of a society from which the interaction between human and object is documented. The typology of these vase shapes and their painted surface with these particular iconographic motifs create a specific environment of communication through which the history of the social and cultural field, in which they were born, emerges.

## C. BELL BEAKER PACKAGE ON THE FRONTIER – RITUAL FEATURES IN NORTH-EASTERN POLAND

**Abstract author(s):** Klecha, Aleksandra (Antiquity of Southeastern Europe Research Center, Faculty of Archaeology, University of Warsaw) - Manasterski, Dariusz - Januszek, Katarzyna (Faculty of Archaeology, University of Warsaw)

**Abstract format:** Poster

The Bell Beaker phenomenon is identified in Europe, among other things, by a characteristic set of objects sometimes referred to as a cultural package. Such sets usually include: small S-shaped vessels with a distinctive decoration of repeated motifs organised in horizontal lines, stone bracers, daggers or arrowheads. They are found mainly in burials. In recent years in north-eastern Poland there have been discovered four features of ritual character, containing such objects. They were accompanied by other items such as amber ornaments, a "protoheraldic" plate, flint artefacts and small quantities of burnt human and animal bones. The analysis of the materials shows their western European origin. The aim of the paper is to present issues connected with the research on the artefacts and to discuss the migration undertaken by the groups to which the discovered objects belonged. This issue is all the more important as, in the late Neolithic, the territory was inhabited by the last hunter-gatherer groups in Central Europe. Archaeological records indicate that the Bell Beaker societies had a considerable impact on their transformation into a Bronze Age communities known as the Trzciniec Culture.

---

## 161 PERIPHERAL REGIONS IN THE PREHISTORY OF TEMPERATE EUROPE

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Vondrovský, Václav (Institute of Archaeology of the Czech Academy of Sciences, Prague) - Ptáková, Michaela (University of South Bohemia) - Pechtl, Joachim (University of Innsbruck)

**Format:** Regular session

Since introduction of Wallerstein's world-system theory into prehistoric archaeology, core and periphery are recognised as relevant concepts of our inquiry. Their definition is, however, highly contextualised and should be perceived in terms of human-environmental networks. Operating on the meso-scale of regions and landscapes the periphery may cover various entities: sub-alpine zones, woody highlands, wetlands distant from the core as well as closer situated inner or semi-peripheries.

Peripheral regions of prehistoric occupation naturally remain aside from the main interest of scholars as the archaeological record in these areas is usually qualitatively and quantitatively limited in comparison to core regions. Although contemporary archaeology acknowledges a patchy structure of prehistoric occupation, we are still missing a comprehensive attitude towards the research of peripheral regions that would provide a complex image of past societies.

In our session we wish to go beyond Wallerstein's world-systems approach which is based mostly on economic dependency and surplus distribution. We will try to explore the environmental determination of periphery and subsistence strategies that local communities might adapt. Did communities on periphery undergo a loss of social and eco-



conomic complexity? Can we observe different dynamics of cultural processes on periphery and core? Are there any general patterns in periphery (re-)colonisation? Was the contact with core vital for communities living on periphery? We welcome papers that address these issues through various periods, socio-economic systems, and inhabited environments of prehistoric temperate Europe. We would like to invite researchers who study such themes not only in the scope of archaeology, but also in natural scientific methods. In particular, we welcome contributions that integrate these approaches synergistically to provide a holistic understanding of peripheral regions.

## ABSTRACTS

### 1 PREHISTORIC RURAL SETTLEMENT CONTINUITY ON THE NORTHERN FRANCONIAN JURA. ARCHAEOLOGICAL AND GEOARCHAEOLOGICAL INSIGHTS FROM THE SITE „GÖRAUER ANGER“ (BAVARIA, GERMANY)

**Abstract author(s):** Seregély, Timo (Pre- and Protohistoric Archaeology, University of Bamberg) - Kothieringer, Katja (Digital Geoarchaeology, University of Bamberg)

**Abstract format:** Oral

In prehistoric studies, Central European low mountain regions are usually described as unfavorable to settlement. A problematic water supply, low-yield soils, poor climatic conditions and a peripheral location that is hardly connected to trade routes are considered the main reasons for this. Since 2015, the University of Bamberg has been investigating rural settlement and land use in prehistoric times in a study area situated in the north-easternmost part of the Franconian Alb (Bavaria, Germany). The landscape is characterised by karstified plateaus with ridges, hilltops and depressions as well as deeply incised and narrow valleys. After the first part of the research project involved prospections and small-scale exploratory excavations to locate and date settlement sites, the work in the second part concentrates on two selected territories on the Alb plateaus. The lecture will present first results from one settlement area, where archaeological excavations took place at several selected sites along a prominent ridge in 2020. The so-called "Görauer Anger" revealed not only a strongly varying state of preservation of prehistoric settlement structures, but also an unexpected, long-lasting settlement continuity from the younger Middle Bronze Age to the Early LaTène period. Geoarchaeological investigations of colluvial deposits in footslope position south of the ridge confirm temporally matching landuse activities. Colluvial backfills in sinkholes and terrain depressions on the ridge that are no longer visible today also hold important information on landscape changes, their extent and chronology. Geophysical prospection methods such as magnetics or electrical resistivity tomography helped to find such structures, and a combination of find analysis, radiocarbon dating and OSL dating was used to differentiate the backfill history. The archaeobotanical data reveal a preferential use of oak and beech wood during the settlement period and a more open landscape from the Late Bronze Age onwards.

### 2 NEOLITHIC SETTLEMENT ON THE PERIPHERAL AREAS OF LOESS UPLANDS NORTH OF THE CARPATHIANS (A CASE STUDY FROM THE SANDOMIERZ UPLAND)

**Abstract author(s):** Szeliga, Marcin (Institute of Archaeology, Maria Curie-Skłodowska University in Lublin) - Mroczek, Przemysław - Dobrowolski, Radosław - Chodorowski, Jacek (Institute of Earth and Environmental Sciences, Maria Curie-Skłodowska University in Lublin) - Liłyńska-Zajac, Maria (Institute of Archaeology and Ethnology, Polish Academy of Sciences, Kraków) - Moskal-del Hoyo, Magdalena (W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków) - Pidek, Irena (Institute of Earth and Environmental Sciences, Maria Curie-Skłodowska University in Lublin) - Makowiecki, Daniel (Institute of Archaeology, Nicolaus Copernicus University in Toruń) - Furmanek, Mirosław (Institute of Archaeology, Wrocław University) - Plak, Andrzej (Institute of Earth and Environmental Sciences, Maria Curie-Skłodowska University in Lublin)

**Abstract format:** Oral

The current state of research on the Neolithic in Central Europe indicates an almost close relationship between the settlement of the early agricultural communities and the extent of loess cover in upland areas. The great geomorphological, hydrological and – especially – soil values, resulting from the presence of a fertile soil cover, formed on a loess ground, were undoubtedly one of the most important factors initiating the colonization, as well as determining the durability and very high intensity of the settlement processes during the 6th and 5th millennia BC.

Previous knowledge about the scale and range of the Neolithic communities settlement on the upland areas is significantly complemented and verified by the results of the interdisciplinary geoarchaeological research conducted at the borderland of the loess cover of the Sandomierz Upland and sand-clay formations of the Iłża Foothills in 2017-2021. They document the previously poorly known process of formation and functioning of the Neolithic settlement clusters in the areas situated on the edges of the uplands, especially outside the range of compact loess cover, i.e. within the ecological-landscape zones that differ from the basic settlement preferences of the of early-agricultural communities from the upland areas. Convenient, though specific, natural conditions of such areas and high adap-

tation abilities of early-agricultural groups allow to assume the existence of similar settlement concentrations, also in other areas on the borderland of loess uplands in central Europe.

The study was supported by National Science Centre in Poland (grant number: 2015/19/B/HS3/01720).

### 3 **FALLEN PERIPHERIES, FALLEN CENTRES. CULTURAL NETWORKS AT THE NORTHERN FRINGE OF THE LA TÈNE WORLD IN THE FINAL CENTURIES BC**

**Abstract author(s):** Markiewicz, Joanna (Uniwersytet Wrocławski)

**Abstract format:** Oral

The final centuries BC in north central Europe were featured with great cultural diversity, settlement instability and mobility. Intensified movement of people resulted in the emergence of new settlement clusters. The paper discusses the cases of the La Tène culture settlements north of the Carpathians and Sudetes and Przeworsk culture settlements in the Thuringian Basin. In both instances, the new settlement clusters emerged in specific, carefully selected ecological niches. They were separated from the centre (and one another) with areas of empty land or land inhabited by the communities utilising other types of ecological resources. While most of these fringe settlement zones disintegrated earlier than their core cultural areas, their disappearance significantly affected the centres, as the return migrants brought along new people and ideas. On the other hand, some of the former peripheries outlasted their fallen centres and in the turmoil around the turn of the eras became new, temporary centres of power.

### 4 **NEOLITHIC HINTERLAND IN SOUTHERN BAVARIA AND THE NORTHERN ALPS BETWEEN STAGNATION AND ADAPTATION**

**Abstract author(s):** Pechtl, Joachim (Institute of Archaeology University of Innsbruck)

**Abstract format:** Oral

Primary Neolithisation in the southern Bavarian region took place with the spread of the Earliest Linear Pottery Culture from about 5400 BC. Especially in the Danube region, flourishing agrarian communities soon established themselves. In fact, however, the process of penetration of the landscape with peasant economies was far from complete. Obviously, in some such hot spots a dense and apparently largely continuous settlement took place until the end of the Neolithic period (c. 2200 BC). In other areas of southern Bavaria and the neighbouring northern Alpine region, however, settlement began much later and remained sparse and discontinuous. Some areas even remained completely free of permanent settlements during the Neolithic.

In order to understand these processes, the natural characteristics of different areas are studied and the economic strategies of the respective settlers are analysed. It seems that in many cases there was little willingness to make economic and cultural adaptations and that the failure of colonial endeavours was rather accepted. On the other hand, there is evidence of successful economic adaptation and cultural opening, especially in the Alpine region. In both cases, relations with the core zones of Neolithic settlement are of great importance.

### 5 **'LIKE COMMON PEOPLE': BIOMOLECULAR RECONSTRUCTIONS OF THE SUBSISTENCE ECONOMY OF NON-ELITES IN LATE BRONZE AGE GREECE**

**Abstract author(s):** Vika, Efrossini (University of York) - Soncin, Silvia (Sapienza University) - Talbot, Helen - Craig, Oliver - VonTersch, Matthew - Presslee, Samantha - Alexander, Michelle (University of York)

**Abstract format:** Oral

The archaeology of Greece in the Late Bronze Age is dominated by the glory of the illustrious Mycenaean palaces and the rich warrior burials. The role of non-elites remains at large an enigma. Previous reconstructions of the Late Bronze Age supported a model of a central redistributive economy, reflecting the role ascribed to the palatial centres by the cultural historical paradigm. Recently, the exact extent of 'state control' has been re-addressed, but a strong tendency remains to model the entire political economy from the viewpoint of the palaces.

Our contribution discusses two weaknesses of the current research agenda: (i) the massive bias towards the palatial centres and the elite burials, that masks the strong effect of regional polities in the development of social complexity; and (ii) the inherent limitations of existing analytical approaches in subsistence studies, that mask the critical role of the variable Greek landscape in the development of economic advantages and behaviours.

With a regional focus on Western Greece and a local viewpoint, we employ a novel combination of stable isotope measurements (bulk and compound-specific) to reconstruct the daily economic activities as recorded in subsistence practices, in order to shift the attention from elite burials to non-elite lifeways and propose a more nuanced narrative of the political economy, that comprehends the role of peripheral communities in the development of social complexity.

## CULTURAL RESILIENCE OF PREHISTORIC PERIPHERIES: A CASE STUDY OF SOUTH BOHEMIA

**Abstract author(s):** Vondrovský, Václav (Institute of Archaeology of the Czech Academy of Sciences, Prague) - Chvojka, Ondřej (University of South Bohemia) - Hlášek, Daniel (Institute of Archaeology of the Czech Academy of Sciences, Prague) - John, Jan (University of South Bohemia) - Šída, Petr (Institute of Archaeology of the Czech Academy of Sciences, Brno) - Pták, Martin - Šálková, Tereza - Ptáková, Michaela (University of South Bohemia)

**Abstract format:** Oral

The region of South Bohemia (Czech Republic) represents a specific area of prehistoric occupation. Generally higher altitudes, less fertile soils and local wetlands set certain limits for agricultural communities in comparison to those inhabiting the neighbouring loess lowlands spreading across drainage basins of the upper Elbe, Morava, and Danube. In our case study we track the cultural development of South Bohemia in a long-term perspective from late Mesolithic hunter-gatherers to complex society of the Bronze Age. Comparing a comprehensive dataset of radiocarbon dates, we have identified several periods of differences in cultural development of South Bohemia and neighbouring lowland regions. Despite new cultural systems with distinctive materiality and cultural manifestation emerged in lowlands, they reached South Bohemia with considerable delay, or they are even completely absent in local archaeological record. We argue that this trajectory was governed by the cultural conservatism strengthening a distinctive identity of South Bohemian communities rather than their physical isolation since the inter-regional distribution networks remained uninterrupted. The paper demonstrates that there can be more variable reality beneath blocks of archaeological cultures and their generalised spatio-temporal development. Even for temperate landscapes lacking extreme gradients of high mountains or arid areas it should be considered patchier image where progressive core regions interweaved by inner peripheries with different development.

## WHAT HAPPENS IN THE PERIPHERY... EVIDENCE OF PAST ACTIVITIES IN REGIONS WITH SPARSE ARCHAEOLOGICAL FINDS

**Abstract author(s):** Dreslerova, Dagmar - Demján, Peter (Institute of Archaeology of the Academy of Sciences of the Czech Republic, Prague)

**Abstract format:** Oral

Spatial studies in archaeology often refer to the modern concept of centre/core vs. periphery as a theoretical framework to explain variations in economic/subsistence strategies or find density, which is evaluated either on the basis of the amount of radiocarbon data relating to a certain time span on the basis of the analysis of archaeological finds using typological dating. Although it is debatable, whether the producers of these finds actually had any notion of such concepts, they can nevertheless be used - if clearly defined - to explore certain general or local phenomena related to a particular environment. In our contribution we first present, based on archaeological and geographical data from the Czech Republic, the division of the territory into so-called cores and peripheries mainly from the geographical and spatial perspective. Furthermore, we will demonstrate that the study of sparse finds in the periphery thus defined can produce interesting and exciting results, which could otherwise be lost amongst the mass of evidence present in the core areas.

## DIGITAL HUMANITIES AND MEDIEVAL ARCHAEOLOGY: RE-INTEGRATING ISOLATED, FRAGMENTED AND OVERLOOKED ARCHAEOLOGICAL EVIDENCE

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Vargha, Maria (Charles University Prague) - Eichert, Stefan (Naturhistorisches Museum Wien) - Parvanov, Petar (Central European University)

**Format:** Regular session

The proposed session aims to bring together researchers from Europe who create digital collections and analyses about diverse archaeological and historical evidence types, primarily archival archaeological data and bioarchaeological data.

Traditionally, archaeological research favours the deep investigation of a site or even a particular object or phenomenon. Apart from exceptional examples traditionally connected to landscape archaeology, medieval archaeology does not usually attempt to analyse a large-scale analysis of sites to investigate more extensive social or economic processes. Nevertheless, archaeology can often provide a much more significant amount of data that could be retrieved from written evidence and thus opens an opportunity to investigate certain parts of the process that has not been possible before. Besides, by applying new quantitative modelling approaches, archaeological evidence can often bring new light to even well-documented historical processes.

Nevertheless, dealing with large-scale archaeological data can also be rather challenging. Ethical issues, data normalisation, methods for analysis and interpretation all have their respective disputes, and the definition of 'Big Data', especially in the context of Medieval archaeology, is also debatable. Therefore, the session aims to give a platform to discuss the potential and the challenges that researchers face with 'Big Data' in Medieval archaeology, review best

practices and possible pitfalls, and have a comparative overview by exploring different projects and investigation directions.

The session welcomes papers focusing on the Middle Ages, within the range of the following topics:

- Digital collection of archaeological sites
- Digital collection and analysis with burial archaeology
- Digital analysis of large-scale archaeological data
- Digital analysis of Medieval processes by archaeological data
- Digital collections and analysis of Medieval material culture

## ABSTRACTS

### 1 **THANADOS - OR HOW TO PRESENT DEAD PEOPLE AND THEIR BELONGINGS IN A STATE OF THE ART FASHION**

**Abstract author(s): Eichert, Stefan (Natural History Museum Vienna) - Richards, Nina (Austrian Academy of Sciences)**

**Abstract format: Oral**

Since 2019, a small team of experts at the Austrian Archaeological Institute (ÖAI) of the Austrian Academy of Sciences (ÖAW), the Natural History Museum Vienna and the Austrian Centre for Digital Humanities and Cultural Heritage (ACDH-CH) has developed a web application - <https://thanados.net> for presenting and providing thanato-archaeological data online.

Here, already published anthropological and archaeological information as well as results of scientific analyses (e.g radiocarbon dating, stable isotopes) are made available as open data for researchers and the general public. The web application currently presents more than 430 burial grounds with almost 5000 burials and over 10.000 finds - a nearly 100% coverage for the Early Middle Ages in the area of present day Austria. New sites are added continuously. Various options for downloading the data allow far-reaching further analyses out of the box. Extensive visualisations and possibilities to create burial ground plots and queries tailored to interests and research questions additionally facilitate working with the presented data.

While THANADOS has so far primarily presented data on cemeteries of the early Middle Ages within the borders of present-day Austria, the focus is now expanding to other periods and regions.

### 2 **EMPOWERING THE VOICELESS – CHALLENGES AND APPROACHES**

**Abstract author(s): Vargha, Maria (Charles University Prague)**

**Abstract format: Oral**

The present paper introduces a research project funded by the PRIMUS grant scheme at Charles University, Prague. The project focuses on the process of Christianisation of East-Central Europe from the point of view of the archaeological heritage of the rural population. Christianisation in the examined region was a crucial agenda of state formation; however, the impact of the rural population is seldom examined.

The present paper focuses on the methodological approaches to investigate territoriality and reconstruct the earliest network of rural churches based on historical and archaeological evidence. Examining the early network and the 'area of influence' of churches and other religious and secular institutions and their comparative contextualisation with contrasting site types (such as field cemeteries) provides an excellent base to investigate the development of institutionalised Christianisation in the lowest level of society. The current project is developing a digital database of those archaeological features connected to this process, and the present paper showcases the upsides and challenges of the extensive, digital, geospatial database.

### 3 **EMPOWERING THE VOICELESS – GEOSTATISTICAL AND GEOSPATIAL ANALYSIS**

**Abstract author(s): Janovský, Martin - Fajta, Martin (Univerzita Karlova)**

**Abstract format: Oral**

The present paper introduces a research project funded by the PRIMUS grant scheme at Charles University, Prague. The project focuses on the process of Christianisation of East-Central Europe from the point of view of the archaeological heritage of the rural population. Christianisation in the examined region was a crucial agenda of state formation; however, the impact of the largest segment of the society, the rural population, is seldom examined.

An extensive, digital archaeological and historical database has been compiled to investigate the development of the rural church network, composing churches, cemeteries, settlements and ecclesiastical and secular power centres. By applying digital methods on a large spatial dataset, the investigation of what and how human and environmental factors have impacted the formation of the early rural church network becomes possible. The present paper shows the preliminary results of this material's geospatial and geostatistical analysis, conducting primarily catchment,

proximity analysis, and analysis of the intensity of a point process of spatial covariate, attempting to differentiate between the organic and the institutionalised development of Christianisation of the rural population. In conclusion, these analyses make it possible to define the different settlement practices of the early medieval period and to explain the absence of churches in sites with only early medieval burials.

#### 4 **BEYOND DOTS AND NUMBERS. THE POTENTIAL AND PITFALLS OF LARGE-SCALE SPATIAL APPROACHES TO MEDIEVAL TRANSHUMANCE**

**Abstract author(s):** Dahle, Kristoffer (NTNU University Museum; Møre & Romsdal County)

**Abstract format:** Oral

Summer farming was an integrated element of Norwegian agriculture and dairy farming up until the 20th century and is still practised in a somewhat more modern appearance. This system is known from medieval written sources, and was presumably exported to the North Atlantic isles during the Viking Age colonisation, yet our archaeological knowledge on this transhumant practice is sparse. The material traces are often fragmented and insubstantial, the sites rarely fully investigated due to low development pressure, and the subject is in general given little attention within current archaeological discourse.

According to Askeladden – the Norwegian database of Cultural Heritage Sites and Monuments – a vast majority of these early shieling sites are located to Western Norway. Can we trust that this spatial distribution displays a prehistoric 'reality'? On the basis of such a quantitative material, can we attempt to make large-scale analysis on outland use, regional variation, and economic specialization and trade?

In this paper, I want to go beyond the dots and numbers, and discuss the challenges relating to such quantitative and large-scale approaches – in particular relating to data generated through small-scale and development-led prospection – but also some of the possibilities.

#### 5 **CONSIDERING THE WAY FORWARD: DIGITAL DATA AND THE SEMANTIC WEB**

**Abstract author(s):** Jansens, Nicolas (Heidelberg University; Charles University)

**Abstract format:** Oral

In our emerging age of big data and the Digital Humanities, the understandability (i), usability (ii) and durability (iii) of data are major concerns for forward-thinking researchers and institutions. Yet, in the case of many digital data-based projects, solutions to properly address these aspects are neither truly sought nor implemented. The reasons for this are partially structural, relating to the finite nature of research projects, and partially legacy-based, relating to the knowledge and skillsets transferred within our disciplines. This presentation is primarily addressed to the latter.

Drawing on experience in the ongoing toponomastic and archeological project "Interlinking language and material culture – a study of European populations in time and space", I will discuss the above-mentioned issues and their potential resolution using the technologies of the Semantic Web.

Issues considered: (i) a lack of embedded meta-information to facilitate interpretation of data by humans or machines; (ii) project-specific data structures, which limit transferability beyond the original project; (iii) isolated release of datasets on local platforms subject to abandonment as maintenance efforts and resources are directed elsewhere.

Potential solutions: (i) use of object-oriented data structures enabling semantic elaboration of the data in relation to common metadata vocabularies (i.e. ontologies) defining types and typological relationships (cf. OWL Web Ontology Language); (ii) implementation of, and contribution to, stable, open ontological libraries (e.g. FOAF); (iii) integration of data with/into open, collaborative data platforms (e.g. Semantic MediaWiki).

Are these solutions reason enough for orientation towards the principles of the Semantic Web and its core technologies? How might that be engaged in collectively?

#### 6 **OLD WINE INTO NEW WINESKINS: LEGACY DATA, BIG DATA, AND A CASE STUDY FROM THE BYZANTINE PELOPONNESE**

**Abstract author(s):** Simoni, Eleni (University of Patras) - Papagiannopoulos, Konstantinos (Institute of Local History) - Dafi, Evangelia (Ministry of Culture and Sports, Ephorate of Antiquities of Trikala) - Makrypoulas, Christos (Independent Scholar)

**Abstract format:** Oral

Regional Medieval studies in the Eastern Mediterranean span a wide period of nearly 1000 years between the sixth and the fifteenth centuries. They also entail huge spatial coverage, with Greek territory being the epicentre of a large number of regional, extensive and intensive surveys. Even though ongoing archaeological research flourishes in Greece, legacy data forms the largest part of highly voluminous collections that are hypothetically available nowadays. Their easy digitalization and manipulation with GIS leads to ever-growing datasets. Furthermore, the proliferation of remote sensing images has been immensely facilitated through the accessibility of various means and, more recently, UAVs. Despite methodological limitations, this is the reality of today and tomorrow.

Our presentation sets the intensive survey of Western Achaia as its starting point, offering the stimulus to discuss these issues from various perspectives. On local scale, we use pottery analysis as a template for studying land use and performing spatial analysis in the medieval village of Kamenitsa. On regional scale we examine the distribution of both archaeological and historical sources that construct a huge and heterogeneous database in Achaia, consisting of excavations, stray reports, intensive and extensive surveys, old archives and place name registries. On interregional scale, we go through the collections of the major surveys of Byzantine Greece to seek common trends in identifying the most abundant primary data, i.e. ceramics. Finally, on temporal scale, we use UAV derived images to visualize a flood and seek interpretation of gaps in the medieval pattern with respect to habitation.

As a result, conclusions can be drawn for the opportunities big legacy data offer in Greek medieval research, despite the drawbacks of their ever-growing bulk and diversified methods of collection and processing, in order to examine broader extensive social and economic developments over time.

## **7 SMALL FINDS IN 19TH AND EARLY 20TH CENTURY SILK ROAD COLLECTIONS: THE OVERLOOKED ARCHAEOLOGICAL EVIDENCE**

**Abstract author(s):** Hoppál, Krisztina (MTA-ELTE-SZTE Silk Road Research Group, Eötvös Loránd Research Network)

**Abstract format:** Oral

By the end of the 19th century interest in collecting archaeological finds from various locations along the Silk Roads heightened among European travelers, resulting in a number of unique collections kept in several European museums. Most have been continuously studied since their arrival to Europe, however, different parts of these collections usually have not enjoyed the same scholarly attention. Especially household and everyday craft objects have often been overlooked compared to pieces of art which usually took priority. These small, portable artifacts that comprise the core of objects of daily life are particularly decontextualized and poorly documented thus present unique challenges.

The fate of these finds can be illustrated by two different yet similar collections of the late 19th- early 20th century: the Zichy Collection of the Ferenc Hopp Museum of Asiatic Arts, Hungary, and the Turfan Collection kept in the Museum für Asiatische Kunst – Staatliche Museen zu Berlin. While objects in the Zichy collection came predominantly from the Caucasus to where three expeditions were led by the wealthy and influential Hungarian politician, Count Jenő Zichy in the late 19th century, a remarkable number of the "Alltagsobjekte" or "Kleinfunde" from the Turfan Collection were collected near the modern city of Turfan, which gave the name to the German Expeditions (1902-1914).

Apart from certain differences, small finds of the Turfan and Zichy collections share several similarities. Both collection units contain multiple finds connected to nomadic cultures and settled civilizations of the 5th to the 13th centuries, and could only be approached by using archival archaeological data. Present paper aims to compare these two different collection units and show pitfalls and outcomes of analyzing such decontextualized materials.

## **8 DIGITAL APPROACHES TO BOARD GAMES IN THE MEDIEVAL WORLD**

**Abstract author(s):** Crist, Walter - Browne, Cameron (Maastricht University)

**Abstract format:** Oral

Board games as a cultural practice serve as a social lubricant—they help people to interact with one another across cultural, linguistic, and other social boundaries. Games often serve as a shared cultural practice within and across regions which provide a mechanism by which people cross these barriers to create and maintain networks of interaction. This paper explores game play as a tool of interaction in the Middle Ages as part of the ERC-funded Digital Ludeme Project, which seeks to document, reconstruct, and map the evolution of board games across the world from prehistory to the modern world.

Using archaeological, historical, and art historical data gathered in this project, it is possible to explore interactions in the Medieval world to expand and deepen our understanding of the ways ideas spread through networks of interaction. Games are conceptualized as groups of ludemes, or "game memes," that together create a functioning system that form the mechanisms of game play. The spread of ludemes and dispersion of games, when examined in the context of human interaction, provides a new line of evidence for discussing exchange of ideas and interactions that may not be visible in other forms of material culture. This talk highlights games of the Medieval period and the different variations in their rules under the lens of Social Network Analysis, in order to model the interactions through which people interacted and transferred ludemes to one another. The question of reconstructing the rules for medieval games will also be explored in this light, as the project's Ludii software allows for quantitative assessment of gameplay through the application of artificial intelligence to proposed rulesets.

## FROM CLOSED CATALOGUES INTO LINKED OPEN NUMISMATIC DATA IN FINLAND

**Abstract author(s):** Oksanen, Eljas (University of Helsinki) - Ehrnsten, Frida (National Museum of Finland; Finnish Heritage Agency) - Rantala, Heikki (Aalto University)

**Abstract format:** Oral

This paper will investigate the intersection between new challenges in digital archaeological collections management and the potential for national-scale 'big data' analysis of citizen science-generated databases using the national collections at the National Museum of Finland and the Finnish Heritage Agency as a case study. There is an increased need for digital solutions in archaeological cultural heritage management, in significant part stemming from the vastly increased amount of information generated by the public, specifically the growing number of archaeological finds recovered by metal-detectorists and other public finders in European countries; including Finland, where the activity is legal within certain restrictions. Concentrating on coin finds, we will discuss digital heritage challenges that stem from combining heterogeneous older and modern catalogues and data, and in designing sustainable institutional solutions that serve the needs of multiple user audiences (e.g. collections management, scientific researchers, non-professional numismatists, citizen scientists and the broader public). We will present the new project DigiNUMA, which aims to develop a new Finnish public data service for numismatic heritage through data harmonisation and Linked Open Data principles in concordance with the principles of pan-European undertakings such as Nomisma.org and AriadnePlus. The possibilities that such technological platforms offer for deploying digital citizen science/crowd-sourcing data enhancement will be discussed.

## UNDERSTANDING EARLY MEDIEVAL BURIALS THROUGH RADIOCARBON DATASETS

**Abstract author(s):** Brownlee, Emma (University of Cambridge)

**Abstract format:** Oral

An emerging method in archaeology is the use of summed radiocarbon dates as a proxy for population levels. Combining large datasets of radiocarbon dates, either using summed probability or kernel density estimates, allows us to see how activity fluctuated over time. So far most applications of this method have been in prehistoric archaeology, and have related to demography. However, recent work from early medieval Ireland shows that it can be successfully applied to historical periods and to other types of archaeological question.

This paper will present preliminary results from a meta-analysis of over 1000 radiocarbon-dated graves from early medieval England, collated from both research and commercial excavations. It will examine the potential of radiocarbon kernel density estimates to shed new light on how burial practices evolved across the early medieval period. This includes questions around the changing use of grave goods, the nature of cemetery space, and the extent to which mass death events can be identified. It will demonstrate the potential of this approach for overcoming problems with more traditional typological chronologies, and how limitations in the method itself might be minimised.

## HOW DIGITIZING OLD EXCAVATIONS IN ARCMAP AND ACCESS DATABASES CAN CONTRIBUTE TO A GREATER UNDERSTANDING OF PAST PRACTICES

**Abstract author(s):** Swensen, Elisabeth (NTNU University Museum)

**Abstract format:** Oral

Trondheim, a town in Norway, has been the object to many archaeological excavations, as it lies on top of both iron age and medieval cultural layers (protected by the Norwegian Cultural Heritage Law). These excavations have a variety of documentation of varied quality, as they involve more than 100 years of archaeological practice. In my PhD I study a set of excavations carried out between 1928 and 2016, exploring their documentation regarding water and waste management. By georeferencing field drawings and highlighting specific structures, I have been able to use ArcMap to visualize a fuller picture of medieval Trondheim both spatially and temporally. Newly digitized field diaries, photographs, and field reports give access to a vast quantitative and qualitative material which I have brought together in Microsoft Access databases. The databases make it possible to combine and arrange data in a myriad of ways, opening for new insights into old materials.

Visualizing such different archaeological practices in ArcMap and Access comes with some challenges. This can be regarding the dating of structures, different documentation practices, and other factors which will not be visible in statistics drawn from the databases or maps showing specific structures. However, the possibilities arising from such projects show that new insights are possible and make way for bigger studies with similar methods. Old excavations should not be forgotten, and new methods can place their invaluable work back in focus.

## EVERYDAY LIFE IN BORGUND AND THE REVITALISATION OF DATASETS ANNO 1950

**Abstract author(s):** Hansen, Gitte (University Museum of Bergen, University of Bergen)

**Abstract format:** Oral

The deserted town Borgund was found by archaeologists in 1953. Borgund is located on the west coast of Norway and was one of the countries only 16 towns during the Middle Ages. With the discovery Norway's first excavation of ordinary medieval peoples' settlement traces began and a new era of medieval archaeology was born with archaeologist Asbjørn E. Herteig as lead investigator. During the 50's and into the 70's, 5300 m<sup>2</sup> were excavated and today some 90.000 objects and faunal material, along with drawings, dairies, and other 'raw documentation' are stored in the University Museum of Bergen's repositories. Data has hardly been touched since the 1970's. How do we process these 'Big data' legacy sources to become assets in modern research? In the multi-disciplinary Borgund Kaupang Project our ambition is to study everyday life in this small town in the periphery of Europe. We treat the whole town as one site, so we are not satisfied with just sampling areas of the excavated site. The paper presents technical and intellectual challenges in transforming analogue handwritten datasets to a digital scientific platform and translation of datasets anno 1950 to state-of-the-art anno 2020s.

## RE-EVALUATING OLD ARCHEOLOGICAL EVIDENCE TO YIELD EXCITING NEW POTENTIAL: THE MEDIEVAL CASTLE OF PETRUS (CENTRAL SERBIA)

**Abstract author(s):** Milosavljevic, Monika (University of Belgrade) - Stefanović, Filip - Stojanović, Branislav (The Regional Museum of Paraćin) - Trajković, Lana (Independent researcher) - Manojlović, Nikolina (University of Belgrade)

**Abstract format:** Oral

Robert Chapman and Alison Wylie have stated, material evidence is a rich scaffolding for (re)interpretation that allows for revision based on novel (digital) tools, ranging from improvements in digital (re)documenting to opening new research questions. From this perspective, a critical re-examination of legacy data needs to be conducted of the Medieval Castle Petrus, a well-known archaeological site, which received repeated small-scale excavations throughout the 1970s to the 2000s to date its structures.

Petrus holds a valuable strategic position above the gorge of the river Crnica, which secluded nine churches/monasteries as well as one hesychastic cave. Prior archaeological work has shown the castle to consist of a lower town and an upper town in which there are the remains of a fresco painted palace. The castle was constructed in an area known by historical sources as that assigned primarily as a march to lord Crep Vukosavić (14th c.) and the "hesychastic desert" of the 14th and 15th centuries.

The excavations in the 1970s and 80s resulted in simplified technical drawings of the palace's foundations in the upper town, but were done only preliminarily. Moreover, after the small-scale excavations at the time, the areas excavated of the palace were then covered by soil. A new excavation campaign initiated in 2021 on the palace in Petrus included new documenting standards based on digital technologies such as photogrammetry, drone scanning and GIS, which pointed to great excavation potential. The archaeological record of the castle itself is more precise in its technical aspects. Furthermore, the animal bones that were not previously considered an important source of information were collected and recorded at this time. All these data and new methods to analyze them point to a promising wealth of potential that the site may yield upon further re-evaluation.

## BRIDGING THE GAP: A SEMANTIC-BASED ARCHITECTURE TO BRING TOGETHER THE ARCHAEOLOGICAL RECORD AND WRITTEN EVIDENCE

**Abstract author(s):** Medina Gordo, Sonia (University of Barcelona) - del Fresno Bernal, Pablo (Sistemes de Gestió del Patrimoni) - Travé Allepuz, Esther (University of Barcelona)

**Abstract format:** Poster

Either Big or Smart, HSS studies are dealing with digitalized data more and more frequently. This tendency leads scholars to the construction of information systems or digital repositories capable of managing datasets more properly. The issue is that these organisational information schemes often suffer from a lack of interoperability and stay isolated from other data collections. Technically, this sort of insular management framework occurs when the dataset is gathered as means of meeting the particular needs of someone's study, whilst it fails to exchange its information with others adequately. From a conceptual perspective, problems arise once our data model cannot go beyond the expertise domain nor employ the same concepts in other contexts.

In Medieval and Postmedieval contexts, this panorama is more noticeable, as the use of a heterogeneity of sources is very common in our day-to-day research. In our contribution, we aim at introducing a procedure that nourishes from analogous tools and projects, such as the cultural heritage management tool HORAI, or the integrated information system GREYWARE for pottery studies. Our approach does not only make use of archaeological working procedures, but also enhances them by extending and enabling abstract equivalences of its main concept: the Unit of Stratigra-



phy. In this poster, we will bring together various digital repositories as examples, emphasizing the integrated use of archaeological and written sources.

## B. THE VIRTUAL SCIENTIFIC MODEL OF GREAT MORAVIAN MIKULČICE

**Abstract author(s):** Poláček, Lumír - Krupičková, Šárka - Hladík, Marek - Mazuch, Marian - Hlavica, Michal - Stuchlíková, Eva - Šindelář, Jiří (Institute of Archaeology of the Czech Academy of Sciences, Brno)

**Abstract format:** Poster

The Virtual Scientific Model of Great Moravian Mikulčice is a newly published specialised map that gathers spatial information about Mikulčice – a key site for the study of Great Moravia in the Czech Republic with a history of more than 60 years of systematic archaeological research. The interactive map spatially visualises and provides access to information for the scientific community and the general public regarding the stronghold and its hinterland, artefacts and ecofacts, and the development of the site from prehistory to the Middle Ages. The data is published in a web map application on the ArcGIS platform, which is accessible to users (without needing to log in) at <https://mikulcice-valy.cz>. The map application is divided into four units: Hinterland (B1), Mikulčice-Valy Stronghold (B2), Structures & Features (B3), and Artefacts (B4). This interactive map is an active tool, which will be further developed and updated in accordance with the ongoing excavation of the site. The map application is linked to a book published at the same time – Mikulčice 900 atlas (Poláček et al. 2021). Both the map application and book are the outputs of the project Virtual Scientific Model of Great Moravian Mikulčice: A System of Interactive Documentation, Presentation and Archiving of Long-Time Systematic Archaeological Excavations (2018–2022).

---

## 170 THE HOUSES OF DEATH AS ANCESTRAL MONUMENTS. THE ARCHAEOLOGY OF NEOLITHIC LONG BARROWS IN EUROPE

**Theme:** 2. [Re]integration

**Organisers:** Turek, Jan (Center for Theoretical Study, Charles University, Prague) - Darvill, Timothy (Department of Archaeology and Anthropology, Faculty of Science and Technology, Bournemouth University) - Kristuf, Petr (Department of Archaeology, University of West Bohemia in Pilsen) - Przybyl, Agnieszka (Institute of Archaeology, University of Wrocław)

**Format:** Regular session

The construction and use of long barrows connected vast areas of Central and Northwestern Europe during the late fifth, fourth, and third millennia BC. But the purpose and meaning of these great monuments remain issues for debate. They are commonly interpreted as funerary and religious sites, perhaps erected as part of a system of ancestor cults. Their symbolism is closely connected with archetype Neolithic houses, representing crucial values of early farming communities in Europe. Sometimes they are viewed in economic or socio-political terms, as territorial markers delineating the areas controlled by different farming communities. In yet other perspectives they are perceived as landmarks of previous habitation; indicators of settlements or farming-friendly territories enduring for millennia after their construction. Indeed, all these interpretations may be valid and contribute dimensions to the original nature of the long barrows.

In this session we want to address a wide range of issues, starting with regional and chronological variability, construction, and the functional and symbolic interpretations of the structures and their use. We would welcome papers on these matters and also on the spatial relationships of long barrows with other funerary sites, settlement areas, and, more widely, ceremonial landscapes. Contributors are invited to given attention to the dynamics and time-span of the monumental traditions represented, and consider ancestral cults, activities at and around the barrows, and the abandonment and reuse of individual monuments. We would also welcome discussion on the multidisciplinary methods of long barrow research, and issues connected to their conservation and public presentation.

## ABSTRACTS

### 1 CULTURAL ADAPTATION, SOCIAL LEARNING, AND THE ADOPTION OF NEOLITHIC LONG BARROW CONSTRUCTION IN SOUTHERN SCANDINAVIA

**Abstract author(s):** Swenson, Dain (Lund University)

**Abstract format:** Oral

The tradition of construction of monumental mortuary sites was a common practice throughout northern and Atlantic Europe in the Neolithic (c. 4000 – 1700 BC in Scandinavia), and the introduction of the practice to Scandinavia reflects changing patterns in population size, ritual behavior, and relationships with the landscape. The adoption of monumental burials in southern Scandinavia can be examined through the lens of social learning and evolutionary anthropology. Through this lens, culture is an adaptive mechanism which allows us to thrive in different natural and cultural environments. We imitate the behavior of successful individuals if a clear solution to a problem is not readily

apparent. The acculturation process and the spread of technology is, in part, an extension of the social learning processes of imitation, modification, and adoption of ideas and behaviors, and rituals which appear to be advantageous. The spread of long barrow and other monumental traditions, and the rituals which were conducted around such structures can be viewed as advantageous behavior to Neolithic Scandinavians who adopted the practices. This paper examines Neolithic long barrow building in southern Scandinavia, contrasting it with similar traditions elsewhere in Europe, and discusses modern or near-modern monumental tomb traditions and rituals for a modern analogue. Furthermore, the paper explores if evolutionary anthropology can provide insights into any advantages Neolithic Scandinavians gained by adopting long barrow building, such as increased group cohesion, or a shift in territorial attitudes towards the landscape.

## 2 WORK IN PROGRESS – BUILDING A LONG BARROW THROUGH CENTURIES

**Abstract author(s): Beck, Malene (Østfyns Museer)**

**Abstract format: Oral**

The excavation of a long barrow on Funen/Denmark revealed the complex building history of a grave monument consisting of several phases, representing cycles of use during two centuries or more in the early Neolithic.

The barrow contained three non-megalithic graves corresponding to three phases of a wooden palisade at the eastern end of the barrow. A system of ditches, recut several times, predated the barrow and probably marked what was later to become a burial ground. Beneath the barrow ard-marks were discovered.

The long barrow was a complex structure, and during its lifetime it was constantly altered, some parts were destroyed and new elements were added. The different elements – ditches, burial chambers and palisades – probably did not coexist for a very long time, if at all. The central piece of the monument seems to be the wooden palisade. The palisade was a reappearing element, the function of which was to mark a boundary or contact point between the living and the dead.

All though the long barrow was extended and altered over more than a century, it seems that the idea of the final appearance of the barrow was present all the time. The earthen long barrows in Denmark have a lot of architectural elements in common, but none are identical. They are variations on a certain idea or theme, and the different appearances can perhaps be ascribed to the fact, that what we excavate may be earthen long barrows at different stages of construction. Perhaps the importance of the barrow did not lie in the physical barrow itself but in the actions performed during the burial or while building or tearing down parts of the structures. The barrow then became a transformer of land and people from wilderness to culture landscape and from living to ancestor.

## 3 MOUND OVER MOUND – LONG BARROWS AT BYGHOLM NØRREMARK, DENMARK

**Abstract author(s): Gebauer, Anne Birgitte - Nielsen, Poul Otto (National Museum of Denmark)**

**Abstract format: Oral**

Long barrows were the earliest monuments constructed by the first farmers in Northern Europe. These barrows continued to be erected over more than half a millennium (3800-3200 BC) although the architecture of the funerary structures changed. Early long barrows were associated with complicated burial structures, often timber-built, while later long barrows included megalithic chambers and were often delimited by kerbstones. The well-preserved long barrow at Bygholm Nørreremark is an example of the prolonged social and ritual significance of many barrows as the earthen long barrow was remodeled as a megalithic monument where votive offerings continued for centuries. The site was completely excavated in the 1970s and is now being reanalyzed in relation to the final publication. The complicated and long-lasting rituals generally associated with funerals at long barrows are illustrated by a series of wooden structures related to the Early Neolithic Bygholm long barrow including two graves, one or two mortuary houses, a timber façade, division of the mound by internal fences, and a palisade enclosing the entire funerary site. The second stage of the mound belongs to Middle Neolithic. It is particularly striking in terms of size and an unusual double line of kerbstones. The scale of the construction at both stages compared with limited number of graves suggest that these were elite burials. Votive offerings of pottery and polished flint axes demonstrate that the long barrow retained its significance as an ancestral monument throughout the Funnel Beaker Culture. Furthermore the Bygholm barrow is part of a landscape heavily populated with tombs and hoards from the Funnel Beaker period. The use and purpose of long barrows is examined based on the detailed information from Bygholm Nørreremark as well as the role of this barrow within the ceremonial landscape.

## 4 LONG BARROWS AND FAÇADES

**Abstract author(s): Larsson, Lars (Department of Archaeology and Ancient History)**

**Abstract format: Oral**

For decades the Early Neolithic earthen long barrow was not known in Sweden as a burial type despite a large number of excavations of Early Neolithic settlement sites and the identification of a considerable number of earthen

long barrows in nearby Denmark. A project was initiated to find out whether earthen barrows actually existed in the southernmost part of Sweden. The eastern parts of two long barrows, regarded as long dolmens, were excavated, and both presented features, such as a façade, similar to Danish earthen long barrows.

In recent years a number of earthen long barrows have been identified within sites with large areas of topsoil removal. In addition to the earthen long barrows, a number of excavations have shown that façades seem to be common, with a very low barrow or in most cases without any barrow at all. In some cases, a number of façades have been identified without barrows and dolmens seem to have been built directly on top of the remains of facades. Façades made of erected stones instead of wooden posts have also been identified. These different aspects will be discussed.

## 5 A MOUND OF MEMORIES

**Abstract author(s): Søndergaard, Louise (Museum Skanderborg)**

**Abstract format: Oral**

During the winter of 2020 Museum Skanderborg excavated a burial mound in the central part of Jutland Denmark. From outside the mound appeared rather insignificant due to ploughing, but as the layers were peeled off, so were generations of attentive activities. The mound was not the initial stage of the feature. A very rare example of a late Neolithic/early Bronze Age house was completely covered by the mound. Parallel to this house was another one – dated to the early Bronze Age, and right next to the hearth of this house, there was a burial.

The deceased was a woman of aristocratic descent, who had been buried in a hollowed-out oat log which was the most exquisite burial in this specific period in Denmark (1500-1300 BC Early Bronze Age p II). This burial no doubt initiated the erection of the actual mound, but unlike common behaviour this elaborate burial was not the central point of the mound. It was actually placed on the perimeter of the feature indicating that the ancestral dwellings were equally important to seal below this monument.

Later Bronze Age activities at the mound; burials and pits with deposits of finds that evokes suggestions of ritualistic behavior further strengthened the sense of belonging, legitimized ownership of the area as well as reproduced ancestral affiliation.

## 6 LONG BARROWS AND RELATED MONUMENTS IN THE COTSWOLDS IN THE LIGHT OF RECENT WORK

**Abstract author(s): Darvill, Timothy (Bournemouth University)**

**Abstract format: Oral**

Scattered across the Cotswold Hills in the mid-west of England are more than a hundred stone-built long barrows dating to the period 3800 to 3300 BC, one of the most dense concentrations of such monuments in north-west Europe. They have been the subject to study for more than three centuries, but few have been excavated in modern times. Some, including Hazleton North (Gloucestershire) and Ascott-under-Wychwood (Oxfordshire), are clearly single-phase constructions. Others, including Notgrove (Gloucestershire) and Wayland's Smithy (Oxfordshire) are multi-phase monuments in which changing preferences are expressed through successive architectural forms and structures. This lecture will briefly explore what we currently know about the range of monuments dating to the early fourth millennia BC in the Cotswolds, considering issues relating to construction, form, and sequence, before moving on to reflect on the nature and content of the burial deposits and the key matter of identity as expressed by the monuments themselves. The paper draws on the preliminary results of on-going excavations at a multi-phase long barrow at The Sisters near Cirencester in Gloucestershire.

## 7 NEOLITHIC LONG BARROWS AS LONG TERM ANCESTRAL MONUMENTS IN THE RITUAL LANDSCAPES OF BOHEMIA

**Abstract author(s): Turek, Jan (Center for Theoretical Study, Charles University) - Kříšťuf, Petr (Department of Archaeology, University of West Bohemia in Pilsen) - Hejčman, Michal (Czech University of Life Sciences Prague)**

**Abstract format: Oral**

Our recent long barrows project focusses on reconstruction of the sequence

of Neolithic ancestral worship and representation of communal and personal identities in the landscape of North Bohemia. The long barrows are commonly interpreted as funerary/religious sites, perhaps erected as part of a system of ancestral cult. They can also be perceived as territorial markers delineating the areas controlled by different farming communities and perceived as landmarks of previous habitation enduring for millennia after their construction.

The long barrows in Bohemia are dating between 4000-3300 BC. Unlike the burials in contemporary enclosures, the barrows usually contain single burials, particularly emphasizing the familial local ties and more private and intimate relationships towards ancestors. The barrow recently excavated at Dušníky is 86 m long orientated east–west. Its width is 26 meters (E) and 17 meters (W). The mound was piled of dark earth exploited along the barrow. Its current height is still around 1 m in the ploughed field! The barrow was built over the timber burial chamber containing remains of

an 11 year-old child. The tomb was made of wooden planks and contained a small jug (dating to Baalberge phase of the TRB) and a flint arrowhead. Upon the primary burial and completion of the barrow construction, it probably served as an ancestral shrine. The evidence of sacrificial activity consists of several broken ceramic vessels near the eastern frontage. Such ceremonial activity lasted up to 100 years. Similar (Michelsberg Culture) barrow excavated in Vražkov was reused even 2000 years later in EBA for both funerary and sacrificial purposes. The chemical analyses suggest these barrows were located outside of the habitation areas.

In our view the Neolithic long barrows were not only funerary structures but also important ancestral monuments structuring the prehistoric ritual landscapes over long period of time.

## 8 PERSPECTIVES OF LONG BARROWS RESEARCH IN MORAVIA (CZECH REPUBLIC)

**Abstract author(s): Kalabková, Pavlína (Palacký University Olomouc)**

**Abstract format: Oral**

Thanks to research at discovered necropolis we were able to come three stages of development of tumulus burial grounds in Moravia. The oldest FBC tumuli in Central Moravia were found on east-facing slopes of Velký Kosíř, near the village Slatinky. They contained the remains of human torsos which were not cremated, placed in crouched position in stone cists and covered with stone enclosures and layer of clay. These graves contained Baalberg pottery and therefore the stage is called Baalberg phase. The second group is represented by tumuli with significantly reduced volume of stones used. They were used for the perimeter structure of various and size. The cremation burials were placed on the inner surface surrounded by stones, or on the eastern side of the structure. The first tumulus of rectangular structure was discovered at the site Luthóž near village Drahanovice and therefore the stage is called Drahanovice phase. The contents of these tumuli are generally attributed to the early stage FBC with some signs of Boleraz Group and the emerging Baden Culture. The third group was lacking stone structure. Stones were only used to cover individual cremation graves. The traditional habitus of FBC vessels is replaced by shapes and decorations attributed to the Boleraz Group or Baden Culture. Tumuli of this type belong to the group of first tumuli to be studied at sites Slatinky and Ohrozim, which is why this stage was named Ohrozim phase. In addition to these three types of tumuli structures, extremely long mounds are also identified on the necropolises. They have a slightly trapezoidal ground plan and a length 40,80–120m. They are known from two sites – Ludéřov and Slatinky. They have the same E–W orientation as other mounds on the necropolis. However, their research has not yet been done.

## 9 FROM THE NEOLITHIC LONG BARROWS TO THE EARLY MEDIEVAL BURIAL MOUNDS. THE RITUAL LANDSCAPE OF THE MUSZKOWICE FOREST (SUDETEN FORELAND)

**Abstract author(s): Przybyl, Agnieszka (University of Wrocław)**

**Abstract format: Oral**

An almost perfectly preserved ritual landscape is represented in the small wooded area near the Muszkowice village, in the Sudeten Foreland in south-western Poland (Lower Silesia). The most distinguishable feature of the area is the presence of dozens of prehistoric and early medieval burial mounds. In the Muszkowice forest there are as many as 35 archaeological sites, representing separate burial places. Among them 16 sites represent places with the Neolithic earthen long barrows and 19 represent clusters of much smaller, round burial mounds. All of the latter are probably much younger than the former. Some of them are certainly of an early medieval origin.

During the archaeological excavations, at one of the Neolithic sites (Muszkowice 18), a late Neolithic inhumation grave were recorded. It was located inside a mound of the long barrow of an earlier origin. At another of the Neolithic burial sites (Muszkowice 45), two, not very large round barrows with the remains of the cremation burials, were discovered. They are related to the Early Middle Ages. In this area this is not the only one example, where small mounds were imposed onto the Neolithic monumental barrows.

In my presentation, I want to outline the issue of continuity of burial grounds confirmed by several cases of such a distant use of cemeteries in that area.

The studies presented were conducted with the financial support of the National Science Centre, research project No. 2017/25/B/HS3/01442.

**Theme: 3. The Carpathian Basin: Integration, Mobility and Diversity**

**Organisers: Vicze, Magdolna (Hungarian National Museum) - Sorensen, Marie Louise (Cambridge University) - Sofer, Joanna (Southampton University) - Kovács, Gabriella (Hungarian National Museum)**

**Format: Regular session**

The many nuances of life on prehistoric sites and the questions they raise about lifeways and the influences of various forms of temporalities and seasonal cycles sit behind this session proposal. These aspects of prehistoric life are obvious, yet rarely discussed. Our work at the Bronze Age tell at Százhalombatta (Hungary) has made us realise that archaeological notions of seasonality are often underdeveloped and sometimes banal. For example, how the behaviour of fish or birds may have directed community attention towards seasonal opportunities. Nor do we take into account the difference between using plants that enabled two annual harvests rather than just one when we discuss our prehistoric agrarian communities. Which activities filled the cold winter months, and which could be distributed to any available time during the year? For example, how are pottery making versus spinning and weaving dependent on the weather and temperatures? Having paid scant attention to these aspects means that we may have ignored some of the major factors that influenced community life, including for example labour divisions, the necessity of choice, and whether ideas of the 'right' time were linked to certain activities. It also means that we have neglected to grant prehistoric people planning and foresight, such as the need for storage or having the right kind and amount of grain for seeding. Drawing inspiration from late Medieval annual calendars that typically illustrate the distribution of tasks over the year, including both those that were dependent on seasons and those that were irregular and opportunistic, we call for discussion of how we may bring more attention to these dimensions of prehistoric settled life. In turn, we aim to recognise more of the agency at play between individuals, communities, environments, and materials.

## ABSTRACTS

### 1 PLANNING AND FORECASTING AS STRUCTURING GUIDANCE IN THE PREHISTORIC 'EVERYDAY'

**Abstract author(s): Sorensen, Marie Louise Stig (University of Cambridge)**

**Abstract format: Oral**

In this paper, I consider some of the traditional means of forecasting and planning and argue that such means provided foundational structures to prehistoric lives; that they became essential parts of habitus (aiming at order rather than randomness). I will explore the different temporalities of planning and forecasting, and their varied influences on domestic life. To reflect on the typical concerns of planning I look to different traditional calendrical systems – what are their emphasis and how do they provide guidance for practical actions. This brings attention to seasonality and how changes are best responded to. For forecasting, my focus will be traditional weather lore and similar practices – what are their concerns and how are they formulated. This brings attention to the close connection between observations and forecasting as the behaviour of animals, birds, plants, clouds, or the surface of waters are used to propose changes within the short term. My aim is not to suggest these as direct analogies. Rather, by focusing on these two common forms of guidance for the arrangements of tasks and activities, I aim to move attention to the regulative mechanisms of the 'everyday' within different temporal scales

### 2 ANNUAL ACTIVITY DIAGRAMS AS A TOOL FOR UNDERSTANDING THE COMPLEXITY OF DAILY LIFE ON A FARM

**Abstract author(s): van Amerongen, Yvonne (Archol - Archaeological Research Leiden)**

**Abstract format: Oral**

In West Frisia (The Netherlands), the Middle and Late Bronze Age (1800-800 BC) were characterized by a dynamic landscape in which subsistence was dominated by farming, but wild resources were also exploited throughout the year. In order to capture the complex concepts related to subsistence such as activity, distance, landscape type, and climatic influence year cycles were constructed. These were made based on extensive research on seasonality of each of the activities related to the different subsistence strategies (crop and animal husbandry, hunting and gathering). Furthermore, the distance from the settlement required for each of their related activities was assessed, as well as the influence of (changing) environments over time. In the resulting activity diagrams, the work required in a farming system on an annual basis, the adaptability to environmental change, as well as the interconnectedness and complexity of a farming system that includes wild resource exploitation are captured in one image.

### 3 RHYTHMS OF HEATHLAND LIVING IN THE NORDIC BRONZE AGE

**Abstract author(s):** Houghton, Mark - Caple, Zac (Aarhus University)

**Abstract format:** Oral

By the end of the Early Bronze Age, heathlands created and maintained by the grazing of livestock and regular controlled burning expanded to become a major feature of the Northern European landscape. This was particularly so in Western Jutland, Denmark, where heathlands continued to be the dominant landscape form until the nineteenth century. This inherently unstable landscape form entangled humans and other species in cyclical relations of pastoralism, grazing and burning that mark out heathland living. While mobility is an established part of our understanding of the European Bronze Age, our focus is often drawn to long distance 'heroic' travel, rather than the annual rhythms of movement that pastoralism entailed for these communities.

This paper explores the temporalities of heathland living in the Danish Early Bronze Age, with a particular focus on how humans and other species co-created seasonality and rhythms of life that operated across multiple scales. By considering events on different timescales and their archaeological signatures alongside larger patterns of settlement and social organization, we open up our understanding of these communities and the different social dynamics which they brought about. These cyclical timescales were both seasonal – particularly those relating to the management of herd animals such as sheep – and something unique to this landscape – relating to the cycle of heathland plant species sprouting, maturing, burning and recovering. We can thus explore the critical difference in temporality between communities living in different parts of Denmark, the practices and rhythms of life to which they were exposed, and the forms of multispecies social organization that resulted.

### 4 THE POLYRHYTHMS OF THE IRON AGE HEATHLAND FARM: A VIEW FROM WESTERN DENMARK

**Abstract author(s):** Caple, Zac - Houghton, Mark (Aarhus University)

**Abstract format:** Oral

In the Early Iron Age, the heathland areas of Western Denmark transformed from a winter grazing commons to a site of semi-permanent agricultural settlement. Extensive networks of Celtic fields enveloped the heathlands. In contrast to earlier seasonal migrations, the rhythms of everyday life in the Iron Age were dictated by the field. Iron Age farmers practiced a mixed mode of agriculture combining swidden cereal production and livestock husbandry. Fields rotated between cereal plots, pasture, and heath-fallow. Without manuring, the fields may have required a fallow as long as 35 years, but the incorporation of dung, household waste, and other manures significantly shortened the fallow cycle. In addition to these longer cycles, farm life was punctuated by the seasonal rhythms of livestock and crop needs. While we might imagine the farm's rhythms following the predictable schedule of the harvest, the harsh environmental conditions of heath may have subjected the farming communities to the temporalities of disaster. Given the heath's sandy oligotrophic soil, a 3-week period of drought could ruin the crop, forcing people to adopt emergency strategies.

This paper will examine the composition of this polyrhythmic agrarian landscape as it is revealed through archaeological and palynological remains. The rhythms of the Iron Age farm are traced through several case studies which attend to the varied uses of heather as fuel, fodder, and building material. The consequences of the failure of these cycles are also explored. Thus, the farm is seen to extend beyond the in-field zone which is often the focus of archaeological investigations. We also draw out the ontological contrasts with earlier periods that this evidence suggests.

### 5 SIGNS OF SEASONALITY IN BRONZE AGE AGRICULTURAL PRACTICE AS SEEN IN THE ARCHAEOBOTANICAL RECORD

**Abstract author(s):** Peto, Ákos (Hungarian University of Agricultural and Life Sciences) - Kovács, Gabriella - Vicze, Magdolna (Hungarian National Museum, Budapest)

**Abstract format:** Oral

One of the main factors of success for contemporary human populations was the understanding how nature functioned and also the capability of adopting agricultural know-how to the surrounding landscape. Seasonality within the agricultural cycle was highly important. This part of the agricultural knowledge and environment exploitation must have been the art of knowing 'when to act', and so much the art of 'how to act'.

In the lack of written sources, bioarchaeological remains – among which archaeobotanical remains are one of the most significant ones – can tell us stories of how people coped with seasonality in the Bronze Age. The cultivation of plants, storage of the harvested material all have an interpretation placed within the notion of seasonality.

In the current presentation we undertake an attempt to interpret archaeobotanical material in the light of the changing seasons and by acknowledging that most of the agriculture related actions were strictly linked to a given period of the year, but the survival of human populations depended on their long-lasting effect.

Case studies and phenomena from the site of Százhalombatta-Földvár will be under investigation to reflect on seasonality within the contemporary agricultural practices.

## 6 DETECTING SEASONAL ACTIVITY AT PREHISTORIC SITES THROUGH THE STUDY OF SKELETAL REMAINS FROM FISH, BIRDS AND JUVENILE LIVESTOCK

**Abstract author(s):** Bartosiewicz, Laszlo (Stockholm University) - Gál, Erika (Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Research Network)

**Abstract format:** Oral

The study of temporalities using animal remains includes seasonality. The occurrence of migrating wild animals as well as the reproduction patterns of domestic livestock can offer indication of the season when a deposit was formed. The likelihood of successful fishing also increases during known periods of spawning. Such regularities have certainly directed attention towards the seasonal exploitation of animal resources during prehistory.

The number of usually small remains of birds, fish and juvenile livestock recovered from archaeological sites strongly depends on the methods of excavation. Without wet sieving and/or dry screening it is hopeless to obtain sufficiently large numbers of such delicate finds.

Animal remains from the Early Neolithic settlement of Ecsegfalva and the Bronze Age tell at Százhalombatta (Hungary) have been recovered with sufficient precision to guarantee a reliable representation of small animal remains of key importance in determining seasonality in the find material. Extensive reliance on domestic mammals at both sites is indicative of the opportunistic exploitation of seasonal animal resources which brought variability in the meat diet.

## 7 CHILDREN AND SEASONS IN PROTOHISTORIC SETTLEMENTS IN THE SOUTHERN CARPATHIAN BASIN

**Abstract author(s):** Ložnjak Dizdar, Daria (Institute of Archaeology, Zagreb) - Drnić, Ivan (Archaeological Museum in Zagreb)

**Abstract format:** Oral

The moon, the sun, the stars and water were the most important elements of the first calendars. They served to confirm and validate the seasons. They were also crucial for the main economic activities of the protohistoric communities in the Carpathian Basin.

Agriculture was a major economic activity of the communities in the southern Carpathian Basin; sowing and harvesting must have influenced the cycles and production of food. Traces of the participation of children in agricultural activities are very rare, but some traces in settlements indicate that children were involved from an early age in food preparation activities, from producing and collecting to storing and keeping food. Many scenes from the life cycle of a settlement have not been preserved, not even in the smallest archaeological traces, but certain objects make it possible to reconstruct the life in these cycles and the roles that the youngest community members had in these rhythms. Aside from the seasons that depended on weather and the environment, the settlements had their own life cycles, and the transfer of knowledge about these cycles had an important role in the common life of different generations. Children could take part in the everyday activities in the settlement, learning from adults and taking on various tasks suitable to their age – planting, sowing, scaring away birds, helping with the harvest, storing food, preparing meals. The finds from chosen protohistoric Bronze and Iron Age settlements in the southern Carpathian Basin can help us try to reconstruct these scenes from the settlements.

## 8 MICROSCOPY OF SEASONALITY

**Abstract author(s):** Kovács, Gabriella (Hungarian National Museum) - Pető, Ákos (Hungarian University of Agriculture and Life Sciences, Institute for Wildlife Management and Nature Conservation, Department of Nature Conservation and Landscape Management) - Vicze, Magdolna (Hungarian National Museum)

**Abstract format:** Oral

Even today with high skills and techniques, people are greatly affected by the difference in seasons. Thousands of years ago this must have been even more challenging, so people had to adapt, just as we do today. In this paper seasonality will be investigated on the microscopic level. This will be carried out with the application of thin section soil micromorphology and phytolith analysis on the example of Százhalombatta-Földvár Bronze Age tell settlement in Hungary. Sustainability was not a trend 4000 years ago, but was just 'simple' life. People were dependent on their surrounding and they were well aware of this, so activities were adjusted to the possibilities and challenges of nature. Earthen materials were used for construction for example. Accessing the required raw materials several natural and environmental circumstances had to be taken into account. Preparation of wattle and daub walls, where clay is tempered with great amounts of vegetal remains is also likely to have been taking place seasonally. The maintenance of houses, with fine re-plasterings must have been carried out under carefully chosen conditions as well. It will be demonstrated how seasonality can affect a range of activities that can best be investigated under the microscope.

## 9 THE TEMPORALITY OF A POT

**Abstract author(s):** Sofaer, Joanna (University of Southampton)

**Abstract format:** Oral

Archaeologists frequently focus on the process of ceramic manufacture, such that the various steps of production are understood as a series of technical actions set within a chaîne opératoire. Using the single example of a fine ware bowl from the Bronze Age tell at Százhalombatta, Hungary, in this paper I argue that vessels can also be understood as embodying a series of nested scales of time that both complement and intersect with technical understandings. Reflecting on these different scales offers insights into the complexity and temporality of human interactions with materials. In turn, this allows consideration of the ways in which the Bronze Age potters of Százhalombatta worked with, and against, time in satisfying the demands of their craft. It shed light on how they may have been aware of time and duration as an integral part of their practice, and the varied nature of temporality for this prehistoric community.

## 10 'THOU KNOWEST, WINTER TAMES MAN, WOMAN, AND BEAST.' – THE ARCHAEOLOGY OF LIGHTING IN MIDDLE BRONZE AGE HOUSEHOLDS

**Abstract author(s):** Vicze, Magdolna (Hungarian National Museum)

**Abstract format:** Oral

One's long-term involvement in studying the daily routines of prehistoric settled life, inevitably takes one to such questions that are rarely discussed. The determinant nature of the seasons and their challenges for prehistoric mankind is an axiom. Probably this is why the imprints of seasonality and temporalities are rarely investigated. However, our work at the Middle Bronze Age settlement of Százhalombatta-Földvár (Hungary) allows us to approach some of these issues in certain detail. This paper aims to search for answers within the archaeological material that can be linked to some aspects of temporality. One of these is the rhythm of day and night. Darkness must have played a greater role than we tend to acknowledge. What kind of activities could be pursued after sundown or during the long winter nights and how did they produce illumination for these? The question is more complicated than it appears as it is not so straightforward how this was solved on a daily basis in a typical Middle Bronze Age house.

---

## 176 ORNAMENTS AS A KEY TO UNDERSTANDING THE HUNTER-GATHERER TO FARMING TRANSITION IN EUROPE

**Theme:** 2. [Re]integration

**Organisers:** Martínez-Sevilla, Francisco (University of Alcalá) - Baysal, Emma (Ankara University)

**Format:** Regular session

The transition from hunter-gatherer to farming-based subsistence systems involved both group mobility and the transmission of ideas and associated practices from western Asia across Europe over the course of several millennia. As mobile artefacts closely associated with the human body, personal ornaments accompanied humans as an element of identity. The expression of personal and group identities as well as technological knowledge and knowhow were a crucial part of ornamentation related practices and it seems that people kept this knowledge alive during processes of change. For example, stone bracelets associated with early farming communities during their spread from western Asia to western Europe have already shown that material culture was important for the structuring of Neolithic identities for settlers in different regions and that these expressions of identity were temporally and spatially persistent. Technologies and knowledge were adapted to different environments, material sources and lifeways to create regional styles.

This session intends to gather Mesolithic and Neolithic specialists in the same place to discuss all the issues related to ornaments and their links with changes, continuity and interactions in the Neolithization process. We will explore evidence for changes and continuities in ornamentation practices, technologies and materials through this complex period of economic and social transformation using examples from across Europe and western Asia. We invite papers exploring any aspect of ornamentation production, use, theoretical and practical approaches to their interpretation particularly with reference to the human-ornament relationship, construction of identities, consideration of environments and material choices, and interactions engendered by or shaped using personal ornaments in their many forms. This session aims to place ornamentation at the centre of the Neolithization process as a vital source of information about the relationship between hunter-gatherer and farming communities.



**1 THE ORIGINS OF POTTERY ORNAMENTATION**

**Abstract author(s):** Gralak, Tomasz (University of Wrocław)

**Abstract format:** Oral

The oldest ceramics were discovered in southern China and eastern Asia. In the beginning, pottery was used by Mesolithic hunter-gatherers. It was an innovation particularly useful in a cold climate. The acceptance of the new technology was also an intellectual process. This aspect will be analyzed – from the cognitive point of view. The vessels were given a previously chosen shape and covered with specific ornaments. It was already noted that the newly developed pottery technology referred to previously functioning forms of vessels made of organic materials. This phenomenon (skeuomorphism) was also noted in the case of Neolithic ceramics in Europe and was recorded in many prehistoric cultures. This is the reason why pottery surfaces may imitate wooden bark or lather. Another issue is the connections between pottery and basketry. It seems that these relations were of fundamental importance for creating the geometrical ornamentation covering the vessels. Characteristically, this type of ornamentation was created on stone and bone objects from the Paleolithic, Mesolithic, and Neolithic periods in Europe. Thus, transferring wickerwork patterns to products from other raw materials is a long-lasting process over huge areas. As an example of the phenomenon of skeuomorphism, we can also consider vessels covered with impressions of a cord. Characteristically, this surface treatment method was known in large areas of northern Eurasia. Its appearance may be associated with the widespread pottery technology in the early Holocene among hunter-gatherers. Lately, this type of ornamentation was used by Neolithic populations. Another issue is the meanings given to ceramic ornaments and the vessels themselves.

**2 TRANSFORMATION AND CONSERVATION: LEARNING AND MEMORY AT THE EPIPALAEOLITHIC/NEOLITHIC TRANSITION IN TURKEY**

**Abstract author(s):** Baysal, Emma (Ankara University) - Yelözer, Sera (Istanbul University)

**Abstract format:** Oral

The Epipalaeolithic in Turkey, and western Asia more widely, is notable for the mobility associated with ornamentation practices – shells were gathered and moved around with mobile hunter-gatherer groups, and ornament-related technologies were relatively limited. With time, technologies used in ornamentation proliferated, and the variety of artefacts, as well as their number increased. In this paper we ask what happened to ornamentation practices during the slow process of the Neolithic transition to settled life when human-landscape relationships underwent profound change and some groups, or members of groups, moved from mobile hunter-gathering to sedentary subsistence. While we know that new materials and techniques were added to the ornamental repertoire of the early sedentary groups, we see temporal and spatial persistence in some practices, juxtaposed with innovation and transformation in others. The contextual associations of different kinds of ornaments suggest their centrality in the construction and display of identities. Through examples from Late Epipalaeolithic and Early Neolithic sites in Turkey we will explore the scale of change and endurance in ornament-making and use processes as well as human-ornament relationships. We will discuss how these mobile items served as a medium of interaction between individuals and groups, and their place in identity and memory-making throughout the transition from mobile hunter-gatherer way of life to year-round sedentism.

**3 PERFORATED BEADS AND ORNAMENTS FROM THE NEW EPIPALAEOLITHIC-NEOLITHIC SITE OF ABRIGO DE ZACATÍN (CASTELL DE FERRO, GRANADA, SPAIN)**

**Abstract author(s):** Gutiérrez Frías, Ismael (University of Granada) - Martínez Sánchez, Rafael M (University of Córdoba)

**Abstract format:** Oral

This communication will describe a set of adornment elements from the new archaeological site of Zacatín Rockshelter, placed on the coast of Granada (Spain). It has a chronological sequence placed between the Epipalaeolithic and the Early Neolithic B (VII-V millennia cal BC). This location is one of the few multi-layered archaeological sites on the coast of southern Iberia allowing us to track the transition between the last hunter-gatherers and the first farming societies. The assemblage is made up of around fifty elements, mainly pierced small gastropods, both from marine and freshwater origin, and discoidal lithic beads, among other decorative elements made on malacological raw material. The first study of these elements allows us to trace the chaîne opératoire used in the production of these elements, involving the removal by percussion, pressure of the apical part, wall perforation by abrasion, or pressure. In any case, it is likely different techniques depending on the specific features of each gastropod species, its morphology, or wall thickness. Finally, we have observed both specific and technical variations and selection criteria in terms of species, regarding the chronological phases, observed in the site.

#### 4 ORNAMENTS AS A KEY TO DEFINE THE ORIGIN OF CULTURAL IDENTITIES IN THE MESOLITHIC-NEOLITHIC TRANSITION IN THE IBERIAN PENINSULA

**Abstract author(s):** Martínez-Sevilla, Francisco (University of Alcalá)

**Abstract format:** Oral

Body ornaments represent visual tokens or badges that define an individual's membership of a social group. As such, ornaments play an essential role within the ethnic or cultural identification of human societies, and are a means of acculturation. In the Iberian Peninsula the transition from hunter-gatherer to farming societies coincides with an increase in the presence of ornamental objects. The cultural complexity of personal ornaments increased in terms of quantity, technology, raw materials, and aesthetics from the Late Mesolithic (6600-5600 cal BC) to the Early Neolithic (5600-4800 cal BC). The ornaments change between two periods from perforated shell and deer teeth in Late Mesolithic to a broad variety of pendants, drilled teeth, necklace beads, rings, and bracelets made of different rock types and seashells in Early Neolithic. Therefore, ornament became an object of crucial relevance for the study of the origin of cultural identities in the first farming communities. This communication presents an analysis of the origin of the first farming cultural identities in the Iberian Peninsula and the link with previous traditions using the ornaments as principal element of distinction. The study involves not only ornament typology but also technological processes, workshops presence and circulations networks. The conclusions show how the ornament distribution could be related with different social groups.

#### 5 LET'S HANG TOGETHER! VISUAL IDENTITY OF MESOLITHIC GROUPS IN THE EASTERN ADRIATIC REGION

**Abstract author(s):** Cvitkusic, Barbara (Institute for Anthropological Research, Zagreb) - Cristiani, Emanuela (Sapienza University, DANTE - Diet and ANcient TEchnology Laboratory, Roma) - Vujevic, Dario (University of Zadar, Department of Archaeology)

**Abstract format:** Oral

During the Late Upper Palaeolithic, various raw materials were used to produce ornaments across the Eastern Adriatic region. Production trends persisted throughout time but varied in typology. During the Mesolithic period, ornaments are well documented at many regional sites. Their analysis has revealed Holocene hunter-gatherers settled in this area shared a specific visual identity based on the selection of unique bead types.

Here, we present three prehistoric sites characterized by long-lasting archaeological sequences documenting Upper Palaeolithic and Mesolithic occupations: Pupičina cave in Istria, Vlakno cave on Dugi Otok island, and Vela spila cave on the Korčula island. These sites yielded a wealth of material evidence, mainly ornaments, and decorated items. Besides the presence of various forms of beads in the ornamental assemblage, such as perforated marine gastropods *Tritia neritea*, *Nassarius* sp., or freshwater gastropods *Lythoglyphus naticoides*, or mammal canines of *Cervus elaphus*, one type is dominant – beads made of marine gastropod *Columbella rustica*. Vlakno cave, in particular, has yielded an abundance of entire, unused perforated *Columbella* shells as well as manufacture accidents, suggesting this site could represent a workshop for specialized production and distribution of these specific shell ornaments in the Eastern Adriatic region. Detailed analyses of ornaments from the Mesolithic layers of Vlakno cave indicate intensive communications and connections to the hinterland and the mainland. Aspects of continuity in manufacturing techniques and the selection of raw materials across the Eastern Adriatic and the central Balkan regions suggest the existence of wide social networks based on shared modalities of social and personal identity."

#### 6 NETWORK ANALYSIS APPLIED TO THE SPREAD OF SYMBOLIC PRODUCTIONS DURING THE MESOLITHIC-NEOLITHIC TRANSITION IN EUROPE

**Abstract author(s):** Pereira, Daniel - Rigaud, Solange (CNRS; Centre National de la Recherche Scientifique - CNRS, UMR5199 PACEA; University of Bordeaux) - Manen, Claire (CNRS; Centre National de la Recherche Scientifique - CNRS, UMR5608 TRACES; University Jean Jaures Toulouse)

**Abstract format:** Oral

We explore how connectivity affected two symbolic productions, personal ornaments and pottery decoration, during the Mediterranean Early Neolithic and how network structure impacted the diffusion of symbols and belief systems. We have applied Social Network Analysis to our datasets (39 archaeological layers with pottery data and 49 with ornament data) attributed to the Mediterranean Early Neolithic (Rigaud et al. 2018). By using refined absolute chronology, we have defined 3 main phases of the Early Neolithic diffusion: 1) the emergence of farming societies; 2) a period of cultural diversification and site densification; 3) a period of fixation of the settlement pattern and of a gradual loss of pottery decoration diversity (Manen et al. 2021) counterbalanced by an increase in personal ornaments diversity (Rigaud et al. 2015, Perlès and Rigaud 2021). Networks were constructed for each two sequential time period sequence using the BR coefficient at a similarity threshold that allows for no disjointed nodes. The networks were created in the R software using various centrality indexes (degree centrality, eigenvector, clustering...). Results show significant differences between pottery decoration and ornament networks topology, suggesting that different

transmission mechanisms ruled the circulation of the two cultural traits between communities. Moreover, the networks differ within each chronological phase of the Neolithic diffusion, suggesting that interaction patterns changed significantly over time. Pottery decoration networks show that at the end of the Neolithic, networks are highly consolidated, suggesting the movement of communities into geographically delimited areas. Personal ornament networks appear less structured, indicating that beads were widely shared and linked people with different cultural affiliations. The two symbolic productions express different degrees of cultural interaction and the adoption of common personal ornament associations over large areas can be seen as a social strategy to cooperate and spread within a territory already occupied by foraging communities.

## 7 THE HEAD AND THE CROPS. BODY ORNAMENTS AND ADOPTION OF AGRICULTURE IN NORTH-CENTRAL CHILE

**Abstract author(s):** Armstrong, Felipe (Universidad Alberto Hurtado)

**Abstract format:** Oral

The transition from hunter-gatherer communities to proper agricultural ones took roughly 1,000 years in North Central Chile (ca. 300 – 1200 CE). During this time, new ways of experiencing and inhabiting the human bodies appeared. Archaeological evidence shows that the human body started appearing as images in rock art and pottery and new body ornaments were produced and used throughout this time.

Transition to agriculture seems to have promoted new engagements with material culture as part of the body, as well as with bodies as part of material culture. These engagements can be addressed considering their ontological bases and consequences, shedding light on the body-as-social-phenomenon and its position within socio-historical relational webs. From stone pendants and bone and shell necklaces used by hunter-gatherers, body ornaments went through important changes, while economies increasingly depended on vegetal resources. New body technologies were developed, from stone lower lip piercings (tembetás) to disc earrings, to metal earrings and possible headpieces. In this process, an increasing importance seems to have been given to the face or head, as seen mainly on rock art.

This presentation discusses how the transformation of body ornaments in the Elqui and Limarí valleys can offer a new understanding on how the body itself changed in the process that eventually led to agriculture. Through the exploration of body ornaments as parts of bodily experiences of these communities, as well as participants in sociohistorical relational webs, I offer an ontologically informed approach to the broader social and economic transformations leading to the adoption of agriculture. Although not a European case study, this contribution can offer some insight into the ways in which human communities dealt with this transition, with differences, but also similarities with the European Mesolithic-Neolithic transition.

## 8 FROM SEASHELL TO EGGHELL: BEADS FROM THE NEOLITHIC OF KAF TAHT EL GHAR (TETOUAN) AND MAGHARAT EL KHIL (TANGIER, MOROCCO)

**Abstract author(s):** Martínez Sánchez, Rafael (University of Granada; University of Cordoba) - Vera Rodríguez, Juan Carlos (University of Huelva) - Perez Jordá, Guillem (Universitat de Valencia) - Peña-Chocarro, Leonor (Instituto de Historia-CSIC)

**Abstract format:** Oral

Bearing in mind that the Neolithisation process of the Mediterranean Maghreb is part of the wider processes Neolithization of the Mediterranean European shore, there are however, differences in terms of research interests. In fact, despite a history of almost 150,000 years, one of the less studied aspects of the Neolithic in Mediterranean Africa, is that of ornaments. Being physical artifacts made from biotic or abiotic raw materials, these elements are one of the most interesting aspects linked to the creation of individual and collective identities in human cultures, with a key significance among the first productive societies. Between 2011 and 2012, within the framework of the ERC AGRIVESTMED project, archaeological work was carried out in the caves of Magharat el Khil (Tangier) (Caves B and C, from Early to Late Neolithic) and Kaf Taht el Ghar (Tetouan) (from Palaeolithic to Historic times). A limited but very interesting number of decorative elements have been found in the Epipaleolithic and Neolithic levels. These include especially beads made on small marine gastropods, as well as discoidal beads, most of them made on ostrich eggshells. The latter has a long history across many African hunter-gatherer cultures.

## 9 VARISCITE ADORNMENT PRODUCTION, DISTRIBUTION AND CONSUMPTION IN NORTH-EASTERN IBERIA DURING THE MIDDLE NEOLITHIC: NEW DATA AND A REVIEW

**Abstract author(s):** Garrido Cordero, José Ángel (Departamento de Prehistoria y Arqueología, Universidad de Sevilla) - Odriozola, Carlos P. (Departamento de Prehistoria y Arqueología, Universidad de Sevilla; UNIARQ. Universidade de Lisboa) - Borrell Tena, Ferrán (Institutió Milà i Fontanals, CSIC) - Sánchez Muñoz, Habana (Departamento de Prehistoria y Arqueología, Universidad de Sevilla)

**Abstract format:** Oral

Variscite is a well-known alluminophosphate used in the production of personal adornments, with a long historiographical debate about its origin, exploitation and circulation dynamics due to its recurrent presence in the Iberian Peninsula and Western Europe during the Neolithic and Chalcolithic periods, where this bright green mineral was highly demanded. In the Iberian peninsula, different sources are known to date, pointing to a down-the-line model of distribution and provenance in different geographical regions in different chronological moments.

The Gavà municipality (Barcelona) hosts one of the few outcrops of this semi-precious mineral with prehistoric exploitation in a mining complex with subterranean galleries and pits that existed at least from 5th to 4th millennia BCE. The unpublished materials from the recently excavated Ferreres sector provides a new insight on the spaces of extraction and production of variscite mineral and other phosphates used and on geochemical variability composition both on the raw material and the finished objects deposited in the funerary record of Middle Neolithic fossa necropolis.

More than 700 geochemical analysis have been performed in the last years from 12 sites, most of them well-known necropolis representatives of this period in Catalonia. Among the sites studied, we present and discuss the inedit analysis of the variscite beads from Cova dels Lladres, which could point to a first exploitation of variscite during Ancient Neolithic.

## 10 CALCITE PENDANTS IN SOUTHERN IBERIAN PENINSULA FROM 6TH TO 5TH MILLENNIA BCE: TRANSLUCENCY AND SYMBOLISM IN EARLY NEOLITHIC

**Abstract author(s):** Garrido Cordero, José Ángel (Departamento de Prehistoria y Arqueología, Universidad de Sevilla) - Odriozola, Carlos P. (Departamento de Prehistoria y Arqueología, Universidad de Sevilla; UNIARQ. Universidade de Lisboa)

**Abstract format:** Oral

Calcite is a common mineral used in diverse repertoires of symbolic artefacts during Late Prehistory, which a high degree of translucency and white to orange colour. During the spread of the Neolithic populations across the Mediterranean, a high number of caves with funerary records in Southern Iberia evidence new spaces and ritualization, in which an increase of use of personal adornments stands in the development of social roles and complex identities. Translucency should stand as a key organoleptic property (together with colour, brightness, texture...) in the techno-cultural choices concerning the personal adornment selection and production (Garrido-Cordero et al., 2020). Several pendants stand out from the common black and white discoid beads typical from 6th to 5th millennia BCE because of its raw material and organoleptic properties.

Characterization study of translucent pendants from Ancient Neolithic layers from Cueva de Los Mármoles, Cueva de la Pulsera and Abrigo 6 de La Araña revealed its nature as yellow calcite, probably originated on the same caves that were deposited as ornaments or votive items. The use of translucent calcite and the use of other ritualized elements (as stalactites) in Ancient-Middle Neolithic is discussed here compared with other examples from the Late Prehistory of Iberia and Western Europe.

Garrido-Cordero, J. A.; Odriozola, C. P.; Sousa, A. C.; Gonçalves, V. S.; Cardoso, J. L. 2020. "Distribution and consumption of fluorite and translucent beads in the Iberian peninsula from 6th to 2nd Millennium BC". *Trabajos de Prehistoria* 77 (2): 273-283. <https://doi.org/10.3989/tp.2020.12256>

---

## 177 ORGANIC MATERIALS IN TOMBS: THE QUIET PROTAGONISTS

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Andrianou, Demi (National Hellenic Research Foundation) - Kwaspen, Anne (Center for Textile Research, Copenhagen)

**Format:** Regular session

Remnants of textiles and other organic materials (cellulosic and proteinaceous, apart from bones) are often found in tombs of the Classical and Hellenistic/Roman periods in the eastern Mediterranean. Apart from clothing, organic materials provide care for the deceased and decorate the tomb. Hangings, textiles, pillows, mattresses, ribbons, leather covers or bags, reed mats, aromatic resins woven into fabrics, vegetal matter, etc., all contribute to transform the

tomb into a homey environment. At the same time, for those left behind, all five senses are stimulated by the organic materials, aiding in the construction of personal evocative memories.

Organic materials in funerary settings provide us with invaluable evidence for the burial customs of the time, details that hardly ever come down to us through the literary sources. They signify both the care and comfort that the relatives wished to provide for the deceased. The journey to the Otherworld is equipped with familiar images and smells, in the hope that it continues uneventful. In cases where the tombs are sealed, never to be opened again, this setting becomes a memory of the life once lived and allows for some sort of continuing existence of the soul in the Afterlife.

This session aims to attract scholars working on organic materials (other than bones) in funerary contexts in the Greek and Roman Mediterranean (including Ptolemaic Egypt), to discuss issues regarding their use and re-use, their significance in burial customs, and cross-cultural connections.

The proposed session is based on work conducted within the COST Action "Europe through Textiles: Network for an Integrated and Interdisciplinary Humanities" (EuroWeb) CA 19131, WG 2 and 3.

## ABSTRACTS

### 1 ORGANIC FINDINGS FROM THE INFANT BURIALS AT THE NECROPOLIS OF THE PHALERON DELTA, IN SOUTHERN ATTICA, GREECE

**Abstract author(s):** Panagoupoulou, Aikaterini (Hellenic Ministry of Culture and Sport) - Zacharias, Nikos (University of Peloponnese) - Pappas, Ioannis (University of Crete)

**Abstract format:** Oral

At the eastern part of the Phaleron coast, a spatially extended cemetery has been partly excavated since the 19th century. During the three periods of rescue excavations (1911, 1915, 2012-2019) over 2115 burials were unearthed, mostly pit graves, pot burials, funeral pyres, cist graves, larnakes, and animal burials. Apart from the individual burials, mass graves have been excavated, offering aspects of violent death. The use of the cemetery spanned over a period of four centuries (8th – 4th century BC), with the main use in the archaic period. Except for the two thousand vases, the clay figurines, the stone tools, the amulets, the various metal objects, and the beads, a considerable number of organic finds have been also found in many graves, especially the pot burials.

This paper is dedicated to the organic material evidence recovered from the Archaic child burials of the Phaleron Delta cemetery, which will be presented here for the first time. Except for the information provided for the funerary treatments of infants and children in Attica at the time, these pot burials preserved unique remains of textiles as well as traces of substances, owing to their preservation state to the coastal sandy environment.

### 2 ORGANIC MATERIALS IN LATE CLASSICAL AND HELLENISTIC TOMBS IN GREECE: THE EVIDENCE OF FURNISHINGS

**Abstract author(s):** Andrianou, Demi (National Hellenic Research Foundation)

**Abstract format:** Oral

Our ancient sources provide very little information on the subject of life beyond death, and none too consistent information at that. We are not in a position to determine whether with regard to the question of their ultimate fate the ancient Greeks were fatalistic or indifferent, or, whether to a greater or lesser extent, belief in an afterlife of happiness was common. Perhaps it is, as many scholars maintain, that a given attitude depended on the historic occasion and the specific individual concerned.

What is undisputed, however, is that the dead were cared for by their relatives. Furnished and decorated funerary interiors (as in Hellenistic Macedonia and Alexandria) or funerary possessions deposited with care on furniture and not simply on the ground, prove that this stage of the burial practice was not insignificant. Even further, care for the dead involves stimulating the senses: touch, sight, hearing, smell and, even, taste.

Other than clothing, organic materials provide care for the deceased and decoration for the tomb. Hangings, bedding, pillows, mattresses, reed mats, branches, ribbons around urns, individually wrapped offerings, etc. are used in order to create a homey environment and create a memory of the life once lived. At the same time they are not mere indications of conspicuous consumption, as has been previously thought, but indispensable part of funerary customs and transmute into sensory cues of the personal evocative memories that the deceased will take with him/her to the Otherworld. Textiles relate to the senses that trigger feelings and create memories to the relatives that stage the funeral.

### 3 ORGANIC FINDS FROM A TOMB IN VERGINA, NORTHERN GREECE

**Abstract author(s):** Stamatopoulou, Vasiliki (The Greek Ministry of Culture / The Hellenic Open University) - Faklaris, Panagiotis (Aristotle University of Thessaloniki)

**Abstract format:** Oral

The preservation of organic materials from antiquity is not frequent in the soil and climatic conditions of Greece. The extensive grave looting practiced for centuries has also drastically reduced the chances of their preservation. Therefore, the information provided by these rare finds is invaluable for research. The subject of this paper is the organic materials preserved in a sumptuous Early Hellenistic tomb excavated at Vergina, Northern Greece. These are remnants of wood, fabric, string, leather, green shoots and flowers, which demonstrate either care for the remains of the deceased or are remnants of personal objects that were deposited in the tomb as grave goods, as offerings to the deceased from loved ones, or are parts of the exterior and interior decoration of the tomb. These remains, today much deformed and shrunk, caught only a few stages before their total loss, preserve the closest possible approximation we can achieve of the complete picture of the burial ensemble before the sealing of the tomb, a picture hardly approachable without the organic materials and one that reflects a deeply moving meticulous care for accommodating as comfortably as possible the deceased into his new environment with the transfer of the domestic environment into his burial space.

### 4 ORGANIC MATERIALS ON WEAPONS AND ARMOR FROM NORTHERN GREEK WARRIOR BURIALS

**Abstract author(s):** Stamatopoulou, Vasiliki (The Greek Ministry of Culture and Sports)

**Abstract format:** Oral

A significant category of personal objects that accompany their owner in the afterlife placed in tombs as grave goods are weapons and armor. At the heyday of their kingdom in the Early Hellenistic period, the Macedonians, who had long accorded their dead men offering arms as grave goods, came to bury their warriors with entire panoplies, sometimes even more than one or two, as with those from the unlooted grave at Vergina and the graves at Derveni near Thessaloniki.

Weapons and armor were manufactured of various organic materials combined with metal, mainly iron sheets. In contrast to the weaponry that was offered at funeral pyres and all their organic materials were lost in the fire, the weapons deposited in cist-graves and Macedonian tombs of Northern Greece give a completely different picture. Products of iron corrosion have saturated the organic materials of these pieces, having thus preserved organic materials which in different conditions would have been lost providing invaluable information for the construction of this type of military equipment. Remnants of leather and textile lining, stitching along the edges, sponges, and wood components of armor will be presented focusing on the finds of Vergina and Derveni.

### 5 TEXTILES AND TEXTILE WORKING IN ROMAN PERIOD SLOVENIA

**Abstract author(s):** Stemberger Flegar, Kaja (PJP d.o.o.) - Kovačič, Ana (Independent researcher)

**Abstract format:** Oral

The elusive phenomenon of Roman period textile can for the most part, at least in the case of Slovenia, only be traced indirectly. Random mentions of scraps of fabric, golden hairnets, and other metal components can sometimes be chanced in grave descriptions, where they were included as curiosities, but never properly studied.

Items related to the production of textiles are found in greater frequency, either in settlements or, more often, in graves. Distaffs, needles, spindle whorls, loom weights, and tool boxes can be studied in order to reconstruct the Roman period process of making textiles. Moreover they can be used to study the symbolical meaning of textile working for the people associated with it.

This paper aims to present the preliminary results of the first comprehensive study of textile working tools from Roman period Slovenia focussing on typo-chronology. In addition, the paper explores the role of textile working in creating identities in the mortuary sphere.

### 6 FUNERARY TEXTILES IN PTOLEMAIC TOMBS AT EL-DEIR, KHARGA OASIS, WESTERN EGYPTIAN DESERT

**Abstract author(s):** Letellier-Willemin, Fleur (CRIHAM 4270 University of Limoges)

**Abstract format:** Oral

At first, we must set these textiles inside their archaeological context. Various associated studies pursued upon the site oblige to dissociate, as far as possible, Greek period from Roman period, even if they are too often associated.

By proper study of textiles, we try to bring out Greek cultural influence on everyday life and funerary practices inside an Oasis of Upper-Egypt, El-Deir. The site was closely linked to the Theban area of the Nile Valley, where recent ar-

chaeological researches testify Greek influence on daily life. We should like to show how far textiles could express various identities amongst people on our site, in a country of strong tradition as is Egypt.

The study of textiles concerns human mummies coming from the Ptolemaic tombs of the site, as well some mummies of dogs which were found in some disused tombs; they came likely from a local temple dedicated to a canine god, Wepwawet or Anubis. Our work consists in studying fibers, weaving technique, decoration. Analyzing local textile channels, it's possible to evaluate, partly at least, the economic system of the site at that time and possibly its management, with the help, of course, of all other artefacts coming from the tombs as well as information from some rare texts. Exploring the site, which was occupied from 5th century B.C., at least to the 5th century A.D., we were able to throw light upon Ptolemaic period as the most prosperous of all.

## 7 PTOLEMAIC TEXTILES FROM THE NECROPOLIS OF FAG EL-GAMUS, EGYPT

**Abstract author(s):** Kwaspén, Anne (CTR - SAXO - UCPH; BYU excavation) - South, Kristin - Muhlestein, Kerry (BYU Excavation)

**Abstract format:** Oral

Burials from the Ptolemaic Period (332-30 BCE) in Egypt are neither as numerous nor as frequently studied as those from the eras preceding and following it, but they are a necessary link in the continual evolution of Egyptian burial practices. This study presents an overview of Ptolemaic burial architecture and furnishings at several sites throughout Egypt, including a look at burial goods, coffins and their contents.

Archaeological work in the 1980s revealed multiple Ptolemaic burials located within "Hill B" of the necropolis of Fag el-Gamus on the edge of Egypt's Fayum. Tombs at this site dating to the Ptolemaic period were carved into rock hills and have yielded multiple burials of variable preservation, including some richly decorated with cartonnage and gold as well as simpler mummies only wrapped with linen. The paper ends with a close examination of four of these burials, describing their find locations, coffins, and burial goods, including basketry and textile wrappings.

---

## 180 MULTI-PROXY MICROARCHAEOLOGICAL APPROACHES: STATE OF THE ART, NEW ADVANCES, LIMITATIONS AND FUTURE PERSPECTIVES

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Albert, Rosa Maria (ICREA Research Professor; Dept. of History and Archaeology. University of Barcelona) - Berna, Francesco (Dept. of Archaeology. Simon Fraser University)

**Format:** Regular session

In recent years, the study of the archaeological record invisible to the naked eye (microarchaeology) has, through the application of microscopic and spectrometric techniques, contributed to the improvement of the investigation and interpretation of archaeological sites. Fine-resolution multi-proxy studies of soils and sediments have been essential for reconstructing the landscapes and environmental conditions of many regions in given chronological periods. Furthermore, they have also allowed a better understanding of the social, economic and cultural aspects that have driven many prehistoric and protohistoric societies.

The microscopic study of the intact sedimentary context, based on micromorphology, is one of the first steps in carrying out a high-resolution microarchaeological study. Micromorphology helps us understand the spatial context and the formative process of sediments. Furthermore, their study provides us with a precise description of the context of any other microscopic and molecular remains present in the sediments, such as phytoliths, diatoms, pollen, stable isotopes, organic residues, etc. This allows a precise and holistic reconstruction of the activities carried out by past populations, and reconstruction of the environmental conditions present at a given moment.

The proposed session aims to bring together different academics to present the results of their microarchaeological research from a multi-proxy perspective. Specifically, we seek case studies that address the challenges of integrating micromorphology and other high-resolution methods, to assess how they contribute to the advancement of archaeology and scientific methodology, their complementarity, strengths and weaknesses, and future perspectives.

## ABSTRACTS

### 1 THE INTEGRATION OF FOURIER TRANSFORM INFRARED MICROSPECTROSCOPY (MFTIR), PETROGRAPHIC ANALYSIS, AND SOIL MICROMORPHOLOGY IN ARCHAEOLOGY AND PALEOENVIRONMENTAL STUDIES

**Abstract author(s):** Berna, Francesco (Simon Fraser University)

**Abstract format:** Oral

The integration of Fourier Transform infrared microspectroscopy (mFTIR), petrographic analysis, and soil micromorphology allows the simultaneous optical, textural, mineralogical, and molecular characterization of organic and in-

organic particles at the microscopic level in their intact original context, with a wide range of applications in archaeology and paleoenvironmental research. In this talk I will showcase a few important applications of the integrated multi-analytical approach that significantly contributed to the understanding of bone taphonomy, the preparation and function of archaeological materials and features, the formation processes of archaeological sites, and the reconstruction of palaeoenvironments. Examples will include work on lime plaster, the use of space and site formation in caves and rock shelters, and the identification of extinct landscapes in northern South Africa. The archaeological periods covered will include the Oldowan (Wonderwerk and Kathu Pan 6), Middle Stone Age (Florisbad), Mousterian (Oscurusciuto and Skhul), Upper Paleolithic (Manot Cave), the Bronze Age (Kalavassos Ayios Dhimitrios), and the pre-Classic Maya (San Bartolo).

## 2 A MICROARCHAEOLOGICAL APPROACH TO THE EARLY UPPER PALEOLITHIC SITE OF MUGHR EL-HAMAMAH (JORDAN)

**Abstract author(s):** Alonso-Eguiluz, Mónica (Equip de Recerca Arqueològica i Arqueomètrica de la Universitat de Barcelona - ERAAUB) - Toffolo, Michael (Université Bordeaux Montaigne) - Albert, Rosa María (Institut Català de Recerca i Estudis Avançats - ICREA; Equip de Recerca Arqueològica i Arqueomètrica de la Universitat de Barcelona - ERAAUB) - Boaretto, Elisabetta (Kimmel Center for Archaeological Science, Weizmann Institute of Science)- White, Chantel (University of Pennsylvania) - Asouti, Eleni (University of Liverpool) - Nilsson Stutz, Liv (Linnaeus University) - Stutz, Aaron (Bohuslans Museum)

**Abstract format:** Oral

Mughr el-Hamamah is located in the Ajlun Governate, Jordan. Archaeological evidence, showing a large number of lithic, faunal, and botanical remains, indicates that the cave was occupied by hunter-gatherers mainly in the Early Upper Palaeolithic period (EUP; ca. 47-30 ka cal BP). Radiocarbon dates, which point to an occupation mainly from 45-39 ka cal. BP (Marine Isotope Stage 3), make this site a key place to better understand how the earliest Upper Palaeolithic differed from the Late Middle Palaeolithic in the Levant.

During the 20th century, the cave was used by local shepherds, severely altering part of the deposits. Recent radiocarbon (post 1955 AD) date was obtained from charred remains. Yet, microarchaeological analyses (phytoliths, fecal spherulites, ash pseudomorphs, Fourier transform infrared spectroscopy of sediments, and micromorphology) reveal pockets of a very rich, well-preserved EUP stratigraphic unit. Microarchaeological work has identified the microscopic content of the deposits forming during 45-39 ka interval; the modes of deposition of the archaeological layers; and the post-depositional processes that took place afterwards, including those derived from modern pastoral activity.

The mineralogical characterization of the intact EUP layers shows that terra rossa clay forms the sediment matrix. Micromorphological analyses identified four depositional facies that occur repeatedly throughout the deposits and represent a complex interplay of natural (e.g., sheetwash) and anthropogenic (e.g., combustion) processes. Additionally, postdepositional processes affected unevenly to the deposit, being the western area of the site better preserved in terms of charred remains and bones. Although phytoliths were not abundant in the deposits, their identification did indicate a vegetation composition characteristic of humid environments with dry periods. Finally, the identification of fecal spherulites allowed us to better limit the deposits altered by pastoral activity, even in those areas where this alteration was not visible to the naked eye.

## 3 DECIPHERING DEPOSITIONAL HISTORIES: PHYTOLITH ANALYSIS ON ARCHAEOLOGICAL SOIL AND SEDIMENT THIN SECTIONS FROM MEDIEVAL CULTIVATED FIELDS IN BRUSSELS (BELGIUM)

**Abstract author(s):** Vrydaghs, Luc (MARI - VUB Department of Art Studies and Archaeology Faculty of Arts and Philosophy) - Ball, Terry (Department of Ancient Scripture, Brigham Young University, Provo) - Devos, Yannick (MARI - VUB Department of Art Studies and Archaeology Faculty of Arts and Philosophy)

**Abstract format:** Oral

Understanding the origin of the opal phytoliths and the processes that were involved in their deposition within archaeological soils and sediments is a crucial aspect to come to a reliable interpretation. Micromorphology, the study of soil and sediment thin sections, is a very suitable technique to address this issue. It permits to observe all microscopic components, including the phytoliths, in their original position and thus to detect distribution patterns that would get lost using traditional methods, involving concentration and mixing of sediments. Documenting these patterns can help researchers to answer questions concerning their depositional history. Over the last 20 years a specific research protocol has been developed to describe and interpret the phytoliths observed in soil and sediment thin sections (Vrydaghs and Devos 2018; Kaczorek et al. 2018). Present contribution intends to introduce this protocol through the example of the study of medieval cultivated fields in Brussels (Belgium). Furthermore, it will be argued how it opens perspectives for phytoliths analysis and as such complement classical phytolith analysis.

References

- Kaczorek, D., Vrydaghs, L., Devos, Y., Petö, A. and Efland, W.R., 2018. Biogenic Siliceous Features. In: Stoops, G., Marcelino, V. & Mees, F. (eds): Interpretation of Micromorphological Features of Soils and Regoliths,



Second Edition. Elsevier, pp. 157-176.

- Vrydaghs, L. and Devos, Y., 2018. Phytolith Analysis on Soil and Ceramic Thin Sections. In: Smith, C. (ed): Encyclopedia of Global Archaeology. Living Edition. Springer. [https://doi.org/10.1007/978-3-319-51726-1\\_3286-1](https://doi.org/10.1007/978-3-319-51726-1_3286-1)

#### 4 **CHEMICAL AND MICROBIOLOGICAL ANALYSIS REVEALS ANAEROBIC PRESERVATION SIGNATURES AT THE ROMAN SITE OF VINDOLANDA, NORTHUMBERLAND, UK**

**Abstract author(s): Taylor, Gillian - Orr, Caroline (Teesside University)**

**Abstract format: Oral**

Vindolanda is a Roman auxiliary fort situated south of Hadrian's Wall near Bardon Mill, Northumberland, UK. The site is well known for its excellent preservation of leather and wooden artefacts. Between Roman occupation periods, wooden and stone buildings were repeatedly destroyed, and sealed with thick layers of clay, which were then re-built upon, this formed layers in which oxygen was excluded from the decomposing material underneath. This created waterlogged, anaerobic areas above the dense clay layers which are ideal preservation environments. Unravelling and understanding the exact chemical and microbiological signatures from these anaerobic layers can be challenging but could allow increased understanding of decomposition and preservation within these sites. This study presents data from the multiproxy approach undertaken which utilised both microbiological and elemental parameters. In this study, soil characterisation, bacterial diversity and community structure from excavation trenches were identified using pXRF and 16S RNA gene amplicon sequencing. Microbial communities were dominated by Firmicutes, Bacteroidetes and Proteobacteria at a phylum level. Furthermore, Methylophilus might be associated with favourable preservation in these anaerobic layers, which are linked to elemental concentration of iron, sulphur and phosphorus.

#### 5 **MAGNETIC MICROARCHAEOLOGY: METHODOLOGICAL DEVELOPMENTS IN THE INTEGRATION OF ARCHAEOLOGICAL SOIL MICROMORPHOLOGY WITH ARCHAEOMAGNETIC ANALYSIS**

**Abstract author(s): Dinckal, Ada (Archaeological Micromorphology and Biomarkers - AMBI Lab, Instituto Universitario de Bio-Orgánica Antonio González Avenida Astrofísico Francisco Sánchez; Universidad de La Laguna Departamento de Geografía e Historia) - Arguinzones Elvira, Amiel (Archaeological Micromorphology and Biomarkers - AMBI Lab, Instituto Universitario de Bio-Orgánica Antonio González Avenida Astrofísico Francisco Sánchez) - Carrancho Alonso, Angel (Área de Prehistoria. Dpto. Historia, Geografía y Comunicación. Laboratorio de Prehistoria. Edificio I+D+i. Universidad de Burgos; Laboratorio de Paleomagnetismo Dpto. Física, Escuela Politécnica Superior. Edificio A1 Universidad de Burgos) - Mallol, Carolina (Universidad de La Laguna Departamento de Geografía e Historia; Archaeological Micromorphology and Biomarkers - AMBI Lab, Instituto Universitario de Bio-Orgánica Antonio González Avenida Astrofísico Francisco Sánchez)**

**Abstract format: Oral**

Here we present preliminary results for new methodological approaches to integrating archaeomagnetic methodologies with archaeological soil micromorphology. Recently, more scientific methods utilized in archaeological research are being directly integrated with micromorphological analysis through the subsampling of micromorphological blocks. This integration strengthens both the micromorphological interpretations as well as provides contextual information to the integrated scientific analysis. One type of geoarchaeological and microanalytical method which is yet to be succinctly integrated with micromorphology is archaeomagnetic analysis. Our experimental work provides two different approaches which aim to update the way in which archaeomagnetism can be combined with thin section analysis. The first approach involves creating thin sections by directly subsampling oriented and structural intact archaeomagnetic samples using both sodium-silicate resin and epoxy resin substitution. This approach allows for thin section observations of microstructural features directly associated with the characteristics measured in the archaeomagnetic analysis. The second approach involves understanding the magnetic characteristics associated with embedding organic resins, as well as identifying the potential impact the process of producing micromorphological thin sections may have on the magnetism of a sample. This approach would have the added benefit of allowing for microstructural analyses along with most archaeomagnetic methods, as well as opening the possibility of returning to the large reserves of archived micromorphological material which can be subsampled for new magnetic analysis. Our primary aim for this methodological development has been to closer integrate archaeomagnetic analysis with other micro-archaeological techniques, to improve the interpretation of magnetic analysis in archaeology while also improving the understanding of ferric material in micromorphological analysis.

## 6 MEASURING COROLLARY TEMPERATURES IN FIRE-IMPACTED SEDIMENTS BY WAY OF A GEOTHERMOMETER

**Abstract author(s):** Stefanyshen, Earl (Simon Fraser University)

**Abstract format:** Oral

The temperatures reached in soils and sediments after exposure to fire or other pyrotechnic activities dissipate rapidly once the heat source is removed, making them nearly impossible to measure *ex post facto*. In my research, I was able to create an effective geo-thermometer from a plot of soils and sediments that had sustained a wildfire event. Temperatures were determined several months after the passage of the flame front and subsequent return to ambient outside temperatures within the sediments. These measurements were calculated by identifying and mapping the irreversible mineralogical transformations that had taken place at the time of thermal exposure. In this presentation, I describe the results of a test which utilized soil micromorphology and Fourier transform infrared microspectroscopy to quantify the impact of thermal energy on the subsurface environment and the transformations that occur within the chemistry and mineralogy of common organic soils. An initial application of this protocol was carried out within the perimeter of a wildland fire in British Columbia, Canada which successfully measured on a millimetre-scale the heat diffusion pattern through the soil column. This analytical protocol can now be used in post-burn investigations to assess the effects of wildland fires and pyrotechnic activities on subsurface materials of different regions.

## 7 MICRO-DEBITAGE AND FIRE-STARTING: EXPERIMENTAL TECHNIQUES FOR DETERMINING THE PRESENCE OF STRIKE-A-LIGHT ACTIVITY IN SEDIMENTARY CONTEXTS

**Abstract author(s):** Wiebe, Matthea (Simon Fraser University)

**Abstract format:** Oral

The development of fire-starting techniques is a significant technological advancement in human history and therefore inspires many important archaeological questions, including whether Neanderthals were able to create fire, and whether the introduction of this technology had an impact on human development. The relative ability of species or populations to start fire at will (as opposed to collecting it from landscape fires) could spell the difference between survival and extinction. Despite the importance of this activity, however, we have few methods for identifying fire-starting activities in archaeological context. This contribution describes novel experiments that were conducted using the strike-a-light fire-starting method to produce diagnostic microdebitage to assess the possibility of locating such debitage in the archaeological record. Experiments produced promising qualitative, quantitative, and semi-quantitative data that could become the baseline for identifying fire-starting activity from sedimentary contexts. Using microarchaeological and geochemical lenses, results suggest the possibility of extracting diagnostic artefacts from sediments to assess the presence or absence of strike-a-light fire-starting activity in a wide range of contexts.

## 8 HIDDEN SIGNATURES OF EARLY FIRE AT EVRON QUARRY (1.0 – 0.8 MYA)

**Abstract author(s):** Stepka, Zane (Kimmel Center for Archaeological Science, Weizmann Institute of Science, Rehovot) - Azuri, Ido (Bioinformatics Unit, Department of Life Sciences Core Facilities, Weizmann Institute of Science, Rehovot) - Horwitz, Liora (National Natural History Collections, The Hebrew University, Jerusalem) - Chazan, Michael (Department of Anthropology, University of Toronto) - Natalio, Filipe (Kimmel Center for Archaeological Science, Weizmann Institute of Science, Rehovot; Department of Plant and Environmental Sciences, Weizmann Institute of Science, Rehovot)

**Abstract format:** Oral

Pyrotechnology is a key element of hominin evolution. The identification of fire in Lower Paleolithic (LP) sites relies primarily on an initial visual assessment of artifacts' physical alterations, resulting in an underestimation of its prevalence in the archaeological record. Here, we used a suite of spectroscopic techniques to counter the absence of visual signatures for fire and demonstrate the presence of burnt fauna and lithics at the LP open-air site of Evron Quarry (Israel), dated between 1.0 and 0.8 Mya and roughly contemporaneous to Gesher Benot Ya'akov. We found fragments of burnt tusk using Fourier-Transform Infrared spectroscopy and revealed that Evron Quarry lithics had been exposed to high temperatures by employing UV Raman spectroscopy and a deep learning model. We propose reexamining finds from other LP sites lacking visual clues of pyrotechnology to yield a renewed perspective on the origin, evolution, and spatiotemporal dispersal of the relationship between early hominin behavior and fire use.

## CONTRIBUTIONS OF MICROMORPHOLOGY TO THE UNDERSTANDING OF ARCHAEOLOGICAL RECORDS: ANTA 1 DE VALE DA LAJE, PORTUGAL, AS A CASE STUDY

**Abstract author(s):** Adewumi, Opeyemi (Centro de Geociências da Universidade de Coimbra; Universidade de Coimbra; Instituto Terra e Memória, Mação, Portugal; Instituto Politécnico de Tomar) - Oosterbeek, Luiz (Centro de Geociências da Universidade de Coimbra; Instituto Terra e Memória, Mação; Instituto Politécnico de Tomar) - Vallverdú, Josep (Àrea de Prehistòria, Universitat Rovira i Virgili - URV; IPHES, Institut Català de Paleoeologia Humana i Evolució Social) - Almieda, Nelson (Uniarq, Centro de Arqueologia da Universidade de Lisboa. Faculdade de Letras da Universidade de Lisboa) - Ferreira, Mário Quinta (Centro de Geociências da Universidade de Coimbra, Portugal; Universidade de Coimbra)

**Abstract format:** Oral

In recent years, the use of a micromorphological method has proven to be a veritable tool to assess archaeological records that are beyond the naked eye. This technique allows you to study records and data that can contribute to and improve the archaeological research and investigations. Aside from a wide range of visible artefacts that can be studied within a site, such as the lithic materials, ceramics, bones, etc., and others (studies of soil and sediment) that are not visible "to the eye", can also be studied using various microarchaeological approaches including micromorphology.

The identification of fire evidence with the aid of micromorphology techniques applied to study archaeological records is one of the major advances in the multiproxy microarchaeological approaches. For instance, evidence of vegetation clearance by burning is usually well represented in the form of pedofeatures, recognisable with the aid of petrographic microscope.

Fire is arguably one of the most widely used tools by the early humans, especially during the Neolithic period for various purposes. The technique of micromorphology has increasingly been used in microarchaeological research, especially in the archaeological sites that are associated with human occupations, subsistence economies, agricultural-related practices, habitat construction and settlement.

This paper, therefore, intends to explore the contributions of micromorphology to the understanding of the evidence of fire, burning and other artefacts, recorded at the site of Anta 1 de Vale da Laje, Tomar in Portugal. This paper will also discuss the advances and challenges of integrating micromorphology methods into the study of the site.

## TRACING NEOLITHIC FIRE USE AND PYRO-TECHNOLOGY IN THE MICRO-SCALE THROUGH THE USE OF AN INTEGRATED GEOARCHAEOLOGICAL METHODOLOGY

**Abstract author(s):** Roussos, Dimitrios - Kalogiropoulou, Evita (University of Crete) - Kyparissi-Apostolika, Nina (Ephorate of Paleanthropology and Speleology) - Ziota, Christina (Ephorate of Antiquities of Florina)

**Abstract format:** Oral

The study of ancient fire use and the evolution of pyrotechnology has benefited much from the application of a multidisciplinary micro-archaeological approach. Such nuanced analysis, have provided the means to study ancient combustion remains in substantially greater resolution. Our research, implements such an integrated geoarchaeological methodology into the study of Neolithic firing structures and burnt remains in order to assess the dynamics of daily practices performed in outdoor spaces.

A diverse assemblage of firing structures from two Neolithic settlements, Imvrou Pigadi (Thessaly) and Kleitos 1 (Northern Greece), will be here examined. Their form and spatial allocation suggest variability in their use and function. In order to challenge this hypothesis, we aim to identify their structural properties, and determine maximum temperatures reached and maintenance practices applied. Additionally, the analyses of burnt residues could potentially offer insight into fuel consumption, domestic and/or crafting practices. Our methodology will address these objectives by implementing archaeological soil micromorphology, X-Ray diffraction (XRD) and Fourier Transform Infrared Spectroscopy (FT-IR). Therefore, the functionality of combustion features and their level of pyro-technological sophistication will be attested. Finally, this study means to test our methodological integration and show its strength in providing higher analytical resolution, and therefore a stronger level of interpretation. This research is conducted in the framework of BONDS - 'Beyond Oikos: Outdoor spaces, daily life and sociality in Neolithic Greece' Project (Number: 00229), funded by H.F.R.I.

## NIR SPECTROSCOPY OF ORGANIC MATTER: A NEW METHOD FOR IDENTIFICATION OF ANCIENT AGRICULTURE IN CHERNOZEMIC SOILS

**Abstract author(s):** Dudek, Michal - Krupski, Mateusz - Bednik, Magdalena (Institute of Soil Science, Plant Nutrition and Environmental Protection, Wrocław University of Environmental and Life Sciences) - Kofel, Dominika (Institute of Archaeology and Ethnology, Polish Academy of Sciences) - Sady-Bugajska, Agata (Katowice) - Vrydaghs, Luc (Maritime Cultures Research Institute, Vrije Universiteit Brussel) - Przybył, Agnieszka (Institute of Archaeology, University of Wrocław)

**Abstract format:** Oral

The identification and study of prehistoric agricultural landscapes are one of the subjects where multi-proxy archaeological research has contributed to significant advancements. The widespread use of ALS data allowed to reveal numerous ancient field systems, whereas detailed investigations of the soil record – in macro- and micro-scales – led to the recognition of past farming practices and their impact on the local soil cover.

Near Infrared Spectroscopy (NIRS) conducted on humus horizons of European chernozemic soils (formed from loess), proved capable of distinguishing organic matter derived from forest and meadow vegetation. Recent development of the method permitted to discern a third group of organic matter infrared spectra, characteristic for arable land.

Consequently, we included NIRS in a multi-proxy study of chernozemic paleosols buried beneath Neolithic longbarrows of the Funnel Beaker culture (ca 3500 BC), discovered in the Muszkowice and Głubczyce Forests (SW Poland). The objectives were twofold: 1) to assess whether these soils were used agriculturally prior to the construction of the barrows, and 2) to test the applicability of infrared spectra in such research. Therefore we compared the NIRS results with evidence delivered by micromorphological, physico-chemical and archaeobotanical (seed, fruit, charcoal and phytoliths) analysis.

Our research allows the following conclusions: A) the Funnel Beaker culture longbarrows found in the Muszkowice and Głubczyce Forests were built on previously cultivated terrain, and B) Near Infrared Spectroscopy (NIRS) of soil organic matter can be used as a tool to identify ancient arable land in chernozemic soils and to characterize changes of vegetation cover at the site level.

## MICROSCOPIC, LUMINESCENCE, AND GEOCHEMICAL METHODS FOR UNRAVELING LAND-USE HISTORY OF AGRICULTURAL TERRACES: CASE STUDIES FROM SICILY AND VENETO, ITALY

**Abstract author(s):** Fallu, Daniel (Tromsø University Museum, UiT: The Arctic University of Norway) - Alonso-Eguiluz, Mónica - Albert, Rosa María (ERAAUB Equip de Recerca Arqueològica i Arqueomètrica de la Universitat de Barcelona; Institut Català de Recerca i Estudis Avançats - ICREA) - Cucchiaro, Sara (Department of Agricultural, Food, Environmental and Animal Sciences, University of Udine; Department of Land, Environment, Agriculture and Forestry, University of Padova) - Tarolli, Paolo (Department of Land, Environment, Agriculture and Forestry, University of Padova) - Lang, Andreas (Department of Environment and Biodiversity, Paris Lodron Universität Salzburg) - Brown, Antony (Tromsø University Museum, UiT The Arctic University of Norway; Geography and Environmental Science, University of Southampton)

**Abstract format:** Oral

Agricultural terraces are one of the most ubiquitous, visible and durable signs of human impact on the landscape. As such, they constitute a considerable untapped archive of environmental and agricultural history. The stratigraphically complex activities of construction, cultivation, and maintenance, however, result in an archaeological record which is difficult, and at times seemingly impossible, to disentangle. The repeated reworking of the soil can result in the movement of dateable material, creating artificially old or young deposits and obscuring contacts between lithostratigraphic layers. Soil horizonation can further obscure what few boundaries remain. As such methods for reconstructing agricultural history must consider the "invisible" aspects of the stratigraphy including microscopic and chemical evidence of sediment input, soil disturbance and soil development. These methods must be integrated with chronological methods which can readily assess soil reworking and which takes into account the difference between dateable inclusions, and events which formed the soil matrix itself.

This study evaluates a combined protocol of Thin Section Micromorphology (TSM), pXRF, FTIR, SEM, portable Optical Stimulated Luminescence (pOSL), and the analysis of biological microremains (phytoliths, ash pseudomorphs, and spherulites) for reconstructing the site development of agricultural terraces. Case studies are taken from two regions in Italy with different agricultural and sociopolitical histories. Samples from the Soave wine region in northern Italy come from terraced fields representing changes in agriculture from the 1st millennium BC through to the modern period. A second case study, from Castronovo in Sicily, demonstrates the efficacy of this combined methodology for reconstructing the complex reworking and maintenance of a single terrace. In both cases, not only were "invisible" strata revealed, but the combined micro-geochemical-luminescence method was able to place the strata into the larger narrative of regional agricultural development.

13

### MULTI-APPROACH ANALYSIS OF PLANT CONSUMPTION: A CASE-STUDY OF IRON AGE SETTLEMENT AT PADA, NE ESTONIA

**Abstract author(s):** Johanson, Kristiina - Chen, Shidong - Oras, Ester - Sammler, Sandra - Blehner, Marie Anna (University of Tartu)

**Abstract format:** Oral

Plant-based food, especially cereals, plays an essential role in prehistoric human dietary practices and economy. However, in the Eastern Baltic, the investigation of cereal consumption in prehistoric periods faces several obstacles, which are mainly due to the scarcity of macro-botanical evidence.

In our study we took a multi-proxy methodology for tracing cereal consumption in ancient societies, focussing on the informative potential of pottery related food crusts. Twenty five food crust samples from Pada Middle Iron Age (500-800 AD) settlement site in North-Estonia were selected for a multi-approach analysis. We applied conventional microscopic analysis of plant micro-remains (phytoliths and starch grains) and bulk stable isotope analysis in combination with lipid based organic residue analysis (ORA). In our talk we present the results of the combined analysis, indicating the direct cooking of cereals mixed with animal products. Accordingly, we can demonstrate the development of C3 cereal cultivation and animal husbandry at Pada settlement site.

The investigation demonstrates that due to the analytical limitations and biases of each method applied – microfossil studies, ORA and isotopic analysis – the multi-methodological approach is the most reliable and fruitful way to reveal cereal-based food consumption from ancient pottery.

14

### PLOIDY INFLUENCE ON PHYTOLITH PRODUCTION: A POTENTIAL TOOL TO STUDY AGRICULTURAL PRACTICES OF CEREALS

**Abstract author(s):** Andreu Diez, Oriol (ERAAUB-Dep. History and Archeology, Universitat de Barcelona) - Pellicer Moscardó, Jaume (Institut Botànic de Barcelona - CSIC) - Boaretto, Elisabetta (Weizmann Institute of Science) - Albert, Rosa María (Institució Catalana de Recerca i Estudis Avançats - ICREA; Section of Prehistory and Archeology, Universitat de Barcelona)

**Abstract format:** Oral

Phytolith analyses have been shown to be critical to better understand past vegetation landscapes directly related to human activities and the use of plants by past populations. However, there are still some limitations that have directly affected the potential of phytoliths as a tool to study agricultural and domestication processes of cereals. One of the main obstacles is the redundancy problem (similar phytolith morphotypes produced by different plants) that may preclude from precise taxonomic identifications.

Previous studies have shown that there is a relationship between the level of ploidy of certain cereals and variations in phytoliths (Tubb et al., 1993). Based on these results, we hypothesized that the integration of cytogenetic approaches (i.e., flow cytometry) to the study of phytolith morphology should allow us to minimize the problem of redundancy and would improve our ability to identify the presence of cereals at the taxonomic level. Consequently, the identification and tracking of domestication events and past agricultural practices would be facilitated.

To do this, we have designed an experimental study that correlates the phytolith morphology of several previously selected cereal species with their ploidy levels. We present the preliminary results showing the genetic profiles compared to their phytolith production in nine cereal species: six *Triticum* spp. (*T. monococcum*, *T. diccoides*, *T. dicocum*, *T. durum*, *T. spelta* and *T. aestivum*), one *Aegilops* sp. (*A. speltoides*) and two *Hordeum* spp. (*H. spontaneum* and *H. vulgare*). Our objective is to study the genealogy and history of the polyploidization of wheat and the domestication process of barley, which will allow us to improve our understanding of agricultural processes, from production, processing, consumption & trade, as well as social and cultural changes that have occurred over time. Results will be applied to the late Roman period & expansion of Islam in the archaeological site of Pollentia.

15

### A MICROANALYSIS OF ROOFS IN TRADITIONAL AND PREHISTORIC CYCLADIC ARCHITECTURE

**Abstract author(s):** Gkouma, Myrsini (Faculty of History and Archaeology, National and Kapodistrian University of Athens; Science and Technology in Archaeology Research Center, Cyprus Institute; Malcolm H. Wiener Laboratory for Archaeological Science, American School of Classical Studies at Athens) - Tsartsidou, Georgia (Ephoreia of Palaeo-anthropology-Speleology of Southern Greece; Malcolm H. Wiener Laboratory for Archaeological Science, American School of Classical Studies at Athens) - Boyd, Michael (McDonald Institute for Archaeological Research, University of Cambridge) - Margaritis, Evi (Science and Technology in Archaeology Research Center, Cyprus Institute) - Moutafi, Ioanna (Malcolm H. Wiener Laboratory for Archaeological Science, American School of Classical Studies at Athens) - Renfrew, Colin (McDonald Institute for Archaeological Research, University of Cambridge)

**Abstract format:** Oral

Roofs in prehistoric architecture were often made of perishable materials, which have left no visible trace in the archaeological record. The identification of roof structures in the field and the reconstruction of building materials and

practices is therefore a challenging endeavor. It can only be addressed with the application of microscopic methods through which we can detect the macroscopically invisible remains. This ethno-geoarchaeological study applies a combined high-resolution microstratigraphic and phytolith analysis to the roofs of abandoned traditional farmsteads on two islands, Kato Kouphonisi and Naxos in the Cyclades, and compared it with analysis of selected contexts from the Early Bronze Age settlement of Dhaskalio. The ethnographic results were correlated with oral testimonies from elderly residents of Naxos and published data. The main objective of our study was to reconstruct the details of the building materials and practices used on abandoned traditional farmsteads before they become extinct; based on these data we examined to what extent our results can produce far-reaching and valid implications for interpreting archaeological sediments tentatively recognized as roof elements during excavation. A wide range of materials and techniques in the construction of traditional roofs was recorded. Choice of material or technique does not seem to be dependent only on the availability of and access to resources but can also be related to individual family traditions and practices. We here suggest that the results of the ethnographic study can contribute to the interpretation of archaeological contexts and validate the macroscopic recognition of roof sediments. The comparative analysis of traditional and prehistoric architectural elements combined with ethnographic information is a valid methodological approach to trace the lost techniques and missing materials of prehistoric and traditional Cycladic architecture.

## 16 **ASSESSING THE RAW MATERIALS UTILIZED IN LIME PRODUCTION: A CASE STUDY OF PLASTERS AND MORTARS FROM KALAVASOS-AYIOS DHIMITRIOS, CYPRUS**

**Abstract author(s): Herrick, Hannah - Berna, Francesco (Simon Fraser University)**

**Abstract format: Oral**

Multi-method geoarchaeological research conducted in 2015, 2019, and 2022 in association with the Kalavastos and Maroni Built Environments (KAMBE) project focused on identifying the components and production process of lime plasters and mortars at the Late Bronze Age (LBA) regional site of Kalavastos-Ayios Dhimitrios (K-AD), Cyprus. This research aims to identify the natural lithic resources utilized in LBA lime production at K-AD, in order to understand the scale of lime production on-site and to better understand its environmental impact in LBA Cyprus as a whole. This paper discusses results of both petrographic analysis and Fourier transform infrared microscopy (micro-FTIR) as conducted on 1) modern geological outcrops of calcite-rich rock determined to be possible raw materials sources for LBA lime production at K-AD, and 2) archaeological lime plasters and mortars excavated at K-AD from 2015-2020. These results demonstrate that targeted, multi-method analyses of both the archaeological lime products and potential raw materials used in their production can indeed create a more comprehensive picture of both the local LBA lime production process, as well as demonstrate trends in ancient natural resources utilization. Further, the results lay the groundwork for determining the environmental impact of lime production technology in LBA Cyprus.

## 17 **DESTRUCTION PROCESSES IN A LATE IRON AGE PUBLIC BUILDING: A MICROARCHAEOLOGICAL STUDY**

**Abstract author(s): Shalom, Nitsan - Gadot, Yuval (Tel Aviv University) - Shalev, Yiftah (Israel Antiquities Authority) - Lipschits, Oded (Tel Aviv University) - Asscher, Yotam (Israel Antiquities Authority) - Boaretto, Elisabetta (Weizmann Institute of Science)**

**Abstract format: Oral**

Archaeological research has always put an emphasis on the central role and importance of destruction layers for reconstructing past events and material cultures. Nevertheless, traditional archaeology does not always provide sufficient tools for interpreting the specific events that created a destruction context, and often the interpretation depends on preconceptions and external sources. Microarchaeological methods, developed in recent years, enable archaeologists to pose new questions regarding destruction contexts and reconstruct in greater details the depositional processes, making it possible to recognize important nuances. The combination of several methods in the analysis of ruined structures allows to examine, for example, whether they were destroyed by fire, reconstruct the focus and intensity of that fire, and evaluate whether the fire was intentional or accidental. In addition, micromorphology enables us to observe the depositional and post depositional processes in the microscopic scale and identify whether a structure collapsed immediately, or in a long process of decay, indicating whether the destruction layer was quickly sealed or represents a longer time span.

In this paper, I present a microarchaeological study of a late Iron Age public building in Jerusalem, destroyed by fire in the 586 BCE Babylonian destruction of the city. Its rooms were found filled with destruction debris and collapsed stones of the walls. This study uses multiple methods, including FTIR and micromorphology, in order to reconstruct the destruction processes, focusing on the reconstruction of the fire – where was its focus in the building and what intensity did it reach – and the collapse – did the structure collapse in a single event or in a longer, possibly natural, process of decay. These questions may shed light on the life history of the building and through it, refine our understanding of the events of the Babylonian destruction.

## DID THE ROMANS HAD AN URBAN WASTE MANAGEMENT SYSTEM? HOW AN INTEGRATING MICROARCHAEOLOGICAL APPROACH CAN BE USEFUL IN THIS DEBATE

**Abstract author(s):** Gutiérrez-Rodríguez, Mario (Universidad de Jaén) - Bernal Casasola, Darío (Universidad de Cádiz) - Sánchez Vizcaíno, Alberto - Parras Guijarro, David - Tuñón López, José - Montejo Gámez, Manuel (Universidad de Jaén) - Goldberg, Paul (Boston University)

**Abstract format:** Oral

Urban transformation from the Early Empire to Late Antiquity in the Western Mediterranean is a historiographic debate with a long trajectory and development. From the 2nd century onwards, the archaeological record in urban environments gets diversified as a consequence of a new conceptualization of the city. Urban spaces experienced secondary uses and episodes of abandonment, which resulted in the generalization of intramural middens, pits, and reflooring sequences. Most of these urban transformations and new ways of understanding urban life were motivated by changes in habits and dynamics of urban solid and liquid waste management. Although it is not clear from written sources whether in the Early Empire there was a regulated system for the evacuation of urban waste in every city, there is solid archaeological evidence of these evacuation systems through sewer networks and urban and suburban middens. In Late Antiquity, however, middens became widespread inside the inhabited space, obliterating streets, public areas, and private buildings, thus affecting urban mobility and the uses of urban space. In this contribution, we discuss how the changing dynamics of urban waste management decisively contributed to the conceptualization of the city in southern Hispania and North Africa, and how significant information of these human practices, habits, and attitudes towards urban waste is only evident at the microscale. We have applied a multi-analytic microarchaeological approach to the study of several urban middens from Hispania and North Africa, by using micromorphology, physical-chemical analyses, lipid biomarkers, FTIR and  $\mu$ -XRF. Thanks to this integrating approach, we can explore questions like the frequency of discard and nature of the material discarded in urban middens, which are key to understand the evolution of these features. In sum, the understanding of urban waste practices turns essential to unravel urban biographies from the Early Empire to Late Antiquity in the Western Mediterranean.

## APPLYING ISOTOPIC GEOCHEMISTRY TO SOURCE CERAMICS

**Abstract author(s):** Renson, Virginie (University of Missouri Research Reactor)

**Abstract format:** Oral

Isotopic geochemistry has been applied in archaeological sciences to identify circulation of objects as well as human mobility for decades. With the development of multi collector-inductively coupled plasma-mass spectrometers, this approach has become more widespread with lead and strontium representing two of the most commonly applied isotopic systems. For the identification of source and circulation of ceramics, however, the main analytical techniques continue to be elemental chemistry and petrography. Here, we examine how isotopic geochemistry can contribute to our understanding of ancient ceramic provenance and exchange. Examples are drawn from studies of Late Bronze Age and Late Roman-Late Hellenistic ceramics from Eastern Mediterranean contexts and Early Formative ceramics from multiple sites in Mexico. These examples illustrate how lead and strontium isotopes allow determining production centers of material unassigned by elemental chemistry, how isotopic analyses contribute to the identification of local objects and imports, how they allow relating ceramics to their raw materials and identifying mixing patterns, and how to integrate the isotopic approach to elemental chemistry and mineralogy.

## SOCIAL MICROARCHAEOLOGICAL APPROACH TO BURIALS

**Abstract author(s):** Moilanen, Ulla (University of Turku)

**Abstract format:** Oral

In Finland, Early Medieval burials are often divided into dichotomic categories, such as cremations vs inhumations, Pre-Christian burials vs Christian burials, or poor vs rich. This is mostly because of generalisations that simplify mortuary rituals as direct reflections of religious ideologies or social status. When wide generalisations are abandoned and the graves are approached from a social microarchaeological perspective, new details emerge. Small-scale studies will open a rich and multidimensional view of the past. In Finland's case, it may be possible to identify periods of elevated mortality in the Early Medieval period, and possibly even times of social or political instability that could have provoked local power struggles. The microarchaeological approach also helps raise new questions on gender roles and identities, local rituals, commemoration, and the meanings of objects and sites. In general, the small-scale approach widens the possibilities to study and interpret the archaeological material and help integrate it in wider geographical, temporal, and theoretical discussion.

## A COMPLEX JIGSAW. MULTI-PROXY RESEARCH FOR THE DUTCH EARLY NEOLITHIC

**Abstract author(s):** Muller, Axel - Schrijer, Elma (ADC Archeoprojecten)

**Abstract format:** Oral

The central part of the Rhine Meuse Delta in the Netherlands has great archaeological value because of the good preservation of submerged prehistoric landscapes, specifically the fossil river systems in the province of Flevoland. Here numerous late Mesolithic and early Neolithic sites are present and therefore the process of neolithization in the lowlands can be analyzed in great detail.

The construction of a wind turbine complex in the center of Flevoland could potentially destroy a well-preserved prehistoric landscape with a large variation of activity sites, e.g. settlements, burials, hunting and extraction camps and field systems for crop production. After extensive field work new Mesolithic and Neolithic settlement sites and indications for field systems have been documented. Two years of excavating resulted in more than 200 samples of different kinds that were collected to reconstruct paleogeographic dynamics and land use and therefore gain insight in the neolithization processes.

We are planning to perform the following analyses;

- diatoms for the level of marine or fluvial influence on the landscape,
- different botanical proxy's (pollen, macro fossils, parenchyma) for vegetation and environment reconstructions and the study of plant domestication,
- micro-morphology for research on agricultural field systems and different post-depositional processes,
- isotope analysis on Neolithic crops,
- residue analysis on pottery,
- use ware analysis on stone artifacts.

Integration of the results will provide comprehensive data for modeling landscape dynamics, land use and ultimately on the progress of neolithization in the Dutch wetlands.

Although we cannot yet present data, we want to show that there are numerous opportunities to do multi-proxy research within development-led archaeology and that this will substantially increase our knowledge on the early Neolithic in the Rhine Meuse Delta.

## MULTI-PROXY GEOARCHAEOLOGICAL APPROACH REVEALS EARLY ANTHROPOGENIC IMPACTS ON SOILS AND HYDRO-SEDIMENTARY SYSTEMS OF LIMAGNE PLAIN (FR.)

**Abstract author(s):** Mayoral, Alfredo (Catalan Institute of Classical Archaeology. Landscape Archaeology Research Group - ICAC-GIAP), Tarragona, Spain; Université Clermont Auvergne, CNRS, GEOLAB) - Granai, Salomé (GéoArchÉon & CNRS, Université Paris 1, UPEC. UMR8591. Laboratoire de Géographie Physique: environnements quaternaires et actuels) - Ledger, Paul (Department of Archaeology, Memorial University of Newfoundland & Department of Geography, Memorial University of Newfoundland) - Peiry, Jean-Luc (Université Clermont Auvergne, F-63000 Clermont-Ferrand & CNRS, EDYTEM) - Berger, Jean-François (CNRS, UMR 5600, EVS-IRG & Université Lyon 2) - Develle, Anne-Lise (UMR 5204 EDYTEM, Université Savoie Mont Blanc, CNRS) - Defive, Emmanuelle (Université Clermont Auvergne, CNRS, GEOLAB) - Vautier, Franck (Université Clermont Auvergne, CNRS) - Miras, Yannick (CNRS, UMR7194, Histoire Naturelle de l'Homme Préhistorique, Département de Préhistoire, Muséum National d'Histoire Naturelle, Institut de Paléontologie Humaine)

**Abstract format:** Oral

Interpretation of long-term socio-environmental dynamics in the Limagne plain (central France) has long remained problematic despite a relative abundance of studies and a well-known archaeological record. Poor chronological control and macroscale homogeneity of Limagne dark soils were amongst the major drawbacks avoiding detailed discussion of complex socio-environmental interaction. However since 2014 a novel multi-proxy integrated approach has been developed in order to overcome these recursive difficulties, and better characterize the emergence of anthropogenic impact on this landscape during mid- to late-Holocene. This approach was first applied to the archaeological site of Corent, located in a southern Limagne's volcanic plateau and occupied since the Neolithic. Several sedimentary records were obtained from two complementary contexts in the plateau and surrounding lowlands. They were subject to multi-proxy geoarchaeological analyses (sedimentology, geochemistry and micromorphology) that were further coupled with palynological and malacological datasets. Micromorphological analysis played a crucial role in interpretation of pedo-sedimentary sequences and multi-proxy dataset crosschecking and integration. Main results, supported by robust radiocarbon-based chronology, have contributed to a better understanding and discussion of socio-environmental dynamics in southern Limagne landscapes. Since Neolithic until the Middle Bronze Age, anthropogenic impact on soils and hydro-sedimentary systems appears spatially constrained, and natural hydro-climatic variability is discernible. Impacts start to increase slowly during the Late Bronze Age, but the major threshold occurs in the 7th c. BCE. This implies a much earlier anthropogenic forcing on soils and hydro-sedimentary systems than usually acknowledged in Limagne. Hereafter these impacts gradually increase during La Tène and Roman periods. Similar dynamics have also been detected by recent research in other Limagne areas such as the



Sarliève paleolake and the Gergovie plateau, and contribute to foster the emerging debate around the connection between proto-urban phenomena and precocious landscape-scale forcing of natural systems during Early Iron age in Western Europe.

## 23 FROM MICRO TO MACRO: A MULTI-SCALAR GEOARCHAEOLOGICAL INVESTIGATION OF LONG-TERM HUMAN-ENVIRONMENT INTERACTIONS AT THE HARRISON-CHEHALIS CONFLUENCE SW, BRITISH COLUMBIA

**Abstract author(s):** Ritchie, Patrick (University of British Columbia) - Berna, Francesco (Simon Fraser University)

**Abstract format:** Oral

This paper is a multi-scalar examination of 4,000 year old settlements at the Harrison-Chehalis river confluence, in SW British Columbia, one of the most ecologically rich landscapes and productive salmon habitats in North America. The (trans) formation of this alluvial landform and riverine environment over the last few thousand years has been concurrent with increasing human settlement by the ancestors of the Sts'ailes people who significantly re-contoured their surroundings to create one of the most densely settled landscapes on the Northwest Coast. Our historical study of this important cultural landscape shaped by fluvial changes moves between micro and macro scales of analysis. In particular, we draw on sedimentological and soil micromorphological analyses of natural and anthropogenic contexts from small low-lying islands and over 100 radiocarbon dates from pithouse and plank house features associated with 12 settlements. Our data reveal ways in which human and environmental histories were entangled, sustainable, and resilient.

## 24 TRACK RECORD: A MULTI-SCALAR APPROACH FOR INVESTIGATING MODERN AND ARCHAEOLOGICAL FOOTPATHS UNDER DIFFERENT ENVIRONMENTS

**Abstract author(s):** Nir, Nadav (Freie Universität Berlin) - Stahlschmidt, Mareike (Max Planck Institute for Evolutionary Anthropology) - Davidovich, Uri (The Hebrew University of Jerusalem) - Hardt, Jacob - Busch, Robert - Schütt, Brigitta (Freie Universität Berlin) - Ullman, Micka (The Hebrew University of Jerusalem)

**Abstract format:** Oral

Footpaths are of the most widely occurring types of human influences on the environment both temporally and spatially. We investigate modern and archaeological case studies from Tigray (Ethiopia), Judean Desert (Israel) and East Germany to better understand the formation and effects of footpaths. Here we use Micromorphology, automated porosity analysis, selective Fe extraction, Sedimentary analysis and Satellite and UAV images in a multi-proxy and multi-scalar approach.

We first examine the formation of currently used footpaths through possible patterns and changes in the subsoil in Tigray (semi-arid), the Judean Desert (arid) and East Germany (humid). Second, we attempt to detect micro and macro environmental changes in two presumably historical sunken lanes in proximity to 1st Millennium BCE sites in Tigray and in two footpaths attributed to the Roman period (1st century CE) and Early Bronze age (4-3rd Millenia BCE) in the Judean Desert. Different patterns emerge under the different environments while some common trends are also evident. This work is an initial attempt to bring together the formation and effects of footpaths and treat these human produced surfaces as geomorphological landscape features.

## A. ONE MILLENNIUM OF HUMAN-ENVIRONMENT INTERACTIONS RECORDED IN THE ŚWIĘTE MIRE (WESTERN POLAND, CENTRAL EUROPE)

**Abstract author(s):** Czerwinski, Sambor (Laboratory of Climate Change Ecology, Adam Mickiewicz University; Max Planck Institute for the Science of Human History, Jena) - Lamentowicz, Mariusz (Laboratory of Climate Change Ecology, Adam Mickiewicz University) - Karpińska-Kolaczek, Monika (Climate Change Ecology Research Unit, Adam Mickiewicz University; Centre for the Study of Demographic and Economic Structures in Preindustrial Central and Eastern Europe, University of Białystok) - Guzowski, Piotr (Centre for the Study of Demographic and Economic Structures in Preindustrial Central and Eastern Europe, University of Białystok) - Izdebski, Adam (Max Planck Institute for the Science of Human History, Jena) - Galka, Mariusz (Department of Biogeography, Paleoecology and Nature Conservation, University of Lodz) - Pilloix, Malo (Laboratoire Chrono-Environnement, UMR 6249, Université de Bourgogne Franche-Comté) - Kolaczek, Piotr (Laboratory of Climate Change Ecology, Adam Mickiewicz University)

**Abstract format:** Poster

In this study, we focus on the Święte fen located in western Poland. Our aim is to assess the impact of the progressive local-scale economic activity of the Cistercian Order on forest transformation. We carried out pollen, plant macrofossil, charcoal, testate amoeba, and selected non-pollen palynomorph (NPP) analyses, supplemented by 18 <sup>14</sup>C AMS dates.

Our research showed, that during ca. 1100-1250 cal. CE, pollen data indicate the presence of pine forest with the admixture of deciduous trees, like hornbeam, oak, beech. This phase is followed by probable clearance of the forest, which is indicated by a decrease in PAR (pollen accumulation rate) of deciduous trees, as well as the increase in

anthropogenic indicators. The increased human impact reflects probably the rebuilding of the stronghold in Przemęt, related to the reconstruction of the country after the domestic crisis. It was made by locals under the management of rural official in medieval Poland. In the subsequent period, from ca. 1330 to 1660 cal. CE, there was a gradual increase in human activity around the site. In the early 14th century, an onset of Cistercian activity took place. Its start was linked to further deforestation and possible drainage that is evidenced by a decline in the peatland water table depth inferred from testate amoebae.

Between 1670 and 1730 cal. CE, a significant decrease in pollen indicators of ruderal habitats and cultivated fields was recorded. This decline may be linked to the socio-economic crisis that was a result of the Swedish Deluge (1655-1660 CE). Historical sources indicate that depopulation reached almost 50% in the late 17th century. Shortly before this period, a sharp short-term (ca. 50 years) increase in microcharcoal accumulation rate was recorded, which was probably a result of brick firing for the construction of a Cistercian monastery (1651-1696 CE).

181

## **CONTROL THE DIVINE: INTEGRATING SACRED SPACES AND RITUALS AT THE 'FRINGES' (ANCIENT CENTRAL AND SOUTH ASIA)**

**Theme: 2. [Re]integration**

**Organisers: Mendoza Sanahuja, Marc (Universitat Autònoma de Barcelona) - Lakshminarayanan, Ashwini (Sapienza Università di Roma)**

**Format: Regular session**

Some lands are bound to become cultural crossroads. Ancient Central and South Asia have been the setting for the meeting of different cultures through the ages and, in consequence, represents a very interesting case of study for diachronically analysing religious integration and re-integration. These locations have often been relegated to fringes in scholar discussions, and this session aims to flip the approach by giving prominence to these lands.

Central and South Asia knew several important nodes of (global) interactions between the East and the West in Antiquity, either as part of the Hellenistic world or wider trade networks of the so-called Early Silk Roads. The interactions between multiple cultural groups were often categorised using simple acculturation models, but nuanced approaches to religious interplay are necessary to fully apprehend the ways in which cultural impact was felt in different communities at varying degrees.

The contact between locals and newcomers -either transient or permanent- always prompted a two-way interaction between their respective belief systems. The situation necessarily entailed challenges and generated answers in both communities. The effects could be perceived at different levels, from purely pragmatic to deep religious transformations: mutual influences ensured that their religious practices no longer remained the same.

Topics suggested within the frame of Ancient Central and South Asia for this session include, but not exclusively:

- Establishment of new sacred spaces in multicultural contexts.
- Religious adaptation at the fringes: challenges and solutions.
- Peripheral religiosity as seen from the centre.
- Comparison of religious rituals between the centre and periphery.
- Introduction of new rituals, ceremonies and convivial practices.
- Religious coexistence: delimitation, interaction, exclusion.
- Archaeological evidence for religious interaction: transference of motifs and iconography, adoption and resignification of ritual objects, etc.
- Archaeological evidence for religious conflicts.
- Religious syncretism: scholar myth or reality?

## **ABSTRACTS**

### **1 TEXTUAL ARCHAEOLOGY: ON SACRED GROVES IN HELLENISED CENTRAL ASIA**

**Abstract author(s): Mendoza Sanahuja, Marc (Universitat Autònoma de Barcelona)**

**Abstract format: Oral**

Texts are also useful tools to reconstruct ancient religious landscapes. Even in regions with very sparse data like Bactria-Sogdiana, textual sources and epigraphy can provide useful clues about the existence of certain religious spaces. Two different documents preserve information about the establishment of sacred groves by Greek settlers in Central Asia. The first one was located in the village of the Branchidae, who were settled in the region during the Achaemenid rule. That grove was likely a reconstruction of the one found in Didyma, the famous oracle near Miletus. The second instance is found in the so-called Kuliab inscription, in which a grove of Zeus is mentioned. The recurrence of this religious space in two different locations and times are interesting. Do they reflect an important aspect of Greek (re)construction of their own religious landscape in that faraway land? Or are they to be understood as the appropriation and the resignification of local religious spaces by the newcomers? These two examples represent

interesting cases of study to analyse and understand the establishment of religious landscapes in colonial contexts, and the interaction within them between locals and newcomers.

## 2 THE HELLENISTIC SANCTUARY IN TORBULOK - A CASE STUDY IN RELIGIOUS INTERACTION?

**Abstract author(s): Lindström, Gunvor (DAI German Archaeological Institute)**

**Abstract format: Oral**

The religious landscape of Hellenistic Bactria still lies in fog, from which only a few sanctuaries emerge that have been excavated since the 1960s. This is because the historical and epigraphic sources allow conclusions to be drawn about Bactria's population in Hellenistic times, which was mainly composed of native Bactrians and relatively few immigrant "westerners", including Greeks, but do not provide any information about the religions.

Among the few sanctuaries that have been explored is the sanctuary of Torbulok in southwestern Tajikistan, excavated in 2013-2019. Its location in a remote valley a day's walk from the nearest Hellenistic settlement group suggests that its visitors were mainly local Bactrians. Some of the archaeological contexts uncovered are unique and indicate that the cult community developed its own religious practices. Other contexts, however, show that the cult community was familiar with apparently Greek cult practices and utensils, such as the symbolic exchange of gifts with the god, as evidenced by the votive offerings, and the perirrhatheria, which provided water for purification rituals. However, it cannot be concluded that Greek immigrants or their descendants were directly involved in cultic activities at Torbulok or that the cult community was even aware of the genealogy of the practices. Rather, the nature of the worship was based on customs known from larger sanctuaries in the country, which were probably perceived as Bactrian, but in any case appropriate for the worship of the deity at Torbulok.

## 3 SHARING THE MORTUARY SPACE: NEW OBSERVATIONS ON THE BURIAL RITUALS IN THE BUKHARA REGION (UZBEKISTAN)

**Abstract author(s): Wang, Shujing (School of Art and Archaeology, Zhejiang University)**

**Abstract format: Oral**

This paper aims to reconstruct the progress of sharing the mortuary space in the Bukhara region in present-day Uzbekistan. Around 200 burials dated to the pre-Islamic period have been excavated in the peripheries of the Bukhara Oasis. These burials are conventionally attributed to pastoral nomads from the steppe. However, the mortuary space of Bukharan burials has been revisited and reused frequently. This paper analyses both archival data and fresh first-hand material from my recent archaeological excavations. It investigates funerary practices related to the production and reconstruction of mortuary space. As a result, four major methods for grave sharing are observed, including the modification of tomb structure, inhumations in burial mounds, the application of ceramic repositories in the burial chamber, and later, in the tumuli. The shared burials not only present the introduction of new burial rituals but also vividly illustrate the roles of ritual transition in establishing connections between later generations and their ancestors, real or imagined.

## 4 THE PRICE OF SALVATION: UNDERSTANDING THE USE OF LATE ANTIQUE COINS ALONG THE SILK ROAD

**Abstract author(s): Ouellet, Jonathan (Leiden University)**

**Abstract format: Oral**

The practice of placing coins on the eyes of the dead is a well-known practice in ancient Greece and Rome. What is often not looked at sufficiently though is their use in areas well outside of the Greco-Roman world. Several researchers have noted the presence of Byzantine gold and Sasanian silver coins in and around the modern Chinese province of Xinjiang, mainly around the modern city of Turpan. Many of these have been found in tombs and seem to be used in a similar fashion to the Greco-Roman ones. Many scholars have noted the reliance on Byzantine gold and Sasanian silver. Beyond being monetary, some scholars have argued that the coins are in fact also a social and ritual item. It is my intent to look at what role Byzantine and Sasanian coins may have played in social and religious traditions of the silk road. I will be looking at examples of coins found in the region and looking at their context as well as economic and social factors which may have played a role in their use in the region. It is the hope that looking at the coins found in Xinjiang, that we can get a better understanding of how monetary items can function in a religious setting.

## 5 MAKING SPACE FOR BUDDHISM: EARLY BUDDHIST PRACTICE IN HELLENISTIC CENTRAL ASIAN RELIGIOUS SPACES

**Abstract author(s): Ross, Edward (University of Reading)**

**Abstract format: Oral**

During the reign of King Aśoka Maurya (c. 304-232 BCE; r. 268-232 BCE), the teachings and practices of Buddhism were brought to the fringes of the Mauryan Empire and its neighbouring kingdoms. This included the regions to the

north-west of Gandhara, the land of Yonas, or as it is known today, Central Asia. Up until this point, the primary evidence for the transmission of Buddhism into Central Asia and the activities that took place during this early period are the Pāli Dīpavaṃsa and Mahāvāṃsa and the inscriptions attributed to Aśoka. The Italian Archaeological Mission in Pakistan has recently unearthed an apsidal temple in Barikot that dates to the time of the Indo-Greeks, and potentially even as far back as Aśoka's time. This early devotional space presents the greatest physical evidence for pre-Kushan Buddhist practice in Central Asia to date. As reports are published from this excavation, new physical evidence of early Buddhist practice will come to light.

With this new information, it is reasonable to consider that Buddhist practice did indeed take place among the Indo-Greeks, and even the Greco-Bactrians further north, before the Kushan Period (c. 30-375 CE). Like much of South Asia, religious activity and architecture were not restricted to single traditions. In fact, religious structures in Central Asia were places for people to engage with different deities and practices, sometimes even right next to each other. In this paper, I will discuss the nature of early Buddhist practice in the context of multi-cultural temples and consider how it would have integrated into the Central Asian temple site in Ai Khanoum. Through this, we can further deepen our understanding of the multi-faceted nature of religious spaces in ancient multi-religious contexts.

## 6 WHAT SORT OF BUDDHISM DID THE GREEKS IN INDIA ENCOUNTER?

**Abstract author(s):** Stoneman, Richard (University of Exeter)

**Abstract format:** Oral

The Greeks who accompanied Alexander to north-west India in 326 BCE, and those who remained there in the succeeding two centuries, came into contact with Buddhists and Buddhist ideas. . But how much of fully developed Buddhist philosophy was current in the fourth century BCE? How far can fundamental tenets such as no-self and dependent arising be attributed to the Buddha himself?

Here archaeology can be brought to bear on the question: the sculptural programme at Sanchi, for example, in which scenes including King Aśoka (a hero of Buddhist legend), and many jataka tales, are depicted, originates in the 3rd century BCE and shows definite signs of Greek influence in ornamentation, representation of the human form, and animal portrayals.

In this paper I propose to develop some of my own earlier discussions of Pyrrho's doctrines in relation to Buddhist ideas. The renegade 'naked philosopher' Calanus, who accompanied Alexander to Babylon, is seen as an identifiable transmitter of ideas. Another of Alexander's Greek companions was the philosopher Anaxarchus, and I make here a first attempt in the scholarship to build a picture of Anaxarchus' ideas as influenced by Buddhism.

Part of the paper will be devoted to The Questions of King Milinda, a Buddhist work dateable to perhaps 150 CE in which the Indo-Greek king Menander (ca 150 BCE) poses some rather penetrating questions to the monk Nāgāsenā. Can this text be taken as evidence for the Buddhism of his period?

Whatever the answer to this question, there emerges from the paper a more nuanced picture of the philosophical interaction of Greeks and Indian Buddhists in the third to first centuries BCE.

## 7 POWER THROUGH RELIGION AND RELIGION THROUGH POWER. ROYAL AGENCY AND LOCAL CULTS IN HELLENISTIC CENTRAL ASIA AND NW INDIA

**Abstract author(s):** Coloru, Omar (University of Bari)

**Abstract format:** Oral

During the Hellenistic period, Central Asia and northwestern India witnessed the emergence of phenomena of religious interaction between local cultures and the Greek world. Although historiographic sources on this period are fragmentary and few in number, archaeological, epigraphic, and numismatic sources are gradually shedding light on the easternmost area of the Hellenistic worlds known to date. If the public image of the Greek rulers who reigned in the region tends to strongly emphasize their belonging to the Graeco-Macedonian cultural sphere, nevertheless in this still little known historical context, remarkable case studies emerge that on the contrary show how local cults were the object of strong interest and participation on the part of the dominant group. Taking into consideration the available evidence on the Iranian cult of the god Oxus, on the Hindu religion, and Buddhism (also in the light of the excavations in Barikot, Swat), this contribution aims to understand how Greek royal authority and its representatives relate to local cults in the geographical areas under examination. In particular, we will try to understand how the sovereigns and their officials publicly promoted these cults, if and to what extent they adhered to them, which forms of representation of the divine element and which rituals were privileged.

## GANDHĀRAN ART AS AN EXPRESSION OF A MULTICULTURAL ENVIRONMENT - TOWARDS UNDERSTANDING THE NATURE OF INTERACTION

**Abstract author(s):** Kubica, Olga (University of Wrocław)

**Abstract format:** Oral

At the beginning of the 20th century Foucher published his famous work "L'art gréco-bouddhique du Gandhāra: étude sur les origines de l'influence classique dans l'art bouddhique de l'Inde et de l'Extrême-Orient" (1905-51), in which he coined the term Greco-Buddhist art. He argued that, since early Buddhist art was aniconic, thus the first sculpted images of the Buddha must have been influenced by Greek artists. Shortly thereafter Coomaraswamy in his article "The Origin of the Buddha Image" (1927) entered into polemics with Foucher's theory. He described the alleged European standpoint, according to which "the creative genius of Greece had provided a model which had later been barbarized and degraded by races devoid of true artistic instincts, to whom nothing deserving the name of fine art could be credited" (Coomaraswamy 1927: 287). These two voices are just an example of how the problem of Gandhāran art was approached in the 20th century. This approach of the scholars "preoccupied with tracing Greco-Roman influences that they believed shaped Gandhāra" was summarized by Behrendt, who argued that it "did serve to identify the many foreign groups that came into contact with the people of Northwest India, but the nature of these interactions remains unclear", because "the people in Gandhāra were actively filtering foreign 'influences' and selectively appropriating forms and ideas coming from abroad." The culture of Gandhāra cannot therefore "be seen as a pastiche of Mediterranean, Parthian, Chinese, and south Asian influences" and interpreted as "polluted – or ennobled – by the Classical tradition" (Behrendt 2004: 50 f.). In this paper I want to take up the topic of whether contemporary researchers have managed to go beyond the described scheme of researching Gandhāran art and if so, to what extent, and moreover, where are we, and what can the interdisciplinary approach change.

## EMBODYING RITUAL PERFORMANCE: DONOR FIGURES IN EARLY GANDHARAN ART

**Abstract author(s):** Elahi, Moizza (University of Toronto)

**Abstract format:** Oral

Traditional scholarship on Gandhāran art has largely been mired in reductive debates on artistic origins and influences. The goal of the present paper, however, is to shed light on locally constructed sculptural representations of donors and devotees from Butkara I in Swat valley—one of the earliest Buddhist sites in the Greater Gandhāra region. The discovery of several sculptures and architectural elements depicting elaborately adorned male and female figures with distinctly individualizing facial features, and bearing varied Buddhist offerings, not only throws into relief the artistic phenomenon of portraiture in early Gandhāran Buddhist art, but also exemplifies the visual enactment of donative ritual and practice. The appropriation of a transcultural and widely legible visual vocabulary for constructing these essentially Buddhist figures, however, underscores the complex cross-cultural interactions and encounters underpinning Gandhāran art and Buddhist practice in the early centuries of the Common Era. Donative inscriptions from Swat and Bajaur attest to the active participation in the Buddhist sphere of local dynasties, governing under imperial structures (Saka, Parthian and early Kushan) during the first century of the Common Era. This paper argues that in addition to relic establishment and donative inscriptions, the ruling dynasts used donor portraits for the material and metaphorical embodiment of their presence and piety within the Buddhist monastic space. Furthermore, these images likely served as public performances for effectively navigating the broader political and socio-cultural currents. Speaking to diverse communities in the multicultural matrix of Gandhāra, these donor portraits, therefore, highlight the participation of visual imagery in constructing new forms of ritual and practice predicated upon the intertwined notions of power, patronage, and religiosity.

## RITUAL MUSIC AND DANCING IN GANDHĀRAN ART

**Abstract author(s):** Lakshminarayanan, Ashwini (Sapienza University of Rome)

**Abstract format:** Oral

Buddhism was introduced in ancient Gandhāra (parts of present-day Pakistan and Afghanistan) around the third BCE and grew to be a popular religious force during the first centuries CE. Large scale Buddhist sacred buildings were funded by local elites and reliefs depicting both biographical and devotional scenes decorated these buildings. A Buddhist artistic tradition, often referred to as Gandhāran art, developed in this cultural and geographic crossroads using motifs (Greek, Roman, Indian, and Central Asian) that were transregionally shared and locally adapted.

Buddhist canonical texts are often used to promote a "pure" version of the religion that rejected musical and dance celebrations. However, Gandhāran relief fragments depict numerous figures dancing and playing music to demonstrate piety towards the Buddha and Buddhist relics. This paper argues that music and dance (may they be Hellenic, Indic or Parthian type performances) were an integral part of Gandhāran Buddhist rituals and reveals that the different types integrated the ideal performances belonging to the socio-cultural groups of the local Buddhist society.

## JAINA - VĪRA-ŚAIVA INTERACTIONS IN SOUTH INDIA: ARCHAEOLOGICAL EVIDENCE FOR RELIGIOUS AND ARTISTIC EXCHANGES DESPITE STRONG FORMS OF DEPENDENCY

**Abstract author(s):** Hegewald, Julia (The University of Bonn)

**Abstract format:** Oral

Archaeological and artistic enquiries into South Asia have tended to focus more intensely on the northern and central regions of the Subcontinent. The South and particularly the modern State of Karnataka, allegedly lying 'at the fringes' have tended to be more neglected in archaeological and art-historical examinations and writings.

This paper focuses on Karnataka in the twelfth and following centuries. It analyses contact between the originally dominant local Jaina community and newcomers in the form of the Vīra-Śaivas, who along with Śrī-Vaiṣṇavas and Muslims, moved into the region from the early twelfth century onwards, took over control and settle permanently in the area.

Although the local Jains found themselves in a situation of disempowerment and extreme dependency, this new condition prompted a two-way interaction between the respective belief systems and artistic practices of the old and the newly dominating group. The situation necessarily entailed challenges and led to the desecration and destruction of Jaina statues and temple edifices. However, it is fascinating to observe that, based on the visual record of preserved sculptural and architectural remains, it generated answers in both communities and did not only influence the art and life of the subdued. The dominating Vīra-Śaivas absorbed Jaina objects and spaces of veneration and integrated them into their own religious practices even though dogmatically and ritually, they made little sense in the religious context of the newly dominant elite. This mutual change ensured that neither of the religious groups or their religious and artistic practices remained the same. In the long run, it also ensured the firm integration of new faiths and traditions into the cultural environment of South Asia.

## CENTER VS PERIPHERY. INTERDISCIPLINARY APPROACHES TO THE STUDY OF MATERIAL CULTURE, ARCHITECTURE, AND LANDSCAPE IN THE CAUCASUS REGION

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Kaliszewska, Agnieszka (Systems Research Institute, Polish Academy of Sciences) - Lorenzon, Marta (University of Helsinki, Centre of Excellence in Ancient Near Eastern Empires) - Hamburg, Jacek (Krukowski Polish-Georgian Interdisciplinary Research Center) - Bieńkowski, Rafał (Systems Research Institute, Polish Academy of Sciences)

**Format:** Regular session

The Caucasus sits at the crossroads between Eastern Europe and Western Asia, and throughout history, the region has been both a peripheral area for dominating Empires and a strategic place for trade, communication and acquisition of natural resources. Its strategic position has made control of the area a key issue for Empires from the Early Bronze Age to the Medieval period. In recent years, the archaeology of the Caucasus has developed at a very fast pace. Everyday discoveries are changing our perception of Caucasus cultures by providing new data on different aspects of material culture, also thanks to the application of new technologies and methods.

This session focuses on bringing together researchers focusing on the study of the Caucasus as a border area between empires, but also as an independent polity. We welcome papers presenting innovative and interdisciplinary approaches to the study of artefacts and ecofacts in relation to the concepts of 'border area', connectivity and skill transfer as presented in the archaeological record. The session's main goal is to bring together specialists from different fields (i.e., pottery, glass, coins, architecture, metallurgy, landscape, archaeobotany, palaeoecology, archaeozoology, geoarchaeology) that focuses on the diachronic study of this region through the analysis of material culture. We believe that the exchange of recent findings and opinions can lead to a deeper understanding of the complexity of the archaeological record as found in the Caucasus.

### ABSTRACTS

#### 1 ON THE TRAIL OF ANCIENT SETTLEMENTS... THE ARCHAEOLOGICAL LANDSCAPE OF KUTAISI IN THE LIGHT OF RECENT POLISH-GEORGIAN EXCAVATION RESEARCH

**Abstract author(s):** Hamburg, Jacek (Krukowski Polish-Georgian Interdisciplinary Research Center) - Isakadze, Roland (Georgian National Museum; National Agency For Cultural Heritage Preservation of Georgia, Kutaisi Historical Architectural Museum - Reserve; Akaki Tsereteli State University) - Badura, Monika (Laboratory of Paleocology and Archaeobotany, University of Gdańsk)

**Abstract format:** Oral

Since 2017 the Kutaisi Archaeological Landscape Project (KALP) conducted surface prospection and regular excavation research at several archaeological sites in the city of Kutaisi and its surrounding area. At these sites were discovered remains associated with the Late Bronze Age / Early Iron Age, Antique and Medieval periods. This speech

focuses on the study of the oldest residues. Archaeological excavations, although difficult due to significant damage caused by modern buildings and growing city, were carried out in the area of the Dateshidze hill and around the Bagrati Cathedral. Results allowed us to obtain the first evidence for the existence of the Late Bronze Age settlement. Archaeologists found sections of the defensive ditch/moat in the 2018 and 2019 seasons, and remnants related to the wooden and wattle-and-daub architecture during the 2019 and 2021 seasons, characteristic for the Colchis Valley region in that period. Its dating is confirmed by the first results of radiocarbon analyses of organic and botanical material found in huge amounts inside the ditch, where anaerobic conditions prevailed. Besides, in the 2019 season, rescue excavations nearby Meskheti hill (unexcavated ancient settlement located ca. 11 km southwest from Kutaisi) were carried out. Antique tomb in pithos was found there. The object was untouched and full of many finds, including gold objects and a single silver coin.

## 2 EARTHEN ARCHITECTURE AND CONSTRUCTION PRACTICES IN THE KUTAISI REGION

**Abstract author(s):** Lorenzon, Marta (University of Helsinki)

**Abstract format:** Oral

The study presents the preliminary results of the analysis of earthen building materials from the excavations of Kutaisi, Georgia. The research aim is to shed light on continuity and change in architectural construction technologies from the beginning of the to the Early Bronze Age to the Medieval period in the central Caucasus Area. The study presents earthen building materials from two distinct sites in Kutaisi: 1. the Dateshidze hill dated to the Bronze Age period (13th -12th B.C.) until the pre-antique period (6th -5th B.C.), and 2. the Bagrati citadel, where the archaeological remains dated to the Bronze Age (2nd Millennium B.C.E.), Byzantine period (5th - 8th century A.D.) and the Turkish period (15th - 17th century A.D.).

This paper focuses on presenting the results of the macroscopic study and preliminary geoarchaeological analysis, which clarify key issues regarding earthen architecture manufacture practices, especially mode of production, selection of raw source materials and construction practices implemented in the Kutaisi areas. This study highlights the presence of three distinctive manufacturing techniques, likely implemented synchronically, and associated to diverse typologies of earthen architecture construction practices.

## 3 A CASE STUDY OF BRONZE AGE POTTERY FROM KUTAISI, GEORGIA

**Abstract author(s):** Kaliszewska, Agnieszka (Systems Research Institute, PAS) - Lorenzon, Marta (University of Helsinki, Centre of Excellence in Ancient Near Eastern Empires) - Badura, Monika (Laboratory of Paleoecology and Archaeobotany, University of Gdańsk)

**Abstract format:** Oral

In this contribution, we present the new pottery finds discovered in the course of the Expedition for Kutaisi Archaeological Landscape(EKAL) project conducted by the Krukowski Interdisciplinary Research Center in the area of Gabashvili Gora and surrounding hills (Kutaisi).

Georgian Bronze Age pottery remains in the periphery of archaeological interest, hence this presentation aims at discussing its variance, usage and the main problems that arise during the study of pottery from the Caucasus area. Considering all of the above, we present the ceramics finds from two consecutive field seasons of the EKAL project, and we compare those with other regional materials first by creating typological comparisons, then by investigating the pottery in correlation with other excavated materials. We also attempt to use pottery, in combination with the results of integrated interdisciplinary studies, as an active indication of the existence, extension and form of the Bronze Age settlement of Gabashvili Gora. Due to dense modern constructions, the evidence we were able to obtain is fragmentary; nevertheless, it is essential to our understanding of the past urban development of the area in question.

## 4 THE ANIMAL STYLE OF THE URARTIAN AND CAUCASUSIAN BELTS

**Abstract author(s):** Castelluccia, Manuel (University of Naples) - Szabó, Geza (Wosinsky Mór Museum)

**Abstract format:** Oral

During the first centuries of the 1st millennium BC Caucasian metalwork exhibited a rich vitality and fantasy in representing animals of the surrounding landscape. Such repertoire is remarkably represented on metalwork, especially on bronze belts. About 400 metal belts are known, most of them coming from documented funerary contexts. A large amount of them exhibits rich geometric and figurative decorations, with complex composition of animals and human as well. The artistic representations were expressed in a typical local style, the result of a local development from a well-established artistic tradition dating back to the Middle Bronze Age. A very similar tendency is observed within the rich corpus of Urartian metalwork, within which metal belts play a remarkable role. However, Urartian metalwork and especially belts showed a different style, with a tendency toward repetition and uniformity. Moreover, only a small number of belts come from well documented archaeological contexts.

The present proposal aims at highlighting the development of animal representations through the 1st millennium BCE, in the interaction of local characteristics and in Urartian art.

## 5 THE SUPPLY OF THE APSAROS FORTRESS (MODERN GONIO, GEORGIA) IN AMPHORA-BORNE COMMODITIES DURING THE ROMAN AND EARLY BYZANTINE PERIOD

**Abstract author(s):** Komar, Paulina (Cardinal Stefan Wyszyński University in Warsaw) - Rogava, Andria (Georgian National Museum)

**Abstract format:** Oral

The aim of this presentation is to offer an overview of transport containers that were discovered by the Gonio–Apsaros Polish–Georgian Expedition at the Roman fort of Apsaros (modern Gonio, Georgia). The analysis of the Roman (1st–3rd c. AD) and Byzantine (6th–7th c. AD) amphora fragments discovered between 2014 and 2021 demonstrate that the most amphora-borne commodities came from the eastern and southern Black Sea region. However Aegean imports appear to be much more popular in the Roman period than during the Byzantine occupation. This should be linked with a preference for a better quality wine and olive oil among the military elite during the 1st–3rd c. AD. Concerning the northern and western Black sea regions, the former seems to have played a minimal role in supplying Apsaros, while the containers from the latter area have not so far been identified. This supply pattern was maintained for the biggest part during the Byzantine period. However we also observe a shift towards regionalization in this period: an increase in the importance of amphora-borne commodities from Pontic region and a significant decrease of imports from outside the Black Sea area.

## 6 BAGRATI CATHEDRAL AND ITS SURROUNDINGS. PRELIMINARY RESULTS OF THE INTERDISCIPLINARY INVESTIGATION OF THE BAGRATI HILL IN KUTAISI, GEORGIA

**Abstract author(s):** Bienkowski, Rafal - Kaliszewska, Agnieszka (Systems Research Institute of the Polish Academy of Sciences) - Badura, Monika (Laboratory of Paleoecology and Archaeobotany, University of Gdańsk) - Lorenzon, Marta (University of Helsinki, Centre of Excellence in Ancient Near Eastern Empires)

**Abstract format:** Oral

The Bagrati Cathedral is a hallmark monument of the town of Kutaisi as well as of the central Caucasus region. With its foundation dated as early as the 9th century, this structure is one of the oldest architectural monuments in Georgia. The architecture of the cathedral has been the subject of multiple studies, which mainly focus on its architecture, not considering the immediate surroundings of the main monument. In the recent field seasons (summer 2019 and 2021), the Polish-Georgian team has focused on understanding and investigating the urban landscape surrounding the cathedral by excavating two trenches on the North-East side. This study aimed at establishing the history of the hill, focusing on the landscape development around the cathedral, and the urban changes this area underwent over time.

Alongside the excavation, the study also included an archaeobotanical analysis of the finds. The preliminary results of this study indicate an intense human activity, especially during the Middle Ages. The archaeobotanical study also aims at describing the role of plants in the daily diet of the inhabitants of the Bagrati hill. This contribution will present the recent findings in combination with previous studies conducted by the Kutaisi Historical Museum. Our final aim is to attempt a reconstruction of the changes from the Early Middle Ages to Modern times that occurred on one of Kutaisi's most prominent historical hills.

---

## 187 THE NETWORK FORMER: TRADE AND EXCHANGE OF GLASS IN ANTIQUITY

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Franjic, Ana (Museum of Ancient Glass, Zadar) - Montanari, Eleonora (Newcastle University)

**Format:** Regular session

By bringing together the archaeological and archaeometric evidence for glass use and trade, this session aims to examine the role of glass in regional and inter-regional social, cultural, and economic networks present in ancient Europe and the Mediterranean (mid–2nd millennium BCE – 7th ct. CE).

Full of colour or nearly devoid of it, opaque or translucent, glass is an artificial material with a unique set of properties regulated by the technological know-how of the craftsmen as well as the aesthetic and functional properties preferred by their societies. Since the beginnings of the industry and throughout antiquity, glass, either as a raw material or as finished objects, was manufactured in primary and secondary production centres and traded further afield, with findings demonstrating the existence of long-distance glass trade since the Late Bronze Age. The resulting cultural interconnections did not only lead to the circulation, appreciation, and different valuations of glass, but also likely acted as a catalyst for technological experimentation and innovation.

The proposed session aims to evaluate the influence of glass on the communal connections at various levels. Was the demand for this prestige material actively forming connections between groups, and establishing new trade cor-



ridors, or was glass supply adapting to the already present nodes of connection? How did the existing connections affect the use of and demand for glass? How were the cross-craft interactions and knowledge transfer organised within different societies and industries, and at different times?

This session will welcome papers exploring the role of glass in wider trade and social networks or in the formation of inter-communal and inter-regional connections through the lens of typology, technology, chaînes opératoires, knowledge transfer, experimental archaeology, and chemical analyses.

## ABSTRACTS

### 1 GLASS EYE-BEADS IN MYCENAEAN GREECE: MANUFACTURE, PROVENANCE AND FUNCTION

**Abstract author(s):** Nikita, Kalliopi (Greek Ministry of Culture - Ephorate of Antiquities of East Attica)

**Abstract format:** Oral

The current paper presents and discusses the occurrence of glass eye-beads in burial contexts of Mycenaean Greece with special emphasis on cemetery sites in the Argolid. In the first place, a definition of this characteristic piece of glass jewellery and an overview of its principle types are given on the basis of its manufacturing techniques. Glass eye-beads are not included amongst the typical jewellery produced by the thriving Mycenaean glass industry, which is also attested to by their rarity and uneven distribution in the Mycenaean World. Taking into consideration that glass eye-beads are characteristic products of alien glass industries their provenance is explored within the external relations network of the Argolid with the Eastern Mediterranean during the Late Bronze Age. Moreover, given that glass eye-beads, as in the case of jewellery in general, principally occur in burial contexts, further examples from contemporary Mycenaean sites outside the Argolid will also be considered to facilitate a more comprehensive discussion. The paper aims to define the function of glass eye-beads in relation to their modes of deposition, age, gender and social status of the dead. Ultimately, the discussion will emphasise on the symbolic attributes of glass eye-beads and the Mycenaean perception of them within the system of Mycenaean religious beliefs and funerary notions.

### 2 EVIDENCE FOR LONG-DISTANCE TRADE ON THE GREAT HUNGARIAN PLAIN: BLUE GLASS BEADS FROM THE TUMULUS CULTURE CEMETERY OF MAKLÁR

**Abstract author(s):** Mengyán, Ákos (Hungarian National Museum) - Sz. Osváth, Zsófia (Department of Archaeology, Doctoral School of History, University of Szeged) - Hrabák, Zita (Hungarian National Museum) - Bajnóczi, Bernadett (Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences, Eötvös Loránd Research Network - ELKH)

**Abstract format:** Oral

In Central Europe, cross-cultural communication and long-distance trade became consolidated between the 15th and 13th century BC, where the Tumulus Culture emerged and controlled trade routes between Jutland and the Aegean city-states. Among others, the focus of the exchange was on metalwork, amber and glass beads. Glass beads reached also the eastern part of the Carpathian Basin, where multi-layered tell settlements were just abandoned, and this area became the eastern border of the Tumulus Culture.

On the northern edge of the Great Hungarian Plain, in the vicinity of Maklár, two cemeteries are known from this period, namely the sites Nagyrét II. and Koszpérium. In 2021, nearly 180 cremation graves have been excavated at Maklár–Nagyrét II, from which 11 contained blue and turquoise beads, altogether 33 pieces. The scanning electron microscopy analysis (SEM-EDS) verified the early presence of artifacts made of glass/glassy material on the northern territory of the Great Hungarian Plain for the first time. As it was already postulated in the case of other similarly dated glass beads from different parts of Europe, the beads could be the commodity of a long-distance exchange network. The poster presents the results of the chemical analysis of the beads and compares them with beads previously analysed from other Bronze Age sites.

### 3 GLASS CONNECTIONS IN LATE IRON AGE EUROPE: FROM RAW MATERIAL FROM THE NEAR EAST TO ORNAMENTS OF THE NEARBY CITY

**Abstract author(s):** Rolland, Joëlle (UMR 8215 Trajectoires; UMR 7065 Iramat)

**Abstract format:** Oral

This communication aim is to present the different contributions of typological, technological, and analytical approaches to the glass of the late Iron Age Europe, in order to consider this material in the reconstruction of the Iron Age circulation networks. Thanks to the development of analytical methods, the study of La Tène glass has recently reached a new dimension. More than 1400 La Tène glass objects discovered in France and the Czech Republic were recently analyzed using the La- ICP-MS method (laser ablation-inductively coupled plasma-mass spectrometry). Several types of Near Eastern glass used by glassmakers in La Tène Europe were characterized. Based on the typological and analytical data, a diachronic evolution of the compositions used by La Tène glassmakers between

the fifth and the end of the first century BC could be established. These analyzes make it possible to reconstruct the evolution of imports from the Near East during the late Iron Age. This study also sheds new light on the complexity of the commercial and diplomatic relations that the elites of Iron Age Europe developed with the Mediterranean world. Glass, in fact, is one of the only materials linking La Tène societies to the Near East. With this analytical project, it was also possible to approach the distribution of the different groups of glass compositions within the different spaces of Europe of La Tène societies. Once transformed into beads and bracelets, the glass travels through the La Tène networks of people and goods. Through the study of typologies, the inventory of objects, and the technological study of glass beads and bracelets, the study of La Tène glass also allows us to approach the networks of luxury goods as well as the exchange of knowledge between the different secondary production areas.

#### 4 MOSAIC GLASS OBJECTS FROM THE ROMAN LEGIONARY CAMP BURNUM

**Abstract author(s):** Jadric-Kucan, Ivana (University of Zadar) - Sokcevic Purusic, Anamaria (Archaeological collection Burnum National Park "Krka")

**Abstract format:** Oral

Among the first glass objects to appear in the Roman legionary camp Burnum are small luxurious bowls, dishes and bead with head of Medusa made by using the marbling technique dated from the second half of the 1st century BC or the beginning of the 1st century AD. Mosaic glass objects were manufactured using a laborious and time-consuming technique. They reached Burnum via important trade and transit centres Scardona and Iader. A developed road system connected Burnum with these centres, which was necessary for the supply of the military camp with the food provisions and other goods. As a subsidiary civil settlement was probably formed next to the camp for soldiers' families, craftsmen and traders, their importance was even greater. In the end we can say that glass objects were spread also thanks to Roman soldiers, who in that way supported the Romanization process, which is illustrated well by examples from Burnum.

#### 5 ARCHAOMETRIC INVESTIGATION ON THE OPAQUE RED GLASS SECTILIA FROM THE VILLA OF LUCIUS VERUS (2ND CENTURY AD) IN ROME

**Abstract author(s):** Bandiera, Mario (VICARTE, Research unit Vidro e Ceramica para as Artes, FCT/UNL; Dep. de Conservação e Restauro, FCT/UNL) - Verità, Marco (LAMA laboratory, IUAV University) - Vilarigues, Marcia (VICARTE, Research Unit Vidro e Ceramica para as Artes, FCT/UNL; Dep. de Conservação e Restauro, FCT/UNL) - Saguì, Lucia (Sapienza Università di Roma)

**Abstract format:** Oral

This work aims to investigate by a multi-analytical approach the Roman opaque red glass sectilia dated to the 2nd century A.D., to shed light on the Roman glassmaking production of different red shades, from orange to red brown. Due to the lack of glassmaking written source dated to this period the production technology of opaque red glass is still not fully understood. Moreover, there are not clear information where it was manufactured, giving a partial understanding of its production.

The opus sectile decoration from the imperial villa of Lucius Verus (2nd century AD), represents the most important and one of the oldest examples in which glass sectilia began to be employed. The abundance of opaque red glass sectilia, and the presence of different red hues, make this assemblage a rare opportunity to investigate some aspects of the colouring technique during the 2nd century AD.

A set of 40 opaque red glass sectilia from this decoration was collected to be investigated. Each red hue was characterized through: colourimetric measurements, chemical analyses (LA-ICP-MS) to identify the raw materials and the probable provenience, and mineralogical study (Raman Spectroscopy, SEM-EDS and X-ray diffraction) to investigate the main features of the colouring particles of each red hue.

The results highlighted that the five red hues, individuated by colourimetric measurements, were manufactured by well-mastered recipes which include the careful selection of specific raw materials and the application of well-engineered heat treatments. Moreover, compositional differences concerning the silica source and the fluxing agent, distinguish some of the opaque red glass sectilia from the common Roman natron glass. This rises some question about the organization to produce coloured glass during the 2nd century AD, and hypothesizes the existence of specialized production centres devoted to coloured glass, which supplied Rome with high quality coloured glass.

#### 6 THE FALL OF ANTIMONY: SOURCING THE END OF SB-DECOLOURED ROMAN GLASS

**Abstract author(s):** Degryse, Patrick (Earth and Environmental Sciences, KU Leuven; Fac. Archaeology, Leiden University) - Van Ham - Meert, Alicia - Gonzalez, Sofia (Earth and Environmental Sciences, KU Leuven)

**Abstract format:** Oral

Antimony (Sb) is considered a rare metal in the archaeological record, and its ores are not very ubiquitous. Nevertheless, Sb minerals were utilised over several millennia as the prime material to opacify or decolour glass and glazes,

as well as in (natural) copper alloys. In this way, Sb spread throughout the known world from the late Bronze Age onward. In glassmaking, stibnite was the only available mineral raw material that could achieve in a controlled manner the desired opacified nature of the earliest glass, or the necessary effect as a decolourizer or opacifier in later periods. Sb and Pb isotope analysis has allowed Roman colourless glass to be compared to the ore sources possibly known and extracted in the ancient world. Results demonstrated that, although earlier Roman glass was more varied in isotope ratios, variations are not large. Relatively few sources of antimony have the suitable signature matching glass production in antiquity, and are situated in Spain, Romania, Germany and the Caucasus. Conversely, later Sb-decoloured Roman glass is uniform in Sb-Pb isotope ratio, and matches only Dacian stibnite. The isotopic data presented will be used to discuss the inflow of Sb to the glass industry through time, and the transitions in technology to other sources to decolourize or opacify vitreous materials, possibly due to the loss of control over suitable mineral resources.

## 7 TRANSFORMATION IN SICILIAN GLASS ECONOMY BETWEEN THE MID-4TH AND 7TH CENTURIES: MAZARA DEL VALLO AND VILLA DEL CASALE

**Abstract author(s):** Vagni, Elisa - Colangeli, Francesca (Università degli studi di Roma "Tor Vergata", SPFS Department) - Schibille, Nadine (IRAMAT-Centre Ernest Babelon - UMR 5060, CNRS-Université d'Orléans)

**Abstract format:** Oral

Recent research on Sicily has revealed the importance of the island's role within Mediterranean during the Late Roman and the Early medieval periods. In particular, ceramics have often been used for the analysis of manufacturing and commercial aspects. In this proposal, we decide to look at glass as another indicator to investigate questions of production and circulation of goods that affected Sicily during this time.

In context of two ERC research programmes (Sicily in Transition and Glass Routes), we conducted the first systematic study of Sicilian glass assemblages in terms of their chrono-typological and compositional characteristics. The analytic data of the central-eastern rural site of Villa del Casale (Piazza Armerina -EN) and the western city of Mazara del Vallo (TP) will be illustrated, in order to trace a geographical evolution of glass consumption and supply within the island from the mid-4th to 7th century. These sites were selected to point out the differences and similarities between different parts of the island over time.

During this period, the glass-making process is divided into primary and secondary production centres and Egypt and the Levantine coast represent the main export areas for raw glass. As for Sicily, our data illustrate a predominance in glass supply from Egypt up to at least the 6th century. However, at the end of 7th century the income of Levantine glass became prevalent. Similar trends begin to emerge in other areas of the Mediterranean such as the Iberian Peninsula. Moreover, studies on post-Roman ceramic have proved close links between Sicily and North Africa, as well as with the Aegean area. These areas could also have acted as redistribution points for the glass trade.

## 8 GLASS FOR BARBARIANS & GLASS OF BARBARIANS

**Abstract author(s):** Cholakovska, Anastasia (National Institute of Archaeology with Museum, Bulgarian Academy of Sciences) - Petrauskas, Oleg (Institute of Archaeology, The National Academy of Sciences of Ukraine) - Karlsen, Hans-Jörg (Universität Rostock, Heinrich Schliemann-Institut für Altertumswissenschaften) - Hegewisch, Morten (Institut für Prähistorische Archäologie, Freie Universität Berlin) - Kronz, Andreas (Geowissenschaftliches Zentrum, Georg-August-Universität Göttingen)

**Abstract format:** Oral

The site of Komariv at the Dniester River in Western Ukraine was first discovered in 1950, by research fellows of the Institute of Ukrainian Studies (Lviv). Fieldwork campaigns in 1950s, 1960s, and in 1974 at Komariv revealed substantial evidence of local glassworking and vessel production, which defined the site as the only non-itinerant glass craft centre from the late 3rd – early 5th c. AD, attested so far beyond the borders of the Late Roman Empire. Following the first publications in 1960s, Komariv becomes well-known to the specialists of archaeology of the east European Barbaricum. The recent decade saw a revived interest towards the site and its glass, as indicated by some analytical studies performed on finds from the early fieldworks, as well as by an excavation programme for resuming the fieldwork activities. Unfortunately, the glass finds from the 1950 – 1970s excavations mostly lack any archaeological context information, and therefore important questions of chronology and technology of glass working at Komariv cannot be reliably addressed based on their study only.

The present talk aims to outline the latest results of a research project carried out since 2012, which combines geophysical prospection, excavations of new areas of the site, typo-morphological study of the glass finds, and preliminary chemical analyses of selected samples. The data obtained so far confirm the uniqueness of Komariv and contribute to the understanding of the glass vessel repertoire, manufacturing techniques, compositional affiliation of the glass, and the site chronology. Furthermore, crucial questions of the socio-cultural and ethnic identity of the Komariv glassworkers, their routes of raw material supply, glass recycling, and spread of finished production within the context of Chernyakhiv culture and in connection to the broader networks of glass distribution of Late Antiquity will be discussed.

## “WHAT LIGHT THROUGH YONDER WINDOW BREAKS?” FIRST ARCHAEOMETRIC RESULTS FROM THE WINDOWGLASSMED PROJECT

**Abstract author(s):** Bertini, Camilla (Newcastle University; Harvard University)

**Abstract format:** Oral

Chemical and isotopic analysis have often been used as a proxy to answer questions connected with glass production, trade, and provenance during the 1st Millennium AD, but chemical data available for the Early Medieval period are still scarce.

Between the 7th and 10th centuries, glass technologies witness a great transitional period: not only plant ashes replace natron as the “new” source of alkali, but recycling and mixing of different compositions of glass (interpreted by many scholars as a sign of decline in glass circulation from the primary production areas) seems to be the majority of glass circulating at the time.

Moreover, in the past thirty years more and more archaeometric studies focus on a much broader and multidisciplinary approach to ancient glass production: now more than ever we need to reevaluate our “data-driven” vision to move towards a more nuanced and multidisciplinary approach if we want to better understand the Early Medieval glass production in all its complexity.

The WINDOWGLASSMED project (MSCA IF - GF, Newcastle University - UK and Harvard University - USA) aims to open a “new window” on the production, circulation, and recycling processing of glass during the Early Medieval period by using a multidisciplinary approach.

In this session, the first archaeometric results (LA-ICP-MS) will be presented including samples (n=117) from several archaeological contexts (Aquileia, Brescia, Grado, Monselice, Monte Barro, Padova, San Vincenzo al Volturno, and Vicenza) from Central and Northern Italy dated from the 7th to the 10th century CE.

Chemical results will also be discussed within the Northern Italian glass production as well as the broader Mediterranean and Levantine context.

## 10 SAFETY IN NUMBERS: GLASS, COMPOSITIONAL ANALYSIS AND THE MATHEMATICAL NETWORK

**Abstract author(s):** Govantes Edwards, David (University of Córdoba)

**Abstract format:** Oral

Recent decades have witnessed a spectacular increase in our understanding of glass production, distribution and consumption in Antiquity. This has been largely brought about by compositional analysis, which has presented us with a neat way to display our data: glass is organised in well-known compositional groups, the chronology and provenance of which are increasingly well defined. The problem with this is that compositional affinities are elegant, straight and seemingly final, and therefore comforting, when compared with the links that tie glass samples to their archaeological networks, which are ugly, messy and open-ended. Microsoft Excel is rapidly becoming the new context. Apart from other implications, this is leading to a form of scientific reversion of terms when it comes to the analysis of glass trade in Late Antiquity. Glass is being analysed and links created between samples that are sometimes found thousands of kilometres apart, and these links, in turn, used as arguments to establish routes and patterns. The comfort of numbers, however, is making us neglect one fundamental aspect, which is the real role of glass trade in the whole phenomenon of commerce in Late Antiquity. Likely a very minor good, buried under the tons of pottery and archaeologically untraceable goods, such as tin, or wheat, I argue that glass trade can only be understood in its broader commercial context (many more papers concerned with trade mention manganese oxide than, say, the annona supply system), and that compositional analysis should come at the end of the research process, not its beginning: a useful tool, not an oracle. In this presentation, I shall use the example posed by the harbour of Vigo (Spain), in the 6th-7th centuries, as an illustration of the impossibility of understanding glass trade through compositional analysis alone.

## A. CHEMICAL COMPOSITIONS OF SELECTED BRONZE AND IRON AGE GLASS AND GLASSY ARTEFACTS FROM SOUTHEAST HUNGARY

**Abstract author(s):** Sztankovánszkiné Osváth, Zsófia (Department of Archaeology, Doctoral School of History, University of Szeged) - Bajnóczi, Bernadett (Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences, Eötvös Loránd Research Network - ELKH)

**Abstract format:** Poster

As part of a large-scale archaeological and archaeometric investigation focusing on ancient glassy materials excavated in Southeast Hungary, forty Bronze Age, Middle Iron Age (Scythian Age) and Late Iron Age (La Tène period) glasses and glassy items (e.g., simple or knobby eye beads, fragments of glass bracelets, etc.) deriving from seven sites (in Csongrád-Csanád and Békés counties) have been analysed by handheld X-ray fluorescence spectrometry (hXRF) and scanning electron microscopy (SEM-EDS).

The chemical compositions of the glasses and glassy items indicate that the majority of them were made of soda (mineral natron) glass. However, slight chemical differences were noticed, such as 1 wt% or higher potassium oxide levels approaching the K<sub>2</sub>O concentration of plant ash glass in the beads dated to the Bronze Age and in some glass bracelet fragments. A special glass type rich in potash and iron oxide (16 wt% K<sub>2</sub>O, 4 wt% MgO, 11 wt% Fe<sub>2</sub>O<sub>3</sub>) with high amount of bone ash as well as a glassy faience made of plant ash glass were also identified in the Scythian Age find assemblages. The main colorants are copper or copper together with cobalt, sometimes accompanied by 1 wt% or higher amount of iron oxide, in the blue glass; copper with or without calcium antimonate in the opaque turquoise glass; lead antimonate in the yellow glass; and calcium antimonate in the white glass. These results are partly comparable with the Iron Age finds earlier investigated, however, the larger number of the analysed samples revealed the higher diversity of glassy materials, and enables us to define the changes in the chemical composition of glass in the course of time, within a find complex, especially in the Békésszentandrás cemetery.

## **B. MOVEMENT OF RAW GLASS IN THE ROMAN EMPIRE: HIMT GLASS AT FENÉKPUSZTA, PANNONIA (HUNGARY)**

**Abstract author(s):** Dévai, Kata (MTA - ELTE Research Group for Interdisciplinary Archaeology) - Fórizs, István (Research Centre for Astronomy and Earth Sciences, Institute for Geological and Geochemical Research) - Heinrich-Tamáska, Orsolya (Leibniz-Institute for History and Culture of Eastern Europe - GWZO) - Prien, Roland (Heidelberg Centre for Cultural Heritage, Ruprecht-Karls-Universität Heidelberg)

**Abstract format:** Poster

Invention of the high production rate tank furnace changed the "chaîne opératoire" of glass production in Roman Empire. There was a shift from the system where glass melting from raw materials and forming of the final objects happened in the same glass workshop to the system where glass was melted mainly in centres, in so called primary glass workshops, and raw glass was distributed by trading to so called secondary workshops where the finished product was made. It is hypothesised that glass making centres were situated in Levantine region including Egypt. Because raw glass was made from the same type of raw materials (sand and natron) therefore identification of glasses melted in the different primary workshops are based mostly on the minor and trace components. Several types of glasses have been established on the basis of chemical composition: e.g. Levantine I, Levantine II, Egypt 1, Egypt 2, HIMT. Among these the most characteristic one is the HIMT which is believed to be made in Egypt in the Late Roman and Byzantine Period. When HIMT glass is not coloured it has a characteristic yellowish olive-green colour. Mapping the distribution of HIMT glass finds can help us to understand trading routes within of Roman Empire. According to the literature data HIMT glass has been found at several sites from Great Britain through the Mediterranean to the Caucasus. We can put one more site on this map, Fenékpusztá in Hungary (Pannonia). Yellowish olive-green hue suddenly appears in Pannonia in the second half of 4th century and becomes very common. Its appearance in Pannonia can probably be explained by fact that the previous trade routes have changed, raw material of glass have been obtained from other workshops.

---

## **192 MULTI-PROXY APPROACHES TO KINSHIP IN THE GRECO-ROMAN WORLD**

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Voutsaki, Sofia (University of Groningen) - Nikita, Efthymia (The Cyprus Institute - STARC) - Neveff, Lisa (The University of Michigan)

**Format:** Regular session

The study of kinship in past societies is an imperative, but difficult task. On the one hand, kinship is a key aspect of human life, as it defines people's sense of identities, their social ties and their access to rights and resources. On the other, conceptualizing and defining kinship is challenging because of its complex and fluid character and the variable forms it takes in different societies. Further problems arise when trying to assess the significance of kinship in the archaeological record: Which data should we use, which biocultural aspects should we include, and how should we analyze them? A broad range of methods - such as human osteoarchaeology, ancient DNA or biodistance analysis, contextual analysis of mortuary practices and household archaeology- has been employed. More questions arise if we study historical societies: Which other sources should we try to include? How should we use historical, iconographic, epigraphic or papyrological evidence? What is the potential and the limitations of these different datasets, and how should we integrate them?

In this session, we would like to apply these questions to the Greco-Roman world which offers a wealth of archaeological and textual evidence. The ancient world is characterized by a certain degree of political or cultural unity across current national and continental boundaries, but also by marked diversity. In addition, recent attention to silenced groups - such as women, children, the elderly or enslaved people – shifts the traditional focus on male citizens or the elites, and thereby enable a more holistic discussion of kinship.

We are looking for contributions which either emphasize recent methodological and/or theoretical advances in the study of past kinship, or address the problems arising when integrating archaeological and historical datasets.

**1 THE STUDY OF KINSHIP IN THE ANCIENT GREEK WORLD: SOME REFLECTIONS**

**Abstract author(s):** Voutsaki, Sofia (Groningen Institute of Archaeology; Center for Hellenic Studies, Harvard University)

**Abstract format:** Oral

In this session we are asked to reflect about kinship in the ancient Greek world – how to define and conceptualize this complex concept, how to combine different methods, how to integrate different types of sources. This paper offers some reflections to start off the discussion, by looking at the way scholarship has evolved over the last decades in the many disciplines - ancient history, anthropology and archaeology - which feed the debate about kinship. The aim is to present (briefly) the shifting theoretical and methodological approaches, to raise the main questions arising from the debate and to see how these discussions still impact our own work today. The treatment will inevitably be impressionistic, based on my own interests and readings, inspired by Sahlins' (2013) seminal book on kinship, Humphreys' (2018) magisterial synthesis on kinship in ancient Athens, the burgeoning literature on kinship in archaeology (cf. Ensor 2013, Huebner and Nathan 2017), and the discussions in recent bioarchaeological studies (i.a. Johnson and Paul 2016). Nevertheless, an effort will be made to include the different angles adopted by the speakers in the session, and to exploit the wealth of data and approaches which characterizes the study of the ancient Greek world.

References

- Ensor, B.E. 2013. The archaeology of kinship: Advancing interpretation and contributions to theory. University of Arizona Press.
- Huebner, S.R. and G. Nathan (eds.) 2017. Mediterranean Families in Antiquity. Households, Extended Families, and Domestic Space. Blackwells.
- Humphreys, S.C. 2018. Kinship in ancient Athens. An anthropological analysis. Oxford University Press.
- Johnson, K.M. and K.S. Paul 2016. Bioarchaeology and kinship: Integrating theory, social relatedness, and biology in ancient family research. *Journal of Archaeological Research* 24: 1, 75-123.
- Sahlins, M. 2013. What kinship is - and is not. The University of Chicago Press.

**2 KINSHIP STUDIES THROUGH THE ARCHAEOLOGICAL RECORD: EXPLORING MULTIPLE WAYS OF APPROACHING KIN TIES IN PREHISTORIC SOCIETIES**

**Abstract author(s):** Kyritsi, Maria (National and Kapodistrian University of Athens)

**Abstract format:** Oral

The affiliation created through kinship forms one of the strongest and most fundamental links in human societies. Furthermore, it constitutes a kind of human relationship that can be identified in almost every society, regardless of the time or place. By developing kinship ties, people identify themselves within the wider community, while simultaneously their choices and actions are influenced, even if subconsciously. However, despite the large impact that kinship can have, it remains difficult to recognize in the archaeological record. An extra obstacle is added in the case of the prehistoric era, due to the absence or the illegibility of written documents. As a consequence, studying kinship ties during prehistoric times requires the overall assessment and examination of as many aspects of life as possible. Within this framework, the paper discusses how kinship can be approached, by combining the available data from the fields of domestic organization, architectural modifications, artefact possessions, access to resources, burial customs and the ethnographic record. The contribution focuses upon the Minoan period of the island of Crete and uses specific case-studies in order to establish the methodological keys to unlocking ancient kinship – and draws attention also to the limitations inherent in such study.

**3 HOUSE AND SETTLEMENT DISPOSITION AS A REFLECTION OF KINSHIP RELATIONSHIPS. THE PREPALATIAL HAMLET OF MYRTOS FOURNOU KORIFI AS A CASE-STUDY**

**Abstract author(s):** Vendramin, Daniele (Université Catholique de Louvain)

**Abstract format:** Oral

Most archaeologists perceive kinship as archaeologically invisible and abstain from analysing kinship ties aside from making very general assumptions. However, kinship studies were largely rehabilitated in recent years and previous failures are now attributed to flawed approaches rather than to the actual invisibility of kinship ties in the archaeological record. Besides physical anthropological evidence, the architectural remains of houses and settlements constitute perhaps the most important source for kinship studies in archaeology as ethnological comparisons have shown to what extent house dispositions tend to reflect social relationships. Small, kinship-oriented realities such as villages and hamlets imply that people naturally tend to stay together with their relatives for reasons of mutual assistance and protection and, at the same time, put some distance between them and non-related neighbours. This paper aims at providing an up-to-date discussion on available approaches to recognise kinship ties within a settlement through the analysis of house disposition, working and domestic spaces, settlement layout, and all additional evidence sug-

gesting aggregations or divisions within a settlement. It uses as a case-study the site of Early Minoan IIB (2450-2200 BC) Myrtos Fournou Korifi in South-Eastern Crete and considers domestic and public spaces in the settlement, stressing previously overlooked features of household and supra-household aspects of kinship and community life.

#### 4 MORTUARY STRATEGIES & KINSHIP DYNAMICS IN EARLY GREECE

**Abstract author(s): Alexandridou, Alexandra (University of Ioannina)**

**Abstract format: Oral**

The notion of kinship is of immense importance for the study of early societies, due to its major role in all aspects of life. In Greek antiquity, descent and 'family' could have been variously invented and instrumented by individuals or households for satisfying their power goals and facilitating social differentiation. Kinship in early Greece has been scholarly treated both on a textual and archaeological basis, with different aspects of funerary and domestic evidence taken into account.

Since burials can act as spatial and material dimensions of kinship notions, the present paper would like to discuss kinship on Attica and the Aegean islands during the Early Iron Age based mainly on the mortuary evidence, with the bioarchaeological data considered, where available. The main question that will be tackled is whether indeed descent lied behind early Greek burial groupings and whether it can be archaeologically traced. At the same time, any strategies adopted by the possible kin groups for the funerary representation of their individual members and their connotations will be discussed.

#### 5 ETHNIC ROOTS, FEMALE DESCENT, FAMILY STRATEGIES: VOLTERRA, AN ETRUSCAN COMMUNITY IN THE ROMAN WORLD (CENTURIES 3RD BC-5TH AD)

**Abstract author(s): Limina, Valentina (Université Catholique de Louvain)**

**Abstract format: Oral**

The paper aims to reassess the role of local elites in the broader debate about Integration into the Roman world. One of the crucial issues about kinship in the past is defining the structures generated by genealogical relationships. The words "clan, genos, gens, familia" convey different meanings, excluding or including specific ties between group members. When Rome integrated populations, many possible social structures coexisted between the subjugated groups. For the Etruscans, family identity, female descent, and ethnic roots had a pivotal cultural role. Thus, the Etruscan integration into the Roman world reveals new insights when analyzed through a flexible approach to kinship and integrating archaeological materials, historical sources, epigraphy, toponymy, and prosopography. As the case study of Volterra, one of the oldest Etruscan cities, proves, it is not possible to deeply understand the city integration process into the Roman world without analyzing its local elites. Thanks to extended networks of kinship, friendship, and clientship, the local elites progressively structured and modified their power bases to benefit private interests. Epigraphy proved that a solid local power base was fundamental to support policies and patrimony. Marriages were crucial to strengthen alliances, and the phenomena of bordering estates owned by relatives are attested by toponymy and archaeology. As literary sources confirm, the contemporary adoption of opposite political positions within branches of the same family ensured its survival, whatever the results of political struggles would have been. The period 3rd BC-5th AD is crucial to understand the development of long-term family strategies from the beginning of the integration process until the end of the Western Roman Empire. Thus, reconstructing strategies of power some key groups, the paper provides a new understanding of a community in transition to the Roman world and stresses the pivotal role of women in conducting strategies supporting their families.

#### 6 BIOARCHAEOLOGICAL APPROACHES TO KINSHIP PATTERN ANALYSIS IN THE GRECO-ROMAN WORLD

**Abstract author(s): Nikita, Effhimia (The Cyprus Institute)**

**Abstract format: Oral**

This paper will review existing studies on kinship pattern analysis in the Greco-Roman world drawing examples from published studies, including the speaker's recent involvement in Lebanese and Greek Roman era projects. Emphasis will be placed on methodological approaches that may be used with metric and nonmetric skeletal phenotypic data, which have traditionally been used in biodistance studies as a proxy for the underlying genotype. Such approaches have been employed to explore kinship in different contexts but they are largely still lacking in Greco-Roman studies. The complementarity of these approaches will be discussed as well as the importance of their integration with other lines of evidence, such as funerary and osteobiographic data. In this direction, the recent call to cease focusing exclusively on genetic/biological kinship but instead explore biosocial markers of 'shared lived experiences' (e.g. pathology, stress, diet, occupation), which may be even more representative of past individuals sharing a household, will be discussed to assess its potential and limitations.

## KINSHIP AND SOCIAL CHANGE AT THE ONSET OF THE MYCENEAAN ERA; THE CASE OF AYIOS VASILEIOS

**Abstract author(s):** Tritsaroli, Paraskevi (University of Groningen, Institute of Archaeology) - Moutafi, Ioanna (The Malcolm H. Wiener Laboratory for Archaeological Science Postdoctoral Fellow, American School of Classical Studies at Athens) - Nikita, Efthymia (Science and Technology in Archaeology and Culture Research Centre, The Cyprus Institute) - Voutsaki, Sofia (University of Groningen, Institute of Archaeology)

**Abstract format:** Oral

At the onset of the Mycenaean (or Late Helladic, LH) era, the relatively egalitarian and introvert Middle Helladic (MH) village societies of the southern Greek mainland gave way to expansionist Mycenaean polities. In the mortuary sphere, these changes were expressed with the introduction of new mortuary practices, with multiple burials in elaborate tombs and formal cemeteries replacing single inhumations in simple intramural graves. These new practices, which become the norm in the Mycenaean period, have been interpreted as bringing about new divisions between age, gender and status groups and the emergence of extended kin groups.

The aim of this paper is to investigate the extent to which kinship relationships, anchored in the traditional MH households, were reconfigured during the transitional Early Mycenaean era, and were given material expression by means of new, often experimental, mortuary choices. Our analysis focuses on the Early Mycenaean (ca. 1700-1500 BC) North Cemetery of Ayios Vasileios in Laconia). The cemetery displays the full range of traditional and new practices, i.e. both single burials as well as multiple interments in larger tombs. In this paper, we will examine the biological affinity among individuals buried together in the same tomb, or cluster of tombs, by using dental and cranial phenotypic variation. The results will be integrated with the contextual evidence of funerary practices and specific osteobiographies in order to explore intra-community distinctions based on kinship, but also between age and gender groups. We will also discuss methodological challenges for kinship analysis in prehistoric Aegean material (e.g. sample size, skeletal preservation), as well as the importance of interdisciplinarity in the analysis of prehistoric funerary assemblages.

## BLOOD WILL TELL. FAMILY BURIALS IN ROMAN SAGALASSOS (FIRST-FIFTH CENTURY CE), SOUTHWEST TURKEY

**Abstract author(s):** Beaujean, Bas (Sagalassos Archaeological Research Project; KU Leuven) - Cleymans, Sam (Sagalassos Archaeological Research Project; KU Leuven; Gallo-Romeins Museum Tongeren)

**Abstract format:** Oral

A dead person cannot bury him or herself, but is interred by kin, friends, or other members of society. In the Roman world, there is a lot of evidence for family burials, but also for burials by associations or collegia, and professional undertakers or *libitinarii*. For Roman Imperial to Late Roman Sagalassos (Pisidia, Southwest Turkey; 1st-5th century CE), there is little epigraphic evidence to reconstruct these group-related aspects of funerary and commemorative practices. This paper will therefore turn to the archaeological context – including grave goods and grave architecture – as well as to aDNA-analyses, and the physical anthropological study of the skeletal material, to study the specificities of local group-related and/or kinship practices revolving around burials. Furthermore, it will be examined how this developed throughout the Roman Imperial and Late Roman period. By themselves, none of these datasets are conclusive, but through their synergy it can be demonstrated that most funerary practices at Sagalassos were organised by the family. The same evidence also indicates that the ways of dealing with the death of family members changed throughout these centuries.

## SAFER-SPACES POLICIES IN ARCHAEOLOGICAL PRACTICE [EAA EXB]

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Barreiro, David (Institute of Heritage Sciences, Spanish National Research Council) - Pastor-Pérez, Ana (Institute of Archaeology, University of Barcelona) - Simões, Sara (UNIARQ - Centre for Archaeology, University of Lisbon)

**Format:** Workshop

The EAA 2020 Statement on Archaeology and Gender was approved in 2021. It constitutes an important step on the path towards equality and, therefore, towards a fairer, freer and safer archaeological practice for everyone. It is the result of years of work carried out by different people, mostly women, inside and outside the EAA. Those professionals have focused on identifying and preventing the risk of harassment in archaeology and, ultimately, on its future demise.

Moreover, we think that those initiatives are the minimum to adopt a general EAA strategy against harassment, and that it is necessary to expand the field of action including functional diversity, physical appearance, ethnicity or origin, age or beliefs. In our view to transfer the Safe Space policy that is already adopted at EAA meetings to the exercise of the discipline is very relevant, especially in all the archaeological ecosystem: laboratories, classrooms,



offices and archaeological sites-excavations. Safety should be also a priority since risk prevention is often insufficient or even non-existent and its lack constitutes a form of abuse towards the worker.

This session is intended to be a forum for debate how to design and implement Safer Space Policies in the archaeological field and practice. How and how far are we moving forward on preventing risk, bullying, harassment and discrimination together? What are we doing to move towards and safe, egalitarian, inclusive and diverse discipline? How to combine experiences and strategies in order to create supportive frameworks and networks for students and professionals?

Should they be comprehensive policies or should they be designed by experts and applied according to specific criteria? Should they be applied following a principle of co-responsibility or should there be roles of greater responsibility within the workspaces? What can we do from EAA to the broader field of Archaeology?

195

## **SILK: A CATALYST FOR INTERCONNECTION IN THE SIXTH TO TENTH CENTURIES AD/CE**

**Theme: 4. Polis, Empire, League and Beyond – Living in Interconnected Societies**

**Organisers: Makin, Alexandra - Harris, Susanna (University of Glasgow) - Březinová, Helena (Institute of Archaeology of the Czech Academy of Sciences, Prague) - Klein, Astrid (Leipzig University)**

**Format: Regular session**

Throughout history and across cultures silk has been considered a luxury fibre. It has connected people; been the focus of trade, exchange and espionage. It helped power the building and downfall of empires, and religious expression. It drove the development of technology and ideas, and the movement of people. Silk is a story that connects East and West and spans millennia.

Between the sixth and tenth centuries AD/CE Western Europe considered silk an exotic and expensive material that incorporated many meanings in secular to religious circles. Silk textiles were woven in China from prehistory, with the development of techniques leading to a variety of textile types including, gauze, samite and lampas. As these textiles were traded or exchanged outwards, other cultures developed their own uses and meanings for silk and, eventually, their ability to weave and embroider with it. Throughout, woven and embroidered patterns and motifs evolved, taking on new meanings, forging links between China, the Middle East and silk's newer users.

This session welcomes researchers investigating silk and its role as a catalyst for interconnection in the sixth to tenth centuries AD/CE. Papers may include, but are not restricted to:

- Development and knowledge of silk textiles and embroideries, e.g., weaves, dyes and colours
- Mobility of craft workers and silk across cultures and geographic areas
- Analysis of silk textiles, embroideries and threads; documentary and literary sources
- Role and meaning of silk across cultures and societies, e.g., sedentary and nomadic, secular, religious
- Silk in relation to other material and visual culture
- Woven and embroidered motifs; processes of adaptation and imitation
- Development of silk production in Central Asia, e.g. Tarim Basin
- Silk in the Carpathian basin
- Silk production in Europe

## **ABSTRACTS**

1

### **WHO WAS THE HU? CHINESE SILKS WITH INTERWOVEN "HU WANG" ('BARBARIAN KING') INSCRIPTION AND THEIR CULTURAL CONTEXT**

**Abstract author(s): Zuchowska, Marta (Faculty of Archaeology, University of Warsaw)**

**Abstract format: Oral**

During the period of the Southern and Northern dynasties (420-589) the north and west of China was ruled by the non-Chinese dynasties. This situation created an unprecedented opportunity for the cross-cultural contacts and a lot of western influences were adopted in the Chinese art and craft. In the Chinese weaving art of this period, we can observe as well the new trends, both in technology and in design. Especially interesting evidence of these transformations are two pieces of silk found in two graves in Astana (the area of Turpan, Xinjiang, PRCh), dated respectively to the mid and late VI century AD. Both fabrics are decorated with medallions representing a man leading camel and inscription "hu wang" ('barbarian king'). While the weaving technique is a traditional Chinese jin (warp-faced compound tabby), the decoration is visibly inspired by the cultural contacts with the west. Both, the iconographic representation and the character of inscription are uncommon in the Chinese art of this period. The present paper discusses the cultural context of these two pieces of silk, raising the questions of the meaning and interpretation of their decoration as well as the purpose of such production.

## 2 “KUCHA SILKS” REEXPLORED: HISTORICAL AND BUDDHOLOGICAL ASPECTS OF THE SILK PRODUCTION IN THE TARIM BASIN IN THE 5TH-6TH CENTURIES

**Abstract author(s):** Hiyama, Satomi (Kyoto University; Saxon Academy of Sciences and Humanities in Leipzig)

**Abstract format:** Oral

“Kucha Silks” is a term mentioned for several times in the Turfan manuscripts (dated to the 5th century) as a valuable textile circulated as one of the currencies in the Tarim Basin. While various interpretations of this textile type have been raised in previous studies, in her article in 2018, the author raised the possibility that the textiles represented in the wall paintings of the Buddhist rock monasteries in Kucha, Bamiyan, and the Gansu Province dated from the 5th to the middle of the 6th centuries, as well as excavated artifacts from Northern Xinjiang, should be considered to be the visual and material witnesses of the “Kucha Silks”.

Based on the findings of the present author’s provisional study, this paper reexplores the 1) cultural background behind the donation of the local-made prestige silk textiles from the lay community to the Buddhist monasteries, 2) the historical situation of the circulation of the Kucha Silks as well as its overlap with the Buddhist network, and 3) a possible reflection of the ritual practice of dressing up Buddhist statues with valuable textiles, as hinted by Buddhist art of the Northern Dynasties in Gansu Province and further East.

## 3 BIRD AND CRESCENT INSERTED INTO ROUNDELS: REFERENCE TO TAQUÉTÉ AND EARLY SAMITE SILKS IN KUCHA ON THE NORTHERN SILK ROAD

**Abstract author(s):** Klein, Astrid (Leipzig University)

**Abstract format:** Oral

In Kucha on the Northern Silk Road, many paintings, especially the donor images, but in two cases also the decoration of the cave, show a pattern of pearl roundels. They obviously refer to patterned textiles, possibly silk. Among the mostly unfilled beaded medallions, which cannot easily be assigned to a concrete model of a textile sample, there are only two examples showing a bird inserted into a row or grid of pearl roundels with connecting crescent roundels (Kizil 60, Toghraकेken 11). In addition, three donors wear a caftan with crescent roundels filling the trim or the entire main fabric (Kizil 8). Which textiles could it be? The only comparable and unusual find from Kucha is a samite silk showing birds in a diamond net with connecting crescent roundels (MG 26612). This find is classified as a later development from the mid-8th century. Other examples of the bird roundel, even closer to painting, are also samite silks. They are dated to the early 7th century, the beginning of this new weaving technique, and are productions from Central Asia (including Astana and Dulan). In contrast, the motif of single crescent roundels can best be compared with silks from Astana woven as taqueté.

The painted representation of bird and crescent roundels in Kucha indicates an exceptionally early date around 600 CE, which later spread throughout Eurasia. The talk presents graphic reconstructions of the patterns and examines their compositional and iconographic features in comparison with the characteristics and differences of taqueté and samite silks of the same design. What insights does this provide on the relationship of Kucha to neighbouring regions such as Iran, Sogdiana, Turfan, and China, which were instrumental in the production and exchange of these early silks?

## 4 AN INVESTIGATION OF THE COSTUMES OF FEMALE DONORS IN CAVE 61 OF DUNHUANG

**Abstract author(s):** Zhou, Hongdi (Fu Jen Catholic University,)

**Abstract format:** Oral

Based on the iconographic data of the female donor frescoes in Cave 61 of the Mogao Caves on the Digital Dunhuang Official Website, and its clothing of female donors and the sortord, this thesis attempts to highlight and discuss the differences in the costumes of different ethnic groups that have been noted in the literatures on Cave 61 . This thesis argued that the differences in costume between the different groups in Cave 61 is connects to the alliance and political strategy of Cao's family when I combine the genealogy of the Cao's family donors with various components of the costumes are compared with images from donors of other caves and portable painting on silk about the tenth century.

In addition, an analysis of the costume and sortord of the donors in Cave 61 not only discusses characteristics of costume culture of Dunhuang, Khotan, and Ganzhou Uighur during The Cao's Guiyijun period (914-1036), but also reveals that the sortord of donors was related to the strength of the states in regional politics at the time. The integration of the iconographic data and documentary review of Cave 61 reveals not only the differences in the dress of the donors and the cultural intermingling of the nationalities, but also the utilization of marriage by the Cao family to consolidate their local dominance and maintain regional peace and development. The cultural mixing of donor costumes in Cave 61 , therefore, confirms the multiple religious and cultural intermingling that has been repeatedly mentioned in the literature, and on the other hand, links the details and methods of cultural intermingling from a costume perspective specifically to the pattern of donor family marriages.

## 5 MEDIEVAL SILK AND COTTON ON THE EASTERN EUROPE ALONG THE SILK ROAD ROUTES: RECONSTRUCTION OF THE LOST CONTEXT

**Abstract author(s):** Shishlina, Natalia (-) - Leonova, Nadezhda (-) - Mamonova, Anna (-)

**Abstract format:** Oral

Throughout the 8th–12th centuries many events occurred in the south of the Russian Plain which were related to rise and fall of the Khazar Kaganate. Numerous nomadic peoples left behind their archaeological footprints across the Volga-Don steppes. Such graves contained unique silk and cotton cloths. Because of fragmentary nature of the discovered archaeological assemblages, it was not possible to determine their historical context. Technological and isotopic characteristics of textile items helped reconstruct both the 'biography' of the items and the 'biography' of their owners. Analysis of the funerary offerings suggests that warriors from the Khazar Kaganate or other nomadic people (Petcheneg, Polovtsian or Oghuz) were buried in the graves. They wore clothes made from silk and cotton. It is likely that cotton cloths travelled from the east to the west along the network of Great Silk Road trade routes that also ran across the Eurasian steppes together with silk cloths and other exchange items or as parts of garments or accessories. As early as the end of the 8th century the Khazars started a transit international trade and controlled the trade routes. Military posts, such as the Sarkel fortress, built along rivers maintained order. Adult men buried in the steppe graves could be military post soldiers.

## 6 SILK AS A CATALYST TO DETERMINE TRADE ROUTES BETWEEN EAST AND WEST IN THE 6TH CENTURY AD

**Abstract author(s):** Özsoy, Nusret (Erzurum Technical University; Atatürk University) - Oğuz, Anıl (Erzurum Technical University; Uludağ University)

**Abstract format:** Oral

The concept, which arrived the scientific literature with the Silk Road (Seidenstraße) name, was actually used to describe an East-West centered international trade roads, whose history dates back to ancient times.

In this global network where silk was traded as the main commercial commodity, and besides silk, precious stones and mines, various cultures, religions and Technologies were transported to Mediterranean ports after a long journey, and even dispersed to a significant part of Europe. Silk and silk products, which were mostly preferred by the grandee and elites, occupied a serious place in the economy of the states and became an invariable object of desire for long centuries.

After setting foot in Anatolia in 188 BC, Rome encountered the Parthians, who monopolized the Silk Road in the east. However, this encounter turned into a Roman-Parthian struggle that caused the Roman-Parthian war and spread over long centuries. After the Sassanids replaced the Parths in Iran, this struggle continued between the Eastern Roman (Byzantine) and Sassanid Empires. In this context, both powers did their best to dominate the Silk Road, and did not refrain to use from any military, political, economic or diplomatic ways. Protecting existing trade routes or drawing new ones are some of these alternatives.

Thus, silk as a luxury consumable has turned into a catalyst that enables the establishment of new routes between regions and cultures. Various routes were followed in the journey of silk from east to west and were changed or revised. The main factor of the change was the military and political struggle between the powers that wanted to dominate the silk trade. In this paper, the roads, existing or alternative new routes, passages, ports and resting points which is used between East and West silk trade in the 6th century AD will be mentioned.

## 7 SILK TEXTILES IN GREAT MORAVIAN ELITE GRAVES - EVIDENCE OF LONG DISTANCE TRADE

**Abstract author(s):** Brezinova, Helena (Institute of Archaeology of the Czech Academy of Sciences, Prague) - Krupičková, Šárka (Institute of Archaeology of the Czech Academy of Sciences, Brno)

**Abstract format:** Oral

Although few examples of archaeological evidence of the presence of silk fabrics come from the Great Moravian environment (9th century, Central Europe), the evidence is reliable and significant. As regards the study and processing of textile remains and tools used to make textiles, Mikulčice is the most well researched and documented Great Moravian site in the Czech Republic. This important early medieval European archaeological site – a river stronghold – was the seat of Mijmirid dynasty. It consisted of a fortified acropolis and outer bailey, more unfortified extramural settlements and a wider economic hinterland. The results of 60-year-long archaeological research in Mikulčice include discoveries of 10 church remains with more than 2 500 graves (including elite graves with wealthy grave-goods), a princely palace, groundings of wooden bridges and gates, fortification with stone front wall and tens of thousands artefacts, which are still the subjects of multidisciplinary analytical research. The completely new research of a small yet very well-preserved fragment of silk samite on a small gilded plate unearthed in 1957 during a survey of grave 590 is a fundamental discovery. Its analysis has enabled us to elaborate on the conclusions from past research in greater detail and particularly to confirm the presence of luxury textiles in a lavishly equipped child's grave from the cem-

tery by the Mikulčice basilica. A total of 11 samite-type fabric finds have been recorded from Mikulčice, offering convincing proof that this luxury material was available to the inhabitants of the Mikulčice hillfort, even though it was affordable only by a very small group of the richest or most influential people.

## 8 UNIQUE SILK FINDS FROM THE 10TH CENTURY CARPATHIAN BASIN

**Abstract author(s):** Harangi, Flórián (Pázmány Péter Catholic University, Institute of Archaeological Sciences; Ásatárs Ltd.) - Türk, Attila (Pázmány Péter Catholic University, Institute of Archaeological Sciences) - H. Szabó, Krisztina (Hungarian National Museum, National Archaeological Institute) - Kolozsi, Barbara (Déri Museum) - Langó, Péter (Eötvös Loránd Research Network, Institute of Archaeology)

**Abstract format:** Oral

In 2016, during rescue excavations before the construction of a motorway between Debrecen and Berettyóújfalu, an extensive multiperiod site was recovered at Derecske-Nagymező-dűlő. The site included a graveyard, which we can date to the 10th century.

The Feature 643 was a grave furnished with typical finds of this period, i.e. silver alloy cast earrings with bead row pendants; gilded dress fittings; footwear fittings, square-shaped so-called „belt” fittings, a twisted wire bracelet, which was made of copper alloy, as well as shank buttons. Together with the rich metal finds, a significant amount of textile remains, mostly silk were also recovered from this 10th-century woman's grave. Due to their good preservation and fast and professional conservation, the textile fragments could be separated from the fittings and kept intact.

Among the textile remains, there are examples of both types of weft-faced compound weaves, we could identify weft-faced compound twill (samite) fragments – which are dominant among the textile materials in the Hungarian Conquest period – and weft-faced compound tabby (taqueté) remains too. Besides these remnants, the weft-faced compound tabby silk is very rare in the 10th century in the archaeological heritage of the Carpathian Basin. The parallels of these polychrome silk taqueté finds are known from the Middle East, mainly from the Buyid period Rayy in Iran and various sites from Israel and Egypt. This type of silk was much less common in Europe than the samite. Weft-faced compound tabby silk remains absent from Western Europe treasuries or among the famous Viking finds in Northern Europe. All these facts suggest that Hungarians had access to other sources of silk in the 10th century as the Vikings or people who lived in Western Europe.

In our presentation, we would like to present and compare this unique collection of finds with other previously known finds.

## 9 THE OLDEST SILK TEXTILES FROM THE ARCHAEOLOGICAL CONTEXTS OF PRAGUE CASTLE, CZECH REPUBLIC

**Abstract author(s):** Bravermanova, Milena (Institute of Archaeology of the CAS, Prague)

**Abstract format:** Oral

The oldest silk textiles from the archaeological contexts of Prague Castle date back to the end of the 10th century. The first was picked up from the tomb of Prince Boleslav II. Přemyslid (died 999) and it is a fragment of a samite with an eagle pattern, which was made in Byzantium. Trousers leg were sewn from it, only the lace with a knot that held them below the knee has survived. The second silk fabric is part of the reliquary set of St. Ludmila, also from the Přemyslid dynasty (died 921), served as the cover of the remains of the first Czech saint. It is a protolampas with two patterns - with birds in medallions and a small pattern also with medallions, from which the dalmatic was sewn. The fabric also comes from Byzantium. Both textiles are rare imports and, among other things, document their various uses. In the first case, it is a secular garment, which has become a funeral clothing. In the second case, it is the oldest surviving church robe in the Czech lands, which came here as one of the first bishops in Prague and later became a reliquary cloth.

## 10 SILK TEXTILES IN MEROVINGIAN AND ALEMANNIC GRAVES (6TH-8TH CENTURIES AD)

**Abstract author(s):** Linscheid, Petra (University of Bonn)

**Abstract format:** Oral

In the Early Medieval period, silk is rare. Well known are the silk textiles from the elite graves at St. Denis near Paris. Less well known instead is a small number of silk finds from burials in Merovingian and Allemanic row cemeteries, most of them in southern Germany.

These silk textiles make up several functional and technical groups. In most cases, a smaller amount of silk threads was used in the production of tablet woven bands, as the core of gold threads or as embroidery material. When silk was used in the warp and weft, the weave was mostly a simple tabby. Silk textiles in complex samite weaving are attested in only two cases. Some silk textiles evidently belonged to garments, others made part of the grave furnishing. As far as the kind of silk was investigated, it was reported as cultivated silk.

The paper wants to introduce these silk finds and discuss their possible functions and proveniences.

11

## EARLY MEDIEVAL SILKS IN IBERIA: THE SILK TEXTILES FROM SAN ISIDORO SILVER CASKET (COLEGIATE OF SAN ISIDORO, LEON, SPAIN)

**Abstract author(s):** Cabrera-Lafuente, Ana (research project The Medieval Iberian Treasury in Context: Collections, Connections, and Representations on the Peninsula and Beyond, PI Therese Martin, RTI2018-098615-B-100, financed by the Spanish Ministry of Science and Innovation/AEI /10.13039/)

**Abstract format:** Oral

In the Medieval and Early modern period, Iberian was renowned for its sericulture and silk textiles, among its Medieval heritage the Treasury from the Royal Colegiate of San Isidoro in León is noteworthy, silver and ivory caskets and boxes; reliquaries and silk textiles summarised the riches of this Royal foundation and pantheon by the Leonese dynasty. Leon was the head of the Leonese kingdom, repopulated at the end of the 9th century by the Christian inhabitants from the Northern kingdom of Asturias. The city and dynasty were the most important in Iberia until the end of the 13th century.

The silks preserved in the Royal Colegiate (nowadays museum) are some of the earliest examples of silk textiles from abroad in Iberia. Among them, the silk samite and silk and metal thread embroidery on linen tabby lining the silver casket of San Isidoro are the earliest of this treasury.

These two textiles have been characterized (fibres, dyes, metallic threads and weaves), including radiocarbon dating, due to their uniqueness among the Iberian early medieval textiles preserved. Both have early dates, between the late 9th to early 11th century AD and the embroidery's motifs are foreign to the local tradition.

The possibility to present these two silks from the Royal Colegiate of San Isidoro (León), especially the embroidery on this session, will bring the opportunity to share and exchange ideas about workshops, chronology, textile raw materials and provenance on these textiles, an exceptional assemble on Iberia.

Acknowledgement: The Medieval Iberian Treasury in Context: Collections, Connections, and Representations on the Peninsula and Beyond (PI Therese Martin, RTI2018-098615-B-100, financed by the Spanish Ministry of Science and Innovation/AEI /10.13039/501100011033/ FEDER).

12

## VIKING BLISS : SILK AND SQUARE KUFIC TEXTILES IN PRE-CHRISTIAN SCANDINAVIA

**Abstract author(s):** Larsson, Annika (Uppsala universitet; The Society for Textile Archaeology & Culture Studies) - Guennoun, Mohamed (The Society for Textile Archaeology & Culture Studies)

**Abstract format:** Oral

In 2017, I presented an exhibition about the importance of silk among Viking Age textiles found in pre-Christian boat- and chamber graves in central Scandinavian areas. It has long been debated whether this silk originated in Islamic Central Asia or in Christian Byzantium. Already in 2007, I suggested that silk in pre-Christian Scandinavia would be traced to Central Asian production, and found way westward on the Russian Silk Roads - until necropolises such as Birka, ceased.

There is also a discussion about the production area for contemporary tablet-woven bands made of silk, with an extra floating layer of weft threads in silver. A predominant view is that they were made in Scandinavia as the patterns are considered to be of "ancient Nordic" character, but made from imported material. During the exhibition work it was discovered that the patterns are Islamic expressions in ancient geometric writing, so-called Square Kufi. However, when an American art historian wrongly claimed in a call "to the entire world" that this writing did not appear until 500 years later and that our reading was also incorrect, the proposal aroused worldwide critical opinion both in media and among academics.

In this lecture, the ancient Square Kufic script, as well as the rich finds of Viking Age textiles with Square Kufic inscriptions found in Scandinavia and Russia, will be detailed presented. The aim is to highlight the importance of silk as well as Kufic expressions in Viking Age burial customs, which allows focus to shift from local traditions concerning interpretations on Viking Age ceremonial costumes, into a much larger interdisciplinary and Eurasian cultural context. Finally, we also shed light on Kufic patterns in textile folk art, which have survived from Viking Age until present day in both Scandinavia and Russia, despite the symbolism has lost its Islamic meaning.

13

## THE REALITY OF VIKING AFTERLIFE: THE PRESENCE OF SILK IN THE VIKING NARRATIVE

**Abstract author(s):** Pallin, Karolina (TexArk – The society for textile archaeology and culture studies; Textile studies, Uppsala University)

**Abstract format:** Oral

This paper presents a study within the larger project "The narrative of Viking legacy", which studies the difference between today's narrative of the Viking Age and the archaeological material. The pilot study was presented at the conference The Viking Age as a Foreign Place, at The Center for Viking Age Studies, Oslo. This second study is presented for the first time here at the EAA annual meeting.

Grave goods can be seen as objects supposed to accompany humans into the afterlife. The Viking afterlife is, according to the Sagas, a mythological place. However, the reality of the Viking afterlife is how we know them. A reality where the archaeological material is of most importance. The Vikings live in the stories we create about them and the effect these stories have on us and our society. They live in the "Viking narrative".

In Scandinavia, silk first appears in the grave goods in the Viking era, marking a change in available luxury goods. As one of a handful of luxury goods that archaeologically defines this era, silk should naturally be a large part of the Viking narrative.

This study explores Viking attributes found in the Viking narrative, with a particular focus on silk as a defining item and a defining luxury concept. The study shows that silk is found in some parts of the narrative and is absent in others. The aim of this paper is to discuss this clash in the narrative and why this is both interesting and problematic.

## 14 SILK, SILVER AND GOLD TEXTILES IN DANISH VIKING AGE GRAVES

**Abstract author(s):** Mannering, Ulla - Rimstad, Charlotte (National Museum of Denmark)

**Abstract format:** Oral

In Danish Viking Age graves, remains of textiles and tablet-woven bands made in silk, silver and gold threads have been recorded. Particularly in the rich male grave from Bjerringhøj in Denmark, dated to AD 971 exquisite silks and tablet-woven bands were found. Similar complicated but more fragmented layers of fur and silk textiles sewn together with silver and gold tablet-woven bands have been recorded in a rich female grave in Hvilehøj dated to the late 10th century AD.

We here present the latest analyses of the silk, silver and gold textiles found in these two graves which are current being studied within the scope of the Danish Fashioning the Viking Age project at the National Museum of Denmark. The silk textiles have been analyzed, tested for dyes and by making reconstructions of the different textile qualities we are able to present a whole new aspect of Viking Age textile appearance. The study further emphasizes the great variation of silk textiles that the Vikings acquired on their travels and produced in their homelands.

## 15 SILK TEXTILES IN A VIKING-AGE HOARD, DEPOSITED 900 CE IN GALLOWAY, SCOTLAND

**Abstract author(s):** Makin, Alexandra (University of Glasgow) - Cartwright, Caroline (British Museum) - Harris, Susanna (University of Glasgow)

**Abstract format:** Oral

The Galloway Hoard was buried around 900 CE in south-west Scotland. As it typical for hoards of the mid 8th to 10th centuries CE, it contained substantial quantities of silver in the form of arm rings, hack silver and ingots. Less typically, it contained a lidded silver gilt vessel filled with exotic and unusual objects. The closed environment of the silver-gilt vessel and its chemical composition, containing copper alloy, has led to the mineral and organic preservation of numerous textiles. The textiles include the homespun, wool and plant fibre, and the exotic, silk. The position of the textiles within the deposit and vessel provides evidence of the way the textiles wrapped individual objects, and formed bundles creating distinct assemblages of textile and objects. This presentation will focus on the silk textiles discovered in the hoard. We will present the fibre and technical analysis of the textiles. The survival of these textiles in a hoard, rather than a human burial or ecclesiastical setting, provide the opportunity to analyse the role of silk textiles in the practice of hoarding in the early medieval British Isles. From these results we will question the role of silk textiles within the hoard alongside objects from diverse areas of the known world.

---

## 196 "A UNIVERSE WITH AN ADDITIONAL DIMENSION": THE SOCIOENVIRONMENTAL ARCHAEOLOGY OF FISHING [PAM]

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Živaljević, Ivana (BioSense Institute, University of Novi Sad) - Mansrud, Anja (Museum of Archaeology, University of Stavanger) - Ritchie, Kenneth (Moesgaard Museum) - Robson, Harry (University of York)

**Format:** Regular session

Numerous archaeozoological studies, as well as the development of biomolecular approaches (stable isotope analysis, organic residue analysis, etc.) have revealed the important contribution of fish to human diets through space and time. In some cases, for example in a number of Mesolithic contexts, fishing constituted the main part of the subsistence economy. However, unlike other modes of subsistence (hunting, gathering, agriculture), fishing required humans to adapt to a whole different medium. As noted by the American anthropologist Gordon Hewes, due to their specific features, aquatic environments are a strange realm from the point of view of land-dwelling beings – "a universe with an additional dimension". Apart from affording particular sensory experiences, fishing also entangled humans in a web of relations with a multitude of aquatic creatures. Landscape socialization, human movement within the landscape, the location of camps and settlements, activities, and beliefs were intimately bound to, and influenced by, natural cycles of various fish species – their migrations, spawning locations, appearance and behaviours.

Such interspecies engagements were also expressed materially – through the structured deposition of fish remains, the usage of fish teeth and vertebrae to adorn human bodies, and in fish-related iconography (sculpture, rock carvings, paintings). With these considerations in mind, we invite a wide range of contributions concerning socioenvironmental aspects of fishing beyond exploitation and diet. We welcome papers approaching this issue from a variety of perspectives – archaeozoological, historical, anthropological, environmental, phenomenological, multispecies, and relational, regardless of chronological, geographical or cultural context.

## ABSTRACTS

### 1 FISHING AS A WAY OF RELATING TO THE WORLD: HUMAN–FISH ENTANGLEMENTS IN THE DANUBE GORGES MESOLITHIC

**Abstract author(s):** Živaljević, Ivana (Biosense Institute, University of Novi Sad)

**Abstract format:** Oral

The amelioration of environmental conditions at the onset of the Holocene brought new kind of interspecies relations to the fore, including those of humans and various aquatic beings. Moreover, unlike other modes of subsistence, fishing required humans to adapt to a whole different medium, and afforded particular bodily and sensory experiences. Fishing, then, can be understood from a socioenvironmental and 'Naturecultural' perspective – not only as a source of nourishment, but also as a new way of being and relating to the world. The Mesolithic archaeological record attests to a variety of ways human–fish engagements were expressed materially, with a number of bodily practices (structured deposition of human and fish remains, personal ornamentation as simulation and/or becoming, 'hybrid' imagery) possibly emerging from blurry ontological boundaries. By using the Danube Gorges Mesolithic as a case study, I explore fishing as a web of enmeshed relationships between different kinds of persons and mediums, and consider the ways humans were 'becoming with' various inhabitants of the deep.

### 2 CATCH AND RELEASE? CULTIVATING TROUT IN MESOLITHIC SOUTH-EASTERN NORWAY

**Abstract author(s):** Mansrud, Anja (Museum of Archaeology at the University of Stavanger) - Mjærum, Axel (Museum of Cultural History, University of Oslo) - Wammer, Elling (Norwegian Maritime Museum, Oslo)

**Abstract format:** Oral

South Norway is one of the few regions in Europe where postglacial coastlines are not submerged, and where maritime subsistence and settlement patterns are documented throughout the Mesolithic period (9300-4000). The importance of fishing is evidenced by numerous coastal settlement sites with fishbones, fishhooks, sinkers, harpoons leisters and other fishing implements. Although fish-imagery occasionally occur on rock art panels, pointing to the symbolic and social importance of fishing, fish is commonly considered just an economic resource and has gained little attention beyond its economic importance as a staple food. This contribution addresses the socio-environmental aspects of freshwater fishing, suggesting that living trout (*Salmo trutta*) or eggs were transferred from creeks to empty glacier lakes in the mountains by humans during the late Mesolithic (c. 6500-4000 cal. BC). Framing human-trout engagement in multispecies and ethological perspectives, we argue that Mesolithic foragers were actively cultivating relations with this colourful and biologically flexible species of fish.

### 3 A NOVEL METHOD FOR THE DETECTION OF AQUATIC BIOMARKERS IN POTTERY APPLIED TO THE HUNGARIAN EARLY NEOLITHIC

**Abstract author(s):** Davis, Izzy (Organic Geochemistry Unit, School of Chemistry, University of Bristol) - Hammann, Simon (Department of Chemistry and Pharmacy, Friedrich–Alexander University Erlangen–Nürnberg) - Whelton, Helen (Organic Geochemistry Unit, School of Chemistry, University of Bristol) - Cramp, Lucy (Department of Anthropology and Archaeology, University of Bristol) - Outram, Alan (Department of Archaeology, University of Exeter) - Evershed, Richard - Roffet-Salque, Mélanie (Organic Geochemistry Unit, School of Chemistry, University of Bristol)

**Abstract format:** Oral

Using biomolecular methods, it is possible to detect aquatic resource processing from lipids preserved in archaeological pottery vessels. Current approaches involve the detection of three classes of lipid biomarker compounds (isoprenoid fatty acids,  $\omega$ -(*o*-alkylphenyl)alkanoic acids, and vicinal dihydroxy fatty acids), which derive from the original fatty acid composition of fish and other aquatic products. Until present, these biomarkers have been detected in lipid extracts using low resolution gas chromatography-mass spectrometry (GC-MS) operated in Selected Ion Monitoring (SIM) mode using multiple analytical runs.

Here we present the development of a new method for aquatic lipid biomarker detection using high-resolution GC-quadrupole-time-of-flight-MS (GC-qTOFMS), offering increased throughput, selectivity and sensitivity, and allowing the simultaneous detection of all biomarkers in complex mixtures using a non-targeted approach. Our novel method is applied to lipids extracted from pottery vessels from early Neolithic settlements in Hungary. The Linear Pottery Cul-

ture marks a significant shift in subsistence away from hunting, foraging, and fishing, and towards cultivated crops and domestic animals. Zooarchaeological assemblages from Hungarian early Neolithic sites are characterised by a low occurrence of fish remains, while domestic animals generally make up >85% NISP. Due to poor preservation, recovery methods and research interests, the low numbers of fish remains may not provide an accurate insight into the prehistoric exploitation of aquatic ecosystems. Trends in aquatic resource exploitation are observed based on environmental setting, and between sites associated with the western Linear Pottery Culture (Linearbandkeramik, LBK) and eastern Alföld Linear Pottery Culture (ALP). The data presented here provide new insights into the relationship between humans and freshwater environments in early farming societies in Hungary.

#### 4 ANCIENT FISHING IN SOUTHERN ITALIAN PENINSULA. AN ETHNOARCHAEOLOGICAL RESEARCH

**Abstract author(s): Giardino, Claudio - Zappatore, Tiziana (University of Salento)**

**Abstract format: Oral**

The techniques, the gestures and the tools for fishing are a relevant aspect of immaterial cultural heritage; they were spread in most of the coastal countries since prehistoric times.

Highly specialized artifacts have been always used for fishing, as it is indicated by the netting-needles, fishing sinkers, hooks, fishing traps, harpoons that were recovered in many archaeological contexts all around the world. These tools require complex gestures and acts, handed down through the generations.

The paper examines the traditional fishing techniques and the connected archaeological objects coming from the coastal areas of southern Italy, taking into account the areas of the Salento peninsula (Apulia); in that area the memory of traditional fishing techniques is still alive. Salento is a territory located between the two seas, the Adriatic and the Ionian. Many evidences were recovered in this territory connected with fishing that date back since the prehistory.

Ethnoarchaeology helps not only to better understand the techniques employed by the societies of the past, but it also provides us with a useful tool for understanding their immaterial culture, such as the methodologies, rituals and beliefs related to catching fish.

#### 5 ARCHAEOLOGY MEETS MARINE CONSERVATION IN THE NEOTROPICS

**Abstract author(s): Fossile, Thiago - Colonese, Andre (Universitat Autònoma de Barcelona)**

**Abstract format: Oral**

Anthropogenic impacts on tropical and subtropical coastal environments are increasing at an alarming rate compromising ecosystem function, structure and services. Understanding the scale of marine population decline and diversity loss requires a long-term perspective that incorporates information from a range of sources, including archaeological remains. The southern coast of Brazil preserves archaeological sites that are unique archives of past socio-ecological systems, as well as of pre-industrial biological diversity. In this study, we reviewed the published data on marine and freshwater fish species recovered from Middle and Late Holocene coastal archaeological sites in the southern Atlantic Forest and Pampa biomes of Brazil. We assessed species composition and relative abundances through space and time and modelled differences in species functional traits between pre-colonial and modern assemblages. We found evidence for generalist as well as specialised fishing practices, with species of Sciaenidae and Ariidae dominating most fisheries. Pre-colonial catches at Babitonga Bay were predominantly composed of high trophic level species, with large body size and body mass, caught regularly by local human populations over hundreds of years. When compared to pre-colonial fish assemblages, a significant decline in these functional traits were observed in modern ecosystems, possibly associated with overfishing in most recent times.



**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Borel, Antony (Histoire Naturelle de l'Homme Préhistorique - HNHP, Muséum national d'histoire naturelle, CNRS, UPVD; Institute of Archeological Sciences, Eötvös Loránd University) - Ollé, Andreu (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Marreiros, João (Laboratory for Traceology and Controlled Experiments - TraCEr, MONREPOS – Archaeological Research Centre and Museum for Human Behavioural Evolution, RGZM; ICArEHB – Interdisciplinary Center for Archaeology and Evolution of Human Behaviour, Universidade do Algarve; Institute for Prehistoric and Protohistoric Archeology, Johannes Gutenberg University) - Rots, Veerle (FNRS, TraceoLab, University of Liège; Institute of Early Prehistory and Quaternary Ecology, University of Tübingen) - Ibáñez, Juan José (Archaeology of Social Dynamics - ASD, Institución Milá y Fontanals - IMF, Spanish National Research Council - CSIC)

**Format:** Regular session

Use-wear analysis applied to prehistory aims to characterize the surface alterations of artifacts to determine tool functions and describe past human behaviors. For decades, use-wear have been described mainly qualitatively but recent improvements in microscopy allowed quantitative data to be added to these observations. The number of studies using surface texture measurements to examine and successfully determine surface alterations increases. Indeed, metrological parameters can differentiate traces resulting from different use activities and worked materials. Both qualitative and quantitative approaches are complementary and are essential to provide comprehensive documentation and interpretation of the different types of use-wear. However, the discipline still faces limitations regarding the comparability between different analytical techniques and approaches. It also faces difficulties in terms of repeatability of experimental results and interpretation of the archaeological material. So far, no standard procedure or protocol has been clearly set up for qualitative and quantitative studies and for the integration of both. One of the main reasons is that the needs and possibilities in terms of analytical protocols vary depending on the raw material analyzed. However, with the consolidation of the quantitative approach in the field, the multiplicity of procedures increases once again and time has come to homogenize methods (i.e. screening, cleaning, data acquisition, etc.) in order to improve straightforward comparisons between archaeological series and/or sites.

In this session, we would like to address the difficulties we face in standardizing procedures and to reflect upon possible solutions. Ideally, the session would lead to the proposition of a few recommendations for the discipline. We are thus calling for papers from both qualitative and quantitative perspectives that demonstrate problems caused by the lack of commonly shared standards. The session will focus mainly on stone tools but papers concerning other materials will be also considered.

Session supported by the project K132857, NRDl\_Fund, Hungary.

## ABSTRACTS

### 1 QUANTITATIVE, YES... BUT WITH QUALITATIVELY GOOD DATA!

**Abstract author(s):** Calandra, Ivan (Römisch-Germanisches Zentralmuseum)

**Abstract format:** Oral

Quantification is often portrayed as the next yet complementary step to the traditional, qualitative use-wear analysis. Quantification is also claimed to tackle the issue of subjectivity, comparability, and the lack of reproducibility present in the traditional method. However, quantitative methods are not inherently objective, reproducible or equivalent. Data can be compared only if they were acquired in the same way, or if there are enough metadata available to track the source of the differences. More importantly maybe, quantitative data cannot universally be assumed to be of high quality, or even of higher quality than qualitative data, without considering how the data were acquired in the first place.

Therefore, while standardization surely is crucial to the development of quantitative analysis, data quality is a fundamental aspect if we want to be able to draw robust conclusions from the data. Furthermore, data quality is likely more important for quantitative than qualitative data due to the way they are subsequently analyzed. So how can we define, measure (or at least estimate) and adjust the quality of 3D surface data to fit the requirements of our research questions?

In this presentation, I will show some examples of how the choice of microscope, objective and pixel size influences the quality of the surface data, using the proportion of missing and erroneous points as one proxy for data quality.

From these examples, I will propose some best practices and a workflow for quality control in quantitative use-wear analysis. Hopefully, further refinements of such best practices and workflows will provide the basis for solving some of the issues the use-wear community currently faces and for future developments.

## TRACING NEW CHALLENGES AND LIMITATION IN USE-WEAR STUDIES. PROMOTING NEW PROTOCOLS, GUIDELINES AND METHODOLOGICAL APPROACHES IN THE DISCIPLINE

**Abstract author(s):** Marreiros, Joao - Calandra, Ivan - Carver, Geoff - Gneisinger, Walter - Schunk, Lisa - Paixao, Eduardo (TraCEr, MONREPOS. RGZM) - Robitaille, Jerome (MONREPOS. RGZM) - Thaler, Ulrich (TraCEr, MONREPOS. RGZM)

**Abstract format:** Oral

Use-wear studies are of crucial importance in archaeological investigations that aim to reconstruct past hominin technological behaviour. Functional interpretations of archaeological tools rely heavily on frameworks of comparison, based either on data obtained from experimental replication or from the analysis of artifacts. To facilitate transparency and communication in the discipline, researchers have proposed numerous terminologies and classification criteria for the different traces identified on tool surfaces. During the last decades, mainly due to the development of imaging techniques, a significant new body of evidence has emerged, advocating that the traditional approach be complemented with innovative methods and protocols. The primary aim is thus on generating complementary and detailed data, allowing a more reliable discrimination of the traces of use; at the same time, comparison between studies should be facilitated.

Essentially, this phase corresponded to the development of the quantitative, high-resolution methods in the discipline and, consequently, data. For example, this approach has allowed archaeologists not only to identify diagnostic traces of use (the so-called "families" of wear), but also to differentiate between subtypes (e.g. condition of the worked material or specific actions). Still, even when quantitative methods are applied, current state-of-the-art approaches show that a lack of common procedures or best-practices guidelines in the discipline, such as cleaning methods and acquisition settings, are found to limit the results and further interpretations.

In this talk we aim to discuss the current challenges in the discipline, and at the same time discuss the most recent contributions in the field to tackle these limitations. In sum, illustrated by several case studies, our talk aims to raise awareness among colleagues and promote advances in the discipline.

## CAN WE RELY ON NON-STANDARDIZED EXPERIMENTAL APPROACHES DEALING WITH STONE TOOLS SURFACE ALTERATION? ISSUES CONCERNING EXPERIMENTAL PROTOCOLS SET UP

**Abstract author(s):** Scancarello, Olivier - Lemorini, Cristina (Sapienza Università di Roma)

**Abstract format:** Oral

Tribology is an engineering science concerned with the study of physical systems of interacting surfaces in motion. Lithic artifacts, when in contact with other materials, are subjected to the development of wear caused by friction, that consists in a gradual removal of material. Wears are used by wear analysts firstly to distinguish between use-wear, that is wear behaviorally generated by the active use of tools, and post-depositional wear, generally attributed to a wide array of natural processes. Several studies and experimental approaches have been carried out to determine, describe, quantify, and characterize use-wear and post-depositional surface alterations. Nevertheless, concerning the post-depositional alterations, no given methodology exists in the experimental protocols set up, since an extremely complex variability of natural phenomena have been tested upon an equally vast sample of different raw materials. Here we report on a qualitative experimental approach aimed at evaluating the mechanical effects of water transport on flint artifacts in a low energy system. The experiment shares some methodological aspects with similar experiments reported in the scientific literature while it differs in other since a standardization of procedures is currently still lacking. Although the results of our experiment do not significantly differ from similar ones, we believe that some variables (time, artifacts 'density, flint grain-size, ratio between sediment and water) can lead to different results. Moreover, the lack of a shared standardized procedure and of a clear explication of the chosen parameters can generate difficulties and differences in the replication of similar experiment by other researchers. Finally, although our experiment show that similar protocols can lead to similar results, several variables can alter the outcomes of the experiment and thus have to be taken into account and clearly specify.

## 4 USE-WEAR QUALITATIVE AND QUANTITATIVE VARIABILITY ON STONE RAW MATERIALS FROM THE CARPATHIAN BASIN

**Abstract author(s):** Borel, Antony (Histoire Naturelle de l'Homme Préhistorique - HNHP, Muséum national d'histoire naturelle, CNRS, UPVD; Institute of Archeological Sciences, Eötvös Loránd University) - Marteau, Julie (Laboratoire Roberval, Sorbonne Université, Université de Technologie de Compiègne) - Deltombe, Raphaël - Moreau, Philippe - Bigerelle, Maxence (Laboratoire d'Automatique, de Mécanique et d'Informatique industrielles et Humaines - LAMIH UMR-CNRS 8201, Université Polytechnique des Hauts de France) - Lengyel, György (Department of Prehistory and Archaeology, University of Miskolc) - Mester, Zsolt (Institute of Archeological Sciences, Eötvös Loránd University; Histoire Naturelle de l'Homme Préhistorique - HNHP, Muséum national d'histoire naturelle, CNRS, UPVD)

**Abstract format:** Oral

Current methodological development in use-wear analysis applied to prehistoric stone tools aims at integrating qualitative and quantitative approaches to characterize the surface alterations of the artefacts. Both approaches are essential and complementary as, for example, wear qualitatively clearly visible on a surface can be quantitatively undetectable depending on the configuration of the acquisition system used. We propose here to present an ongoing project which contributes to develop standardized procedures for surface texture analysis of stone tools as well as creating an experimental (quantitative and qualitative) reference collection of traces for stone raw materials from the Carpathian basin. We will first present this collection with examples of traces observed on few different types of stone found in the region. Then, we will focus on a Jurassic flint from Ukraine and quartz-porphry from Hungary, for which we evaluate, with laser scanning confocal microscopy, the variability of surface texture parameters values for wear resulting from different activities of tool use and according to different positioning of the artifact under the microscope. We will describe each step of our procedure to identify the different factors which could have an impact on the results and thus, which could prevent or optimize the detection and characterization of use-wear.

The project is financed from the NRD Fund (K 132857) from Hungary and is realized also within the frame of the GDR SurfTopo (CNRS GDR 2077, France) for topography research.

## 5 THE INTENSITY OF USE IN USEWEAR ANALYSIS: THE CASE OF HARVESTING GLOSS

**Abstract author(s):** Ibáñez, Juan (Spanish National Research Council - CSIC) - Mazzucco, Niccolò (University of Pisa) - Pichon, Fiona (Spanish National Research Council - CSIC)

**Abstract format:** Oral

The dynamic nature of usewear, especially of use polish, has already been acknowledged from the beginning of the functional analysis of Prehistoric tools. However, how use polish shifts through time of use and how these changes affect our capacity to identify the worked material is still poorly known. The variability in harvesting gloss is related to the characteristics of the reaped plants and the environmental conditions in which the task is carried out. In this oral communication, using confocal microscopy and texture analysis, we study how the surface texture of gloss changes through time of use. Sequential experiments of cutting *T. aestivum*, *T. diccicum* and *T. spelta* are used to build dynamic models of polish development. Based on these models, the capacity of the method for the identification of the intensity of use is tested. This analysis is applied to a collection of sickle blades recovered in Early Neolithic sites in the Levant.

## 6 A NEW METHOD TO DISTINGUISH DIFFERENT CONTACT MATERIAL ON QUARTZ TOOLS. FIRST RESULTS FROM ANALYSING USE WEAR STRIATIONS ON QUARTZ

**Abstract author(s):** Lundin, Jon (Independent researcher) - Boström, Sebastian (Independent researcher)

**Abstract format:** Oral

Since its introduction in the second half of the last century, use-wear studies have become a staple of archaeological research. The technique has often been criticized for basing results on subjective observations made by the researcher. The authors present recent studies of how quantitative data can facilitate use-wear analysis of lithic quartz tools, which focus on striations on quartz micro topography. Through a 3D-microtopography, generated from light microscope photographs, striations can be analysed using ISO (International Organization for Standards) standards for length, width, and depth as well as other variables in the software Mountainsmaps (DigitalSurf). The authors follow the idea that striations on quartz surfaces is formed during contact with various materials such as antler, hide, wood and grass etcetera and thus changing the original micro topography. By identifying structures on the surface, it is possible to extract striations and by extension numerical, comparable data. Data that can be used to distinguish between different contact materials on quartz tools. This study uses a database consisting of different experimental quartz tools to test the method and analysing an archaeological material as well.

## ON THE NEED OF QUALITATIVE BACKGROUND FOR A FRUITFUL USE-WEAR QUANTIFICATION

**Abstract author(s):** Ollé Cañellas, Andreu - Arroyo, Adrián (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Dept. d'Història i Història de l'Art) - Asryan, Lena (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Dept. d'Història i Història de l'Art; TraceoLab, University of Liège) - Fernández-Marchena, Juan Luis (Seminari d'Estudis i Recerques Prehistòriques - SERP, Dept.d'Història i Arqueologia, Universitat de Barcelona; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Dept. d'Història i Història de l'Art) - García-Argudo, Gala (Seminari d'Estudis i Recerques Prehistòriques - SERP, Dept.d'Història i Arqueologia, Universitat de Barcelona) - Martín-Viveros, Juan Ignacio - Mateo-Lomba, Paula (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Dept. d'Història i Història de l'Art) - Pedernana, Antonella (University of Zurich) - Tumung, Laxmi (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Dept. d'Història i Història de l'Art)

**Abstract format:** Oral

Recent progress made in the quantification of use-wear on the surface of prehistoric tools undoubtedly fostered the expectations of the traceology as a discipline to obtain objective information on their functions. Some limitations of the traditional methods are expected to be overcome with a precise textural assessment based on 3D surface data, which is basically obtained through confocal microscopy.

However, we argue that such quantitative approaches still need qualitative observations derived from the systematic application of traditional methods. This paper rounds up proposals and results deriving from previous studies and works in progress, including different lithic raw materials, bone, and shell. We use them to show how sequential experiments and systematic recording through a multi-technical and multi-scalar approach can help us get insight into the wear formation processes, the nature of the different wear features, and their variability. Such an approach relies not only on accurate observations but also on rigorous sample preparation and handling protocols, as well as on high-quality imaging. These issues are pivotal to face the quantitative step, guaranteeing the data acquisition through full control of what is being measured.

Finally, the combination of qualitative and quantitative assessments reveals vital to overcome certain terminological discrepancies concerning the identification, description, and interpretation of the wear features such as different types of scars, polished surfaces, and striations. The more the phenomena under study are known, the better we can use technical improvements, protocols, and workflows for their quantification.

The same as standardisation and data quality is critical to make progress in the quantitative analysis, we conclude that its combination with the modern traceological method, conceived from a multi-technical and multi-scalar point of view, is essential to reduce the subjectivity of interpretations, to increase experimental reproductivity, and to assess variability and the effects of equifinality properly.

## HOW TO INTEGRATE QUANTIFICATION INTO QUALITATIVE USE-WEAR ANALYSIS?

**Abstract author(s):** Taipale, Noora - Tomasso, Sonja - Michel, Marine (TraceoLab / Prehistory, University of Liège) - Rots, Veerle (TraceoLab / Prehistory, University of Liège; Maître de Recherches du FNRS)

**Abstract format:** Oral

The field of use-wear quantification has seen significant methodological efforts as well as the first archaeological applications in the recent decades, and progress is currently being made in refining techniques to distinguish quantitatively between worn surfaces resulting from tool use. Yet, as it currently stands, use-wear quantification is embedded in an essentially qualitative analytical framework that requires the analyst to be fully trained in "traditional" use-wear analysis to successfully quantify wear. In this paper, we propose ways in which quantitative analysis could be developed further as a meaningful component of qualitative use-wear approach instead of its competitor. Quantitative approaches have mainly focused on polish, but using experimental and archaeological case studies, we highlight four other key points: 1) we state that different forms of edge damage play a crucial role in determining tool use but have largely escaped quantification efforts, 2) we add further data to discuss differences in wear formation on various lithic raw materials and the challenges of finding a one-for-all protocol that could be also applied quantitatively, 3) we demonstrate the difficulties in interpreting trace causality through quantification, and 4) we discuss ways in which the problem of altered use-wear could be approached by future quantification efforts based on our recent experimentation as well as analysis of archaeological material from varied contexts. By contextualising surface metrological approaches, we propose analytical challenges to which they could respond and identify aspects that have thus far been underdeveloped. In doing so, we hope to present wear quantification as a useful component in a comprehensive, sequential use-wear approach that employs different scales of observation in a stepwise manner and relies on rigorous testing of protocols and analyst competence as well as their transparent reporting.

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Vandeveld, Ségolène (Université Paris 1 - Panthéon-Sorbonne, UMR7041 ArScAn équipe Archéologies environnementales; Laboratoire des Sciences du Climat et de l'Environnement, LSCE/IPSL - CEA-CNRS-UVSQ-Université Paris Saclay) - Ferrier, Catherine (Université de Bordeaux) - Medina-Alcaide, M<sup>a</sup> Ángeles (Fondation Fyssen, Université de Bordeaux; Department of History, University of Córdoba - UCO; International Institute for Prehistoric Research of Cantabria - IIIPC) - Rueff, Bastien (UMR7041 ArScAn, équipe Protohistoire égéenne)

**Format:** Regular session

Fire is a central element for humans with multiple uses (heating, cooking, performing craft activities, or socializing). It is also a source of artificial lighting, a crucial resource for the expansion of social, symbolic and economic behaviour during the nighttime or the daytime within dark spaces such as deep caves.

If anthropologists have shown that the uses of light are eminently cultural, archaeologists have long focused on materials and lighting techniques. Although, in recent years, the field of pyroarchaeology has developed a lot in archaeology, often with the help of new technologies such as virtual reality, for example, certain aspects such as the study of light, an ephemeral object that often leaves diffuse traces, remain little developed. The methodological peculiarities, the specific materials and the interpretative questions that surround this subject push us to consider the development and promotion of a branch within archaeology for the specific study of light in the past.

This session aims to showcase the potential of studying lighting remains in order to obtain archaeological inferences. It also aims to create synergies between specialists who have approached this topic from different scientific fields. We invite proposals on lighting practices, namely on the materials, the techniques and the function of lighting, from prehistory to the present days. Contributions on the definition or evaluation of light proxies (chars, charcoals, soot deposits, rubefaction traces, lamps, etc.), their study through various methodological approaches (archaeometry, ethnography, experiments, etc.) and about works related to physical or virtual simulation in order to advance scientific research or to promote "heritage in the dark" will be warmly welcomed.

## ABSTRACTS

### 1 MOBILE LIGHTING IN MEDIEVAL AND EARLY MODERN SWEDEN

**Abstract author(s):** Qvistrom, Linda (Uppsala University)

**Abstract format:** Oral

The list of prehistoric lighting equipment in Sweden is short. The number of medieval examples is much larger, largely due to the ecclesiastical use of candles and lamps. Stationary light sources were, however, uncommon in homes during the Middle Ages and to a degree even during the early modern era. The main light sources were instead mobile, particularly in the form of wooden tapers and, to some extent, different kinds of torches and lanterns.

The use of mobile lighting, held in the hand or temporarily fixed, is something that has greatly affected the practice of using light, and the experience of it. Different tasks are also variously suitable for stationary and hand-held lighting conditions.

This paper outlines the forms of lighting used in Sweden during the Middle Ages and early modern times. The main point, however, is to address the use of variable and stationary lighting. How and in what situations have these been used? How has this changed over time?

These questions will be addressed based on a study of the changing material culture of lighting. What types of lighting devices are found in which contexts? Contemporary imagery and written sources are also utilized, providing examples of different types of lighting and the situations in which they were used.

### 2 LAMPS AND LIGHTING IN UGARIT, FIRST ELEMENTS FROM THE ARCHIVES

**Abstract author(s):** Blanc, Guillaume (Ecole Pratique des Hautes Etudes - PSL)

**Abstract format:** Oral

This presentation deals with light and lighting in Ras Shamra and Minet el-Beida, ancient city of Ugarit. It aims to showcase the diversity of artefacts which can be supports of light. Although most part of lamps, called Canaanites, has been publicly released, research throughout the archives of the Mission of Ras-Shamra (Schaeffer archives of the Collège de France, Paris), - the legacy of former excavations for this archaeological mission - brings new elements about the way they have been found with an highlight on furniture combinations. In addition, these archives, such as pictures sometimes showing the discoveries in situ, allow us to question the uses and values of light in Ugarit. Finally, it would be the opportunity to draw some parallels with other archaeological sites of the Levantine coast and eastern Mediterranean in order to better consider the material culture of Ugarit at the Late Bronze Age.

### 3 **AEGEAN BRONZE AGE LAMP WICKS. MATERIALS, MANUFACTURING TECHNIQUES AND LIGHT PROPERTIES**

**Abstract author(s):** Rueff, Bastien (ArScAn - UMR 7041-CNRS; University Paris 1 Panthéon-Sorbonne)

**Abstract format:** Oral

Lamp wicks in organic materials are rarely found in the archaeological record. However, environmental data combined to ethnographic and experimental approaches can provide valuable information regarding the materials and the techniques used for their manufacturing. This paper intends to present the current state of knowledge regarding Aegean Bronze Age lamp wicks based on bibliographical researches as well as on the observation of lamps bearing soot deposits. Those use-wear traces, created during the burning processes, can indeed help identifying the kind of wicks used. In addition, the results of experiments will be presented. In the frame of these experiments, a wide range of materials and manufacturing techniques has been tested. Measurements conducted with a photometric cell and a thermocolorimeter also showed that the wicks play a significative role on the flames' illumination, color and heat. The applied methodology has been designed in order to be reproducible on lamps from various periods and areas.

### 4 **THE RED SANDSTONE LAMP OF THE LASCAUX CAVE: AN EXPERIMENTAL APPROACH TO THE USE PROCESSES**

**Abstract author(s):** Ferrier, Catherine (PACEA UMR 5199 – CNRS. Université de Bordeaux) - Medina-Alcaide1, M<sup>a</sup> Ángeles (PACEA UMR 5199 – CNRS. Université de Bordeaux; Dept. of History. University of Cordoba) - Leblanc, Jean Claude (TRACES UMR 5608 – CNRS. Université de Toulouse - Jean Jaurès) - Intxaurbe, Iñaki (Dept. of Geology. Euskal Herriko Unibertsitatea/Universidad del País Vasco) - Ternoy, Marie (-) - Garate, Diego (Instituto Internacional de Investigaciones Prehistóricas de Cantabria - IIPC, Universidad de Cantabria - Gobierno de Cantabria)

**Abstract format:** Oral

The Lascaux cave has yielded numerous stone objects, interpreted as mobile lighting systems. One famous example is a carefully crafted lamp made of red sandstone, decorated on the upper part and including a handle. In his publication, Glory suggests the term "brûloir", indicating that the object could have been used to burn organic material for a purpose other than lighting.

The objective of our research is to check the functionality of the piece as a grease lamp and "brûloir", as well as to verify the usefulness of the handle as a protection against temperature, as mentioned by different authors.

Experiments were carried out, based on faithful replicas, using Permian red sandstone located in the vicinity of Brives (France). For the lamp tests, unprepared beef fat was used as fuel and juniper bark was used for the wick, in accordance as much as possible with the archaeological data. For the "brûloir", juniper wood was burned.

Temperatures were recorded during operation at different points of the lamp in order to understand its thermodynamic functioning and the diffusion of temperature in the material. The intensity of the emitted light was also recorded. The remains resulting from the combustion located in and on the edge of the cup were studied for comparison with the archaeological specimen.

### 5 **ARCHEOLOGY OF THE LIGHT IN ATXURRA CAVE: A MULTIPROXY, MULTIANALYTIC AND EXPERIMENTAL APPROACH**

**Abstract author(s):** Medina-Alcaide, M<sup>a</sup> Ángeles (Université de Bordeaux - PACEA UMR 5199; Dept. of History. University of Cordoba) - Arriolabengoa, Martín (Dept. of Geology. Euskal Herriko Unibertsitatea/Universidad del País Vasco) - Ríos, Joseba (Arkeologi Museoa) - Intxaurbe, Inaki (Dept. of Geology. Euskal Herriko Unibertsitatea/Universidad del País Vasco) - Ferrier, Catherine (PACEA UMR 5199 – CNRS. Université de Bordeaux) - Leblanc, Jean (TRACES UMR 5608 – CNRS. Université de Toulouse - Jean Jaurès) - Mesa, Loli (Dept. of History. University of Cordoba) - Rivero, Olivia (Department of Prehistory, Ancient History and Archaeology Faculty of Geography and History University of Salamanca) - Garate, Diego (Instituto Internacional de Investigaciones Prehistóricas de Cantabria - IIPC, Universidad de Cantabria)

**Abstract format:** Oral

Atxurra cave contains one of the most extensive collections of Palaeolithic Art in the Basque Country (Spain). The walls of some twenty raised shelves located more than 200 metres inside the entrance have several sets of engravings from the Upper Magdalenian period. Traces of various prehistoric visits to the interior of the cave have been discovered on the floor of these decorated spaces. Among them, the combustion remains are varied and heterogeneous. In particular, there is evidence of the three main prehistoric lighting systems: numerous torch residues, a possible mobile lamp and three fixed fires. Besides, in the lower cave level, known as the Armiña site, a flint tool linked to the start of the fire has been reported based on use-wear analysis. All these findings make the Atxurra cave an unprecedented site for the study of the different prehistoric lighting resources, their relationship with parietal palaeolithic art and the use of darkness by prehistoric society. In this oral communication, we will present the results of the holistic and interdisciplinary study carried out on these particular combustion residues, including charcoal analysis,

M-Raman, microsedimentology, C14-AMS, SEM-EDX, among others; and their experimental recreation monitored in a subterranean context based in the preceding archaeometry deductions. On the whole, we have been able to determine what prehistoric firelight looked like, together with various symbolic and economic data on prehistoric subterranean activity.

## 6 MULTIDISCIPLINARY APPROACH TO THE FUNCTION OF FIRE IN THE CHAUVET-PONT-D'ARC CAVE (ARDÈCHE, FRANCE)

**Abstract author(s):** Ferrier, Catherine (PACEA UMR 5199 – CNRS, Université de Bordeaux) - Leblanc, Jean Claude (UMR 5608 TRACES, Université de Toulouse - Jean Jaurès) - Debard, Evelyne (UMR 5273, LGL-TPE, Université Lyon 1) - Fosse, Philippe (UAR 3125 MMSH, Université Aix Marseille) - Gely, Bernard (DRAC Auvergne - Rhône-Alpes, Ministère de la Culture) - Laurent, Antoine (UMR 5505 IRIT, UMR 5608 TRACES, Institut National Polytechnique de Toulouse - INPT) - Sagory, Thomas (Ministère de la Culture, Musée d'Archéologie nationale, domaine national de Saint-Germain-en-Laye) - Salmon, Fabien (UMR 5295 I2M, Université de Bordeaux, INP) - Tosello, Gilles - Fritz, Carole (CREAP, MSHS Toulouse, UMR 5608 TRACES, Université Toulouse Jean Jaurès)

**Abstract format:** Oral

In addition to the paleontological and cave art remains, the Chauvet-Pont-d'Arc cave has revealed numerous traces of the use of fire. From the entrance of the cave to the deepest parts, more than 250m from the porch, we can observe numerous charcoals, rare fireplaces, soot and visible thermo-alterations on the walls and roof (change in the color of the rock and thermal burst).

The information acquired from the study of the floors and walls, as well as from experiments based on archaeological data, allows us to propose a typology of the features, whose functions are multiple and more complex than that of a simple production of light.

The research carried out in the Megaceros Gallery, thanks to experiments and numerical simulation, has made it possible to characterize fires of an unusual intensity for decorated caves (quantity of fuel and method of supply, temperatures and toxicity of gases). However, this intensity has always been within the limits that allow the management of the fires. This raises the question of the multiple functions of these fires and the production of light linked to the symbolic dimension of the site.

The following people also participated in this research : J.-B. Fourvel UMR 7269 LAMPEA Université Aix-Marseille, N. Frèrebeau CREAP MSHS Toulouse, O. Fuentes CNP Périgueux Ministère de la Culture, D. Garate Universidad de Cantabria, N. Lateur Département de l'Ardèche, M. Philippe Muséum d'Histoire naturelle de Lyon, O. Riviero Universidad de Salamanca.

## 7 ANTHROPOGEOMORPHOLOGICAL ANALYSIS OF THE ROCHE COTARD WALLS: LOCATION OF THE PALEOLITHIC LIGHTING SYSTEMS

**Abstract author(s):** Vandeveld, Ségolène (Laboratory of Climate and Environment Sciences - LSCE UMR8212) - Marquet, Jean-Claude (Tours University)

**Abstract format:** Oral

The anthropo-geomorphological approach focuses on identifying the part played by anthropic actions in the architecture and evolution of sites (and for example on cave's internal landscapes). In this, it participates in the definition and formalization of the socialization of space as it has been constructed over time. These anthropic actions can leave voluntary and involuntary traces. In this presentation we will focus on the modifications of the walls of La Roche Cotard 1 (Langeais, France), a site in the Loire Valley occupied by Neanderthalian groups. Nowadays, its walls still show marks of reddening (rubefaction), that are evidence of Paleolithic lighting systems. We will detail the methods that we used to identify and characterize these traces, and discuss the additional information that can be deduced from them (wall heating temperature, heating time, location of lightings, etc.) and that inform us about the behavior of past societies to bring light in the dark.

## 8 UNDERSTANDING HEARTH LOCATIONS AND ACTIVITY AREAS IN CAVES BASED ON LIGHT, WARMTH, AND SMOKE DENSITY - CASE STUDY LAZARET CAVE

**Abstract author(s):** Kedar, Yafit - Barkai, Ran (Tel Aviv University)

**Abstract format:** Oral

A hearth is a focal point in archaeological sites, since many group activities such as cooking, tool making, and social interactions took place around it. An air circulation model, coupled by computer simulations, enables the identification of hearth locations and characterization of activity areas by analyzing light, warmth and smoke dispersal emitted from hearths in cave sites. The analysis of light, warmth, and smoke density are affected by various parameters such as: the structure of the cave, the size of the cave mouth, and the location of the hearth. In this talk I will explain the simulation models and present a case study from archaeostratigraphic unit UA25 in Lower Paleolithic Lazaret

Cave, France. Lazaret Cave was chosen for this study because a comprehensive spatial analysis of the finds was performed and only one hearth was active in UA25. In this talk we will present the combination of light, warmth, and smoke density at several different hypothetical locations throughout the cave and analyzed their effect on potential activity areas. Four activity zones were defined, according to the average smoke exposure recommendations from the World Health Organization (WHO). The light and warmth from the hearth are correlated with the distance from it. We will present the parameters for choosing the activity areas based on smoke density and distance from the hearth and compare the results from the simulation with the archaeological finds.

## 9 IDENTIFICATION OF THE SOURCE OF CARBON IN CARBON-BASED SOUTHERN AFRICAN ROCK PAINTINGS

**Abstract author(s):** Dissais, Maud (Ecole Européenne de Chimie, Polymères et Matériaux, Université de Strasbourg; Department of chemistry, Université de Sherbrooke) - Bonneau, Adeline (Department of chemistry, Université de Sherbrooke; Rock Art Research Institute, University of the Witwatersrand)

**Abstract format:** Oral

Many rock art sites have been discovered in southern Africa, most of them attributed to San people. Previous studies [1, 2] discovered that some of their black paintings were made from burnt carbon-based compounds which remained unidentified. The main objective of this paper is to present experimental research conducted to determine the sources of these carbonaceous pigments. We attempt to reproduce the calcination of various animal materials (fat, skin, blood, egg yolk, etc.) as closely as possible to that of used by the San under controlled conditions. We analyzed the carbon blacks formed with elemental, structural and isotopic methods (microscope, SEM-EDS, FTIR, Raman, DART-MS, and IRMS) with the aim to evaluate the influence of the temperature and the calcination time on the final products, indicating the type of fire that was employed. These results would form a database, and by comparing it to actual San black rock paintings, we plan to identify the materials used by the artists in their work and finally solve some of the mysteries associated with the use of fire to create southern African rock art. These methodology and results will also form references for wider investigations on carbonized lighting residues and traces.

References :

1. Bonneau, A., et al., Characterization and dating of San rock art in the Metolong catchment, Lesotho: A preliminary investigation of technological and stylistic changes. *Quaternary International*, 2021.
2. Bonneau, A., et al., Successfully Dating Rock Art in Southern Africa Using Improved Sampling Methods and New Characterization and Pretreatment Protocols. *Radiocarbon*, 2017. 59(3): p. 659-677.

## 10 USING DIGITAL AND EXPERIMENTAL APPROACHES TO EVALUATE THE VISUAL EFFECTS OF LIGHTING CONDITIONS FOR MAGDALENIAN PORTABLE AND PARIETAL ART

**Abstract author(s):** Wisher, Isobel (Durham University) - Needham, Andy (University of York)

**Abstract format:** Oral

In this paper, we report the results of experimental and digital (3D modelling, DStretch, virtual reality) analysis of two Magdalenian art case studies: engraved limestone plaquettes from the rock-shelter site of Montastruc (France); and parietal paintings from the Cueva de Las Monedas (Spain). Experimental insights for limestone plaquettes from Montastruc suggest they were intentionally placed in close proximity to hearth structures, and orientated to allow the roving firelight to wash over the engraved surfaces. VR lighting simulations built using 3D models of the Montastruc plaquettes capture how this may have animated forms on the surface, enhanced in some cases by morphological features of the limestone. A similar effect is observed in VR simulations of art drawn onto the limestone walls of the cave at Las Monedas. Here flickering light cast from a torch enhanced topographic features of the cave walls that were integrated into the animal depictions. There are evident differences in many of the specific elements of the sensory experience of art from the two sites, with different lighting sources being used in different types of space. However, the parallels in the visual effects of light on the surfaces of plaquettes from Montastruc and cave art at Las Monedas blur categorical boundaries between different forms of Palaeolithic art. In turn this encourages reflection on the underlying perceptual effects of artificial light in the making and reception of Palaeolithic art that may transcend particular categories of art. Applying VR, 3D modelling, DStretch, and experimental archaeology to further parietal and portable art in future may allow for deeper consideration of the conceptual underpinnings of art creation in the Magdalenian.



11

## USE OF ARCHAEOLOGICAL EXPERIMENTAL DATA ABOUT PALAEOLITHIC LIGHTING IN COMPUTER SPATIAL ANALYSES RELATED WITH ROCK ART

**Abstract author(s):** Intxaurbe, Iñaki (Dept. of Geology. Euskal Herriko Unibertsitatea/Universidad del País Vasco) - Medina-Alcaide, M<sup>a</sup> (PACEA UMR 5199 – CNRS. Université de Bordeaux) - Garate, Diego (Instituto Internacional de Investigaciones Prehistóricas de Cantabria - IIPC, Universidad de Cantabria - Gobierno de Cantabria) - Arriolabengoa, Martín (Dept. of Geology. Euskal Herriko Unibertsitatea/Universidad del País Vasco)

**Abstract format:** Oral

Formerly, one of the main problems involved in the study of the spatial parameters related with rock art (e.g., visibility, capacity or accessibility) was the subjectivity resulting from the necessary use of qualitative terms, which could make the insights generated by each author very different. In recent years, these problems have been addressed with the emerging use of digital methods that have made spatial analyses more accurate. Geographic Information Systems (GISs) have been widely used in "sensorial" archaeology and interactive documentation, due to their precision and ability to interpret the terrain, with all their strengths and limitations, as previously identified. These techniques are usually employed in open-air studies, but there are some specific precedents in closed and three-dimensionally complex sites, including caves. In these last cases, their total darkness force to determine the physical parameters of the different techniques that were used in prehistory to illuminate them. In this work we want to empathize the importance of the replicability in all experimental programs made to know the features related with the prehistoric lighting, but especially their utility in GIS through the use of interactive scripts. We present some practical examples that show the dynamism of these analysis methods and their strong complementarity with experimental archaeology programs.

12

## A 3D PHYSICALLY-BASED APPROACH FOR THE PROBLEM OF TRANSLUCENT MARBLE TILES AND THE ILLUMINATION OF CLASSICAL GREEK TEMPLES

**Abstract author(s):** de Lara, Juan (UCL)

**Abstract format:** Oral

In recent years the archaeological community has embraced the proposed theory that classical Greek temples were illuminated via thin translucent marble roof tiles. The most famous example are the Parthenon in Athens (438 BCE) and the famous temple of Zeus in Olympia (c. 432 BCE), one of the wonders of the ancient world. However appealing this idea might be, a rigorous digital reconstruction of all architectural elements of the temple evidences the engineering and aesthetic problems associated with this widespread view. This presentation proposes an accurate methodology that accounts for physically-based light settings and appropriate documentation of data to further delve into structural questions related to buildings—and more importantly—how a community may have interacted with them. Indeed, an advantageous aspect of the approach is that in the process of questioning 'how is a building effectively illuminated?' we are able to uncover new and overlooked aspects related to the functionality of buildings.

13

## THE UBIQUITY OF DARK AND LIGHT

**Abstract author(s):** Higginbottom, Gail (El Instituto de Ciencias del Patrimonio - Incipit, CSIC) - Mom, Vincent (Digital Preservation Projects)

**Abstract format:** Oral

This work focuses on the twin ambience of dark and light: how darkness can chase light across the landscape, bringing cold and the unknown, and light chases away that which is darkening the world, thereby bringing warmth and returning the visible world. However, darkness can connect someone to important concepts or experiences of the unknown world, both the unseen and the illusory, with the reality of twinkling skies and wondrous light shows. Thus, darkness has the power to induce and generate these forces of light. Most particularly, similar to Herrstrom's 2017, our presentation focuses upon both the individual's relationship with dark and light as well as shared perceptions, and we do so through the meta-categorization of the notions of Dark and of Light. It reveals how together, dark and light draw individuals into a world of creation and creating; influencing and inspiring them to build megalithic monuments in very specific locations to highlight their own human experience and understanding of these events. Like Pauketat (2017) we try to 'explain the causal relationships between the human body, lived space, cosmic order, habitual practice, and religious experience'. We demonstrate this using the virtual immersion-style, publically available software, Stellarium, to show the interplay between light and darkness during particular astronomical events.

## “FOR THE LOVE” – THE IMPACT AND POTENTIAL OF AMATEUR ENTHUSIASTS ON ARCHAEOLOGICAL SITES AND ACTIVITIES

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Humphrey, Kenneth (Henry M. Jackson Foundation) - Errickson, David (Cranfield University) - Stephen, Jesse (Defense POW/MIA Accounting Agency)

**Format:** Round table

The roundtable discussion would pose the question: What are the opportunities, liabilities, and regulatory challenges to building structured regional or national public programs to enable and promote the involvement of enthusiastic amateurs in archaeology? What are examples of successful programs in the past, what programs serve this need today, and what might they look like in the future? How are archaeologists ensuring ethical practices, leveraging programs in public archaeology, and realizing mutual benefits through their efforts in these areas? What are some notable successes (and challenges, or failures) in this area?

Using the accounting mission as an area of applied practice, roundtable discussants will focus on a subset of archaeological sites and stakeholder groups to further illuminate the topic. Three themes will be used to further guide the discussions: 1) Time: how has the behavior of amateur enthusiasts changed over time, and how has their engagement with the archaeological community shifted?; 2) Impact: what is the current impact of enthusiastic amateurs on sites, in education, and in government?; 3) Direction: what are the biggest opportunities in public archaeology for ethical collaboration with local communities and enthusiastic amateurs, and what is most needed to realize such opportunities?

## ACROSS THE MAELSTROM: SEARCHING FOR NEW DEPARTURES IN THE ARCHAEOLOGY OF THE VIKING AGE

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Sindbaek, Søren (Aarhus University) - Lund, Julie (University of Oslo)

**Format:** Regular session

Whether thinking in terms of exchange and mobility, gender, violence, migration, political evolution, social identities or ontology, the North European Viking Age (c. 750/800-1050 CE) is a pivot of recent debates in archaeology. It is equally highlighted by a range of new conceptual explorations as well as scientific approaches. Yet, the steeply increasing demands for specialization are pulling research communities in different directions, between which gaps are growing. For instance, while research on social identities is creating an increasingly nuanced understanding of the diverse roles in Viking Age society, these perspectives appear to have little impact in the study of social organization or power relations. Similarly, a rise of interest in the exploitation of outland resources provide new understandings of the dynamics of economy and ecology of the Viking Age; but hitherto the social and cultural consequences of these contexts have not been brought to the fore.

This session aims at identifying the predicaments and future directions for a synthetic archaeology of the Viking Age. We call for contributions that explore how different strands of archaeological research may meet and merge to define a more holistic research. How can we develop frameworks with the potential to strengthen the ethical groundings of a contested field of research, and overcome the gap between societal/economic and individual/cultural research cultures? In particular, we are searching for new ways to call in focus the integration and interplay between research and discourses arising from fields as different as genomics, diaspora theory, intersectionality, ecology, environment and climate studies, or studies of landscape, ontology, mobility and political power.

### ABSTRACTS

1

#### LIFE ON THE MARGINS: SOCIAL INEQUALITY AND STRUCTURAL VIOLENCE IN VIKING-AGE SCANDINAVIA

**Abstract author(s):** Raffield, Ben (Uppsala University)

**Abstract format:** Oral

Current archaeological paradigms for the discussion of the Viking-Age (c. 750-1050 CE) are framed almost exclusively by the study of elites. These were martial rulers, their kinship groups and retinues, and the aristocratic landholders who occupied the upper strata of Scandinavian society. The emphasis ascribed to these groups in both scholarly and popular literature reflects cultural historical perspectives dating from the 19th- and early-20th century, when antiquarians and early archaeologists sought to anchor the developmental trajectory of the Scandinavian nations within the prehistoric past. Today, the focus of research on high-status social groups continues to cast a shadow over the lives of the wider population, including members of the lower-status freeborn classes and semi-free, unfree, or enslaved

peoples. To date, there have been few attempts to identify and study the lives of subaltern groups, nor to examine the conditions that allowed hierarchical social structures to be established and upheld across generations.

This paper will introduce a new project that has been designed to address these issues through a critical study of social inequality and marginalisation in the burial record. Focusing on cemeteries located in modern-day Sweden, the project will mobilise a novel framework that combines bioarchaeological, material, and textual analyses in order to examine the ways in which systemic inequality impacted the health and lifeways of different social groups. This will provide a new and crucially overlooked perspective on Viking-Age communities that ascribes primary to those occupying the bottom of the social ladder.

## 2 **“THEN ALL THE POWERS WENT TO THEIR THRONES OF FATE...”. AN ANTHROPOLOGICAL LOOK AT PERFORMANCE AND RITUAL IN VIKING LEADERSHIP**

**Abstract author(s): Maddox, Timmis (University of Wisconsin-Milwaukee)**

**Abstract format: Oral**

In 2014, archaeologists Neil Price and Paul Mortimer (2014) performed an experiment in which a replica of the British Anglo-Saxon Sutton Hoo helmet was worn within a recreated Iron Age hall. What they found was that when worn in the fire-lit interior of the hall, the helmet transformed the appearance of the wearer. Consequently, Price and Mortimer (2014) argued that the wearer of the helmet was meant to become a literal personification of the Scandinavian war god Odin. As a result, increasing interest has been shown in ritual, liminality, drama, and the concept of “play” in Iron Age Scandinavia. Little to no textual evidence exists which could allow us to examine this topic, but modern anthropological theory on play and performance may be able to grant the platform necessary to discuss the role of performance in prehistoric Scandinavia. Utilizing practice and performance theory to discuss the use of the Vendel ceremonial masks, the following paper argues that these helmets reflect the tactics used by the elite to hegemonically shape social perceptions of power—a tactic which the Viking period shows may have been ultimately successful.

## 3 **TRANSFORMATIONS IN VIKING AGE ANIMAL ART – A MULTI-PERSPECTIVE STUDY ON METALWORK AND VISUAL POETICS**

**Abstract author(s): Neiß, Michael (Uppsala University, Department of Archaeology & Ancient History)**

**Abstract format: Oral**

Generations of researchers have been trying to come to grips with Animal Art, with queries that were as multifaceted as their chosen materials. My focal point are Birka type brooches, which are best likened to interactive sculptures that change shape as the viewer changes perspective. Sculptural brooches do not only breathe new life into traditional research questions, but raise new ones that steer us into uncharted waters. Here, we make field observations which fall outside the established paradigms of archaeology. Following the parable of the six blind men who tried to come to terms with the unknown phenomenon ‘elephant’, my study approaches the sculptural brooch phenomenon from different angles, by combining different methods which have been developed within separate research disciplines such as archaeology, art history, cognitive science, sociosemiotics and civil engineering. The methodological framework for my multi-method approach is informed GT, i.e. a variant of grounded theory which uses established theories to identify distinct patterns that previously went unnoticed. Contradictions that arise from the method mix are not seen as a hinderance, but as a generator for progress that gives rise to a new theory. By combining dynamic typology, Panofskyan hermeneutics and multimodal semiotics, my study on sculptural brooches uncovers hitherto unknown parallels between Animal Art and skaldic poetry in regards to context, cognition and imagery. As a result, one is inclined to look for a potential link between those distinct expressions of Viking Age culture. Did objects with Animal Art serve as points of reference for skaldic ekphrasis? Or was Animal Art a material anchor for the same conceptual blends that also transpired through skaldic poetry? The outcome is an empirically grounded theory which links the pictorial language of the smith to the verbal imagery of the skald, more precisely in the context of Old Norse íþrótt ideology.

## 4 **THE PROBLEMATIC DISCONNECTION BETWEEN DECORATIVE STYLE AND OBJECT IN VIKING AGE ART**

**Abstract author(s): Franco Valle, Rebeca (University of Bergen)**

**Abstract format: Oral**

Animal styles have been central in the analysis of Viking Age art and archaeology during the last decades of the 20th century. The schedule of decorative animal styles has proven to be a practical tool for relative dating, to approximate geographical areas of production and to affiliate these culturally with Viking Age society. As it happens with most of the pre-modern art, objects carrying the decorative styles of this period served different practical purposes: brooches for keeping clothes in place, stone commemorative carvings, wooden wall panels, etc. However, when the artistic style represented in these artefacts are analysed, the object material and function are overlooked to become a sort of neutral canvas in which the motifs are represented. This has produced a double-sided effect of

disconnection between the study of these artefacts as either art or archaeology objects: On the one hand, the art style schedule has been kept as a relative dating tool. On the other hand, things and/or representations have formed a crucial role on the study of gender, power, religion, exchange, and other societal aspects. But regardless of how often the style scheme is being used, this has not been in the focus of revision and analysis during the last decades. When we think about how the animal styles have been schematized and scheduled, we see that material properties and techniques employed in the objects themselves has been often overlooked. Thus, the analytic potential of style is limited to descriptive tasks about chronology, chorology and influences, where expressive or semantic interpretations are alternatives. In this paper I argue in favor of a concept of decorative style that depends on technological and operational choices affected by greater scale changes in Viking Age society, those that can be traced through changes in animal art styles in objects.

## 5 POWER, ETHNICITY, AND SETTLEMENT IN THE NORSE-PERIOD LANDSCAPE OF SKYE AND THE WESTERN ISLES

**Abstract author(s):** Ryder, Joseph (University of Bergen)

**Abstract format:** Oral

The Viking (800-1050 AD) and Late Norse (1050-1250 AD) periods of Skye and the Western Isles have long been an enigma within Scandinavian settlement studies. According to archaeological and placename research, the region was settled by Scandinavian-speaking peoples throughout the Norse period (800-1250 AD). Placename evidence suggests that the Norse speakers replaced the native, pre-Norse Celtic-speaking peoples, who could be called Picts. Archaeologically, Pictish culture seems to disappear around the interface of the late 8th/early 9th century AD. Past scholarship has often been dedicated to answering if the transition from Pictish to Norse was peaceful or violent. Yet questions of settlement patterns, power structures, and ethnicity throughout Skye and the Western Isles have not been explored in detail.

My Ph.D project sought to answer questions about power, settlement, and ethnicity in the region. After synthesizing all available archaeological Norse-period data in the region, I utilized a landscape methodology to place the data in context through placenames, topography, and pre-Norse settlements and monuments.

The results show that the Norse imported their settlement system into the islands, and only re-used pre-Norse settlement sites if they fit into a Norse settlement pattern. I developed a centre-periphery model using the Scandinavian concept of the infield/outfield system, which was imported by the Norse. I ultimately argue for a settlement hierarchy within Skye and the Western Isles, with a considerable spread of wealth and elite sites that likely represented individual territories. Maritime routes, harbours, and natural boundaries such as islands likely aided in demarcating territory that led to the establishment of multiple elite centres of varying rank throughout the region. I further argue that this is highly suggestive that the pre-Norse peoples, the Picts, were marginalized during the Norse-period, since there is an overall lack of acculturation or ethnic plurality in the Norse powerscape.

## 6 MAPPING MIDGARD. RECONSTRUCTING MENTAL GEOGRAPHIES OF VIKING AGE SEAFARERS

**Abstract author(s):** Jarrett, Greer (Lund University)

**Abstract format:** Oral

This PhD project aims to reconstruct the mental geographies of Viking Age seafarers and the sailing routes used by these people along the Atlantic façade by combining experimental archaeology and critical cartography. In this session the results of recent fieldwork in Norway will be presented, and the value of integrating different research methods for constructing critical and epistemologically diverse understandings of past peoples and their worldviews will be discussed.

Conventional Western cartography is not a well-suited method for exploring the experiences and worldviews of cultures distinct from our own, and is especially inadequate for studying maritime movement and seafaring experience in the past. However, a range of cartographic alternatives have recently received scholarly attention, arising from developments in digital mapping and from the efforts of subaltern and indigenous communities. Being inspired by this range of creative alternatives, I explore Viking Age worldviews and geographies by creating field-based digital models which emphasise the experiential factors that were important for seafarers in the Viking Age, such as movement, contextuality, time and weather. By focusing on these factors rather than those more commonly used in archaeological cartography, it is hoped that the models will come closer to representing the worldviews and geographies of Viking Age seafarers, and provide a new perspective on sailing, space and experience among maritime communities. This method is intended as an addition to current approaches rather than a universal solution, but it is also hoped that it will encourage others to consider alternative techniques of analysis and representation when engaging with past phenomena, and illustrate the potential of combining field archaeology with digital technologies for promoting intercultural dialogue and research.

## 7 BODY-POLITICS OF THE VIKING AGE

**Abstract author(s):** Eriksen, Marianne Hem (School of Archaeology and Ancient History, University of Leicester)

**Abstract format:** Oral

This paper springs from a sense of puzzlement with some of the ongoing discourse in Iron and Viking Age archaeology. For example, if a major trading good of the Viking Age was enslaved people, as is argued by some scholars — how can we talk about the Viking economy without talking about owning, buying, and selling human beings, and how this relates to personhood? When population DNA studies in Iceland indicate a significant influx of mitochondrial DNA from Ireland and Britain, how can we talk of genomics of the Vikings without thinking about the overarching political consequences of such a genetic map — as well as the consequences for how we understand gender, kinship, and potential sexual and structural violence? These puzzles, among others, highlight gaps where top-down and bottom-up, empirical and conceptual archaeologies fail to meet.

This paper will centre the politics of the body as an approach to bridge perspectives between the 'societal' and 'individual', the natural and social sciences, macro and micro histories. Bodies are malleable nexuses of biology, politics, labour, disease, and many other forces. Bodies explode outwards in relations, ties, obligations, and constraints. Body-related data can tell overarching stories but can also centre embodied experience on the individual scale. Drawing on ongoing research from the 'Body-Politics' ERC project, it will flesh out Viking body concepts and body-worlds, and how these relate to the wider 'Viking phenomenon'.

---

## 206 NO BRAUDEL FOR THE BALKANS? FORGING A NEW, INTERCONNECTED PREHISTORY OF THE BALKAN PENINSULA

**Theme:** 2. [Re]integration

**Organisers:** Galaty, Michael (University of Michigan) - Parkinson, William (Field Museum of Natural History) - Recchia, Giulia (Sapienza University of Rome) - Gori, Maja (Institute of Heritage Science; National Research Council of Italy - ISPC-CNR) - Gyucha, Attila (University of Georgia)

**Format:** Regular session

The Balkan Peninsula (sometimes glossed as "the Balkans" or Southeast Europe) includes the territory south of the Danube and Drava rivers and bordered by the Adriatic, Black, Ionian, and Aegean seas. The cultures within this part of Europe are as diverse as the geography that defines the peninsula. Traditionally, archaeological work in the region has focused on historical periods (e.g., the Classical, Roman, and Medieval periods) and has been motivated by historical questions, especially about the relationship of Balkan peoples to the ancient Greeks and Romans. Increasingly, however, the Balkans are being studied in their own right, with an emphasis on prehistory, and with growing recognition of the interconnections the region had with wider Mediterranean and European societies, beyond Greece and Italy. Nevertheless, this more recent Balkan-focused research stands in stark contrast to the long-standing scholarly traditions that have recognized the Mediterranean and continental Europe as discrete historical entities. There is, simply put, no Braudel for the Balkans.

While there is an extensive record of prehistoric archaeological research in the Balkans, both indigenous and foreign, much of it remains inaccessible to general audiences, published in obscure journals and in many different languages. Recently, however, as the Balkan nations have opened to the outside world, a new, growing interest in their archaeological records has emerged, along with a desire to place them into wider archaeological contexts. This session is designed to accommodate papers by prehistorians working throughout the Balkans. It will provide an opportunity for communication, comparison, and inter-regional model building. Participants will be asked to consider carefully whether the Balkans have always been "balkanized" and the session will demonstrate, we hope, that, more and more frequently today, Balkan archaeologists are working together, across national borders, providing new, innovative understandings of the Balkan past.

## ABSTRACTS

### 1 MOVING PEOPLE, TRADING GOODS, TRANSFORMING CULTURES: EXCHANGE IN THE BALKANS DURING THE NEOLITHIC

**Abstract author(s):** Riebe, Danielle (University of Georgia)

**Abstract format:** Oral

The process of neolithization throughout the Near East and the Balkans is often characterized by the introduction of new practices such as sedentary lifeways, the establishment and growth of permanent villages, the production of new technologies, and the introduction of domestication of animals and plants. However, one of the most critical practices that continues to persist from previous eras into the Neolithic is the system of trade and exchange. This form of engagement between peoples and materials inevitably assisted in spreading the "Neolithic package" through-

out Southeast Europe. Unlike earlier, during the Neolithic the systems of exchange transformed and became more variable in practice. Trade became a way to not just acquire goods and materials, but it also was a means through which socio-cultural information could be relayed, manipulated, and/or implemented. Emerging socio-cultural practices, including social stratification, gender differentiation, and craft specialization, were heavily influenced by both inter- and intra-communal engagements in trade. This paper will discuss the importance of multi-scalar trade and exchange (e.g., short-distance vs. long-distance trade and site vs. regional scale) of various materials (e.g., chipped-stone and ground stone tools, shells, minerals, ceramics, and metals) in relation to the developing socio-cultural complexity that defines the Neolithic in the Balkans.

## 2 CONNECTING THE NEOLITHIC BALKANS: NEW INSIGHTS FROM PRECIOUS STONES AND AMULETS

**Abstract author(s): Horejs, Barbara - Brandl, Michael (Austrian Academy of Sciences OEAI)**

**Abstract format: Oral**

The Neolithisation on the Balkans starting around 6000 calBC shows a regional variability between the Danube and the Aegean, usually associated with well-known key sites representing cultural horizons, such as Starčevo, Karanovo, Anzabegovo et al. While the main trends of the Neolithic dispersal are mostly agreed upon these days, neither the complexity of its socio-cultural dimensions nor the impact of potential regional interconnectivity within the Balkans are yet fully understood.

Our contribution presents data from the newly discovered early to middle Neolithic site of Svinjarička Čuka in south Serbia situated in the South Morava Valley, one of the main communication corridors along the Axios-Vardar-Morava Rivers route connecting the Aegean realm and Central Europe. The new investigations of our Austrian-Serbian collaboration have already demonstrated the potential for unprecedented new insights into this underestimated region for the Neolithisation process of southeast Europe. In addition to an overview of new data and open questions, the paper focuses on the role of distinctive objects, which are interpreted as amulets and were produced from nephrite and other, visually similar green stones. Such objects are known from the Near East, Anatolia and southeast Europe including the Balkan region.

The combination of archaeological contextualisation, typo-technological analyses and geochemical data using pXRF are promising avenues for revealing a potential network for precious objects and/or raw materials (e.g. nephrite) crossing the Neolithic regional borders. Overall, shared aspects of manufacturing techniques, raw materials and potential sources as well as their distinct imagery let us assume the general applicability of Braudel's concept for the 6th millennium BC Balkans, but also raise new questions requiring a re-evaluation and modification of our current Neolithisation models.

## 3 HERDING AND HUNTING IN THE BALKAN NEOLITHIC: A VIEW FROM THE ADRIATIC COAST

**Abstract author(s): McClure, Sarah (University of California, Santa Barbara)**

**Abstract format: Oral**

The Adriatic coast of the Balkan Peninsula provides a unique backdrop for examining Neolithic lifeways. This region serves both as a physical boundary for the Balkan Peninsula and as a gateway to the central and Western Mediterranean. This resource-rich area has a distinctive archaeological record for Neolithic farming communities. The spread of farming and its development along the coasts of modern-day Croatia, Bosnia and Hercegovina, Montenegro, and Albania, along with the off-shore islands, share many material manifestations in lithic and ceramic technologies, as well as subsistence practices. This presentation explores the current evidence for Neolithic herding and hunting in this region, spanning ca. 6000-4500 cal BC. Specifically, it presents faunal data from Dalmatian Neolithic sites in context of broader patterns in this region, highlighting differences in herding and hunting behaviors throughout the Neolithic and in different areas. The results suggest that shifts in the proportions of domestic animal species during the Neolithic signifies a change in management strategies that is also visible in other proxies, and the presence of wild fauna at these sites results from a variety of behavioral responses by farming communities to their changing agropastoral practices and climatic shifts identified in the region.

## 4 DWELLING ALONG THE WETLANDS IN THE NEOLITHIC BALKANS

**Abstract author(s): Naumov, Goce (Center for Prehistoric Research; Museum of Macedonia)**

**Abstract format: Oral**

The Balkan is commonly recognized as the mountainous region, but the valleys, wetlands and lakes are frequent landscape feature as well. Although not considered as significant as dryland areas in the traditional archaeological research, the wetlands and lakes were preferred environmental setting in the Neolithic. Consequently, the wetland societies in the Balkans recently have been studied more intensively by bringing together archaeologists from Southeast Europe. The joined research indicates that the discovered sites in several Balkan countries are far more frequent in the wetlands than on hills, mountains or slopes. The immensity of resources in such areas explains the preference

of marshes, flooded areas, lakes and rivers among the first farming communities in the region. As result to solid access to resources and economic stability these agricultural societies established settlements that could last longer and maintain social and symbolic relationship with the representatives of several generations.

Consequently the wetland societies should be considered as significant contributors in the Neolithic networking, particularly evident since the more comprehensive cooperation between the Balkan archaeologists. Bringing wetland archaeology beyond national borders contributed in more thorough examination of the region and of the relationships that first farmers established 8 000 years ago. Therefore this paper will emphasize the benefits of various international collaborations and the immensity of joined knowledge that can be implied in the Balkan archaeology.

## **5 INVESTIGATING LARGE SETTLEMENTS: THE NEOLITHIC SETTLEMENT COMPLEX OF SZEGHALOM-KOVÁCSHALOM ON THE GREAT HUNGARIAN PLAIN**

**Abstract author(s):** Parkinson, William (Field Museum and University of Illinois at Chicago) - Gyucha, Attila (University of Georgia) - Sarris, Apostolos (University of Cyprus) - Ridge, William (University of Illinois at Chicago) - Riebe, Danielle (University of Georgia) - Yerkes, Richard (The Ohio State University)

**Abstract format:** Oral

This paper discusses efficient, field-based, research techniques for investigating large prehistoric settlements. Due to their size and complex occupational history, the archaeological study of large, multi-component, prehistoric sites is challenging and daunting. Other factors, such as time, funding, and methodological considerations also can hinder the researcher's ability to efficiently model how settlements evolved over time. In this paper, we focus on the Late Neolithic tell-based settlement complex at Szeghalom-Kovácsalom in southeastern Hungary and present a methodological approach that incorporates intensive surface collection, geophysical research, and targeted test excavations to efficiently explore the spatial and temporal evolution of the settlement complex, and also to assess the degree of preservation of different features, especially houses, at the site. The approach we employ: 1) is based on the qualitative and quantitative analyses of magnetic anomalies and excavated structures, 2) is minimally intrusive, 3) facilitates time- and cost-efficient field research to reconstruct temporal developments at large sites, and 4) guides decision making about additional field activities for addressing specific questions.

## **6 TRANSFORMATION OF THE LATE NEOLITHIC VINČA CULTURE: INNOVATIONS AND TRADITIONS IN THE COPPER AGE OF THE CENTRAL BALKANS**

**Abstract author(s):** Milanovic, Dragan (Institute of Archaeology, Belgrade)

**Abstract format:** Oral

During the second half of the 5th millennium BC communities in the Central Balkans experienced fundamental changes. The complex process of transformation of the Vinča culture included a series of internal and external factors, which have led to the gradual abandonment of long-lasting large settlements, micro-regions, and regions, and the formation of the new cultural milieu of the Copper Age. These changes included the establishing of settlements in completely new places and colonization of previously sparsely populated or unpopulated areas. This was accompanied by changes in the overall number, size, internal structure and spatial relationships between settlements, as well as in diet, agriculture, animal husbandry, textile production and copper metallurgy, among other things. The wide range of inhabited altitudinal zones, an increased focus on soils unsuitable for cultivation, complementarity of neighbouring settlements in topography (flat/hill-fort or cave sites), geomorphology (valley/hinterland), and local resources, as well as more frequent settling of naturally fortified positions suggest the utilisation of a wider range of local resources, the existence of economically specialised, cooperative and competitive settlements, cultural diversification, conspicuous territoriality, high level of control over the surrounding area, communications and resources and a greater degree of inter-connections between settlements. On the other hand, the orientation of most Early Copper Age settlements towards a mixed economy and the great importance of agriculture in certain areas indicate a strong Neolithic tradition. All of this indicates an overall decline in population and significant changes in social organization during the second half of the 5th millennium BC. Furthermore, a high level of continuity in the settling of the same places can be noted after a new settlement pattern had been established.

## **7 2000 YEARS OF EARLY STEPPE – BALKANS INTERACTIONS: AN INTERDISCIPLINARY VIEW FROM ARCHAEOLOGY AND GENETICS**

**Abstract author(s):** Preda-Balanica, Bianca (University of Helsinki) - Diekmann, Yoan (Palaeogenetics Group, Johannes Gutenberg University) - Heyd, Volker (University of Helsinki)

**Abstract format:** Oral

We explore the spread of steppe genetic ancestry and early interactions between the Balkans and the steppe landscapes of southeastern Europe, covering a time span of two and a half millennia, approximately between the mid-5th millennium BC and the end of the 3rd millennium BC. Following a long period of stability, continuous population growth, and geographic expansion during the Neolithic, this was a time of dramatic changes, for example: land-

scapes were impacted due to the recurrent influx of newcomers from the wider Pontic-Caspian steppes; lifestyles and economies altered; knowledge of innovative technologies was acquired; new raw materials were used to create objects unseen before; burial rituals and hoarding practices transformed. This culminated in the 3rd millennium BC when thousands of kurgans were built in the steppe landscape of southeastern Europe. For a long time, these were interpreted as belonging to "newcomers", steppe migrants, as opposed to flat burial grounds that were traditionally assigned to "local" communities. Interpretations of interactions between "newcomers" and "locals" ranged from violent invasions and warfare to peaceful cultural diffusion or even organic transformations of societies to account for the same archaeological record. By bringing together genetics and mortuary archaeology, information about the genetic ancestry of individuals and burial practices, we investigate the relationship between descent and identity in the kurgans and flat cemeteries of southeastern Europe, and the impact of steppe ancestry in the Balkans. In this way, we explore new possibilities of interpreting the archaeological data and open a discussion about the intricacies of two and a half millennia of Steppe – Balkans Interactions.

## **8 THE DAWN OF THE BRONZE AGE ALONG THE ADRIATIC COAST OF THE NORTH-WESTERN BALKANS AND THE CETINA PHENOMENON**

**Abstract author(s):** Recchia, Giulia (Sapienza University of Rome)

**Abstract format:** Oral

Approximately 50 years have passed since the Cetina culture was first defined, mostly on the basis of distinct pottery coming from stone tumuli along the Cetina river (central Dalmatia). Yet, data still remains limited, particularly as regards economic strategies and settlement patterns. The Cetina culture is now widely recognized to have spanned from the mid 3rd to the early 2nd millennium BC, but its chronological breakdown remains problematic.

With the discovery of Cetina-type pottery in many Central Mediterranean regions, the expansive character and the superregional dimension of Cetina has attracted much scholarly attention. What it is now called the 'Cetina phenomenon' portrays multiple cross-cultural interactions encompassing a vast area, from the western Balkans to the Peloponnese, peninsular Italy, eastern Sicily, Malta and the Aeolian Islands. Not all the regions yielding Cetina features were directly reached by Cetina groups coming from the western Balkans (via movements or exchange): ceramic models would have spread through a chain of multiple contacts.

This presentation aims at briefly discussing the current picture we have of the Cetina culture, from its origin -rooted in the later Copper Age Adriatic-Ljubljana Culture with external influences, to its development (from the mid- 3rd to the early 2nd millennium BC). The focus will be on the social organization and cultural patterns. The 'core' area of the Cetina culture will be considered closely: present-day Dalmatia, western Bosnia-Herzegovina, Montenegro and northern Albania. Evidence from the neighbouring regions (Istria and the Karst, central-eastern Bosnia-Herzegovina and western Serbia) and across the Adriatic will be analyzed too, with the aim of highlighting patterns of movements and socio-cultural contacts and the impact of the Cetina phenomenon.

## **9 INVESTIGATING SETTLEMENT PATTERNS AND TRACING MOBILITY IN SOUTHERN BALKANS IN THE 3RD MILLENNIUM BC**

**Abstract author(s):** Gori, Maja (National Research Council of Italy)

**Abstract format:** Oral

This contribution will focus on the south-western Balkans in the 4th and especially 3rd millennium BC. Issues concerning relative and absolute will be addressed by discussing new data – where available – against the state of the art, aiming at pinpointing those problems that remain still open. This period can be considered a critical juncture, characterized by discontinuities in settlements and burials. Some of these changes are connected to the creation or dismantling of long-distance networks based on resources procurement, possibly in connections with changes in social structures. These networks and relative patterns in the distribution of archaeological record will be discussed aiming at pinpointing discontinuities and tracing possible large- medium- and small-scale movements. Recently, large-scale movements have been detected with aDNA, which provides a measure of mobility, but does not provide an explanation for it. Specific forms of mobility and migration will be discussed on the basis of the available data, trying to pinpoint possible reasons behind different forms of settlement continuities and discontinuities and human mobility in the Southern Balkans between the 4th and the 3rd millennium BC.

## **10 WHAT ABOUT THE MIDDLE BRONZE AGE IN THE SOUTHERN BALKANS?**

**Abstract author(s):** Krapf, Tobias (Swiss School of Archaeology in Greece)

**Abstract format:** Oral

While the Early and especially the Late Bronze Age have emerged in research as periods of interconnected networks in the Southern Balkans producing a rich archaeological record, the Middle Bronze Age remains – except for a few coastal sites – almost completely unknown. There are probably two reasons: First, there are gaps attested at several



archaeological sites, underlined by absolute dates, and second, often no distinct material culture has been identified that could be clearly attributed to a Middle Bronze Age period in-between the Early and Late Bronze Age.

Part of the problem is our insistence in holding on to the three-period-model of archaeological periodization. Abandoning it would, however, not resolve the question about what happened in the first half of the second millennium BCE in the Southern Balkans. In fact, the issue – if one wants to go beyond the site level – is indicative of recurrent problems in Balkan archaeology: The use of different terminologies, chronologies and approaches and the lack of cross-border comparisons. In the present paper therefore, starting from Sovjan at the corner of Albania, Greece and North Macedonia, the available C14 dates will be compiled and the existing stratigraphies compared, independently of terminologies, in order to identify the material culture of these few centuries that define the period during which the EBA societies evolved into the LBA societies.

## 11 **A MULTI-ISOTOPE INVESTIGATION OF MOBILITY AND DIET IN A LATE BRONZE AGE COMMUNITY IN LIKA, CROATIA**

**Abstract author(s):** Zavodny, Emily (University of Central Florida) - Novak, Mario (Centre for Applied Bioanthropology, Institute for Anthropological Research) - Đukić, Ana (Arheološki muzej u Zagrebu) - Kamenov, George - Krigbaum, John (University of Florida)

**Abstract format:** Oral

Today the Lika region of Croatia is viewed as insular and isolated, but its position in prehistory, situated between the Adriatic coast and interior continental plains, would have been ideal for forging broad inter-regional contacts and relationships across Europe. In this paper we explore these potential inter-regional connections through osteological and mortuary analyses of the burial population at the Late Bronze Age (1200-800 B.C.) necropolis of Smiljan. We also present new results from stable isotope (carbon, oxygen, nitrogen, sulfur, strontium, lead) analyses of bone and teeth from 13 individuals. As one of the most completely excavated necropolises in Lika, Smiljan provides a singular opportunity to reconstruct community-level relationships during this period of rapid social, political, and economic reorganization. Our findings illustrate greater group integration at Smiljan over time and also suggest a growing role for Lika in the expansive inter-regional trade networks of the Late Bronze and Early Iron Ages.

## 12 **LONGUE DUREE IN THE CENTER OF BALKANS – REGIONAL SCALE DIACHRONIC STUDY OF THE GRUŽA RIVER VALLEY IN CENTRAL SERBIA**

**Abstract author(s):** Kocic, Miroslav (Arheološki institut, Beograd; University of Pittsburgh) - Hanks, Bryan (University of Pittsburgh) - Kalicanin Krstić, Marija (Zavod za zaštitu spomenika kulture Kragujevac) - Basar, Petra (University of Pittsburgh)

**Abstract format:** Oral

This paper discusses regional scale comparative project running in Central Serbia, Gruža river valley, with the focus on diachronic social organization change and the emergence of complex societies in prehistory. Prehistory of the Balkan peninsula has been traditionally perceived within the ontology of a study of fragmentary systems, balkanizing past societies, despite the constant search for traces of imports, migration and large culture complexes such as Starcevo Cris Koros and Vinca cultures. One of the many reasons for this also lies in the single site excavation scope of research that was the hallmark of the continental European archaeological tradition, that only started to change recently with regional archaeological approaches with the number of projects in the region done in last 15 years. This paper is a result of two initial projects, NSF funded PhD dissertation work on regional diachronic settlement patterns through systematic survey covering 92 sq km (NSF DDRIG #1741667) and SRGAP (Šumadija Regional Geoarchaeological Project) focusing on development of non invasive methodologies. Combining the use of fluxgate magnetometry, electric conductivity, and magnetic susceptibility, in combination with surface artifact densities, pedological information, and information from previous excavations, allowed for the development of a new multi-scalar approach to prehistoric dynamics in this region of the Balkans. These efforts produced highly significant longue duree patterns and information about emergence of complexity in South East Europe. Results also show that there are strong regional patterns that were previously invisible with a too narrow scope of the research, and also that there are much wider processes at work, underlining that there is a pressing need for creating a nexus of much broader multidisciplinary research reaching across the modern borders and archaeological traditions of the Balkan Peninsula.

## 13 **MAKING SENSE OF THE PAST AND BRINGING SENSE TO THE PRESENT: BURIAL MOUNDS IN BRONZE AND IRON AGE ALBANIA**

**Abstract author(s):** Trinder, Ermelinda (Staffordshire University)

**Abstract format:** Oral

Burial mounds were the exclusive form of burial during Bronze and Iron Age Albania. Throughout the communist period, there was a vivid interest in burial mounds, and they became the symbol of archaeological research in the country. Like the rest of the Balkans, Albanian archaeology was 'caught' in the midst of historical, political and nationalistic

debates around proving the ethnogenesis of Illyrians. Burial mounds were central to this debate. Albanian archaeologists, like many of their Balkan counterparts, adopted a divisive 'ours' against 'yours' approach to the study of burial mounds which resulted in creating scholarly borders, building fences and closing routes of communication. Within Europe, Albanian burial mounds are waiting to be fully discovered, both in terms of their content and meaning.

In this paper, I will explore how death, burial and bereavement influenced Bronze and Iron Age societies through the construction and use of burial mounds. These issues will be considered, analysed and interpreted through the lenses of sensory archaeology, memory and emotions. I will describe how these interpretations have helped shed new light on old data from 130 burial mounds excavated during the communist period. In doing so, this paper shifts the focus from the more divisive issues of ethnogenesis to helping make sense of the past and bring sense to the present. This approach will help scholars both in Albania and the wider region to dismantle borders, knock down fences and build highways of communications.

#### **14 REGIONAL ARCHAEOLOGY IN THE PEJA AND ISTOG DISTRICTS OF KOSOVA (RAPID-K), 2018-2021: INTENSIVE SURVEY RESULTS**

**Abstract author(s): Galaty, Michael (University of Michigan) - Mehmetaj, Haxhi (Archaeological Institute of Kosova) - Deskaj, Sylvia (University of Michigan)**

**Abstract format: Oral**

In this paper we present the results of three summer seasons of intensive archaeological survey in western Kosova, 2018-2019 and 2021. RAPID-K (Regional Archaeology in the Peja and Istog Districts of Kosova) was designed to generate diachronic settlement data for the Dukagjii region, building upon prior extensive surveys. Thus far, we have discovered 50 previously unknown sites, 15 of which are prehistoric, dating from the Neolithic through Iron Age. One of these sites is Pepaj, a very large prehistoric settlement discovered in 2018. Unlike many prehistoric sites in the region, which are hill forts, Pepaj is situated on (relatively) flat land. In 2019, we excavated 30 shovel tests at Pepaj, documenting dense Late Bronze – Iron Age occupation at the site. In 2021, we conducted a magnetometer survey at the site, with interesting results, including several linear anomalies. When combined with broader survey results, data from Pepaj help explain shifts in settlement location from the Bronze Age through Roman conquest. Survey results from western Kosova can be profitably compared to survey results from northern Albania, revealing both similarities and some differences.

#### **15 EXPLORING THE MULTIPLE ROLES OF HILLFORTS IN PREHISTORY: A CASE STUDY FROM WESTERN KOSOVA**

**Abstract author(s): Baci, Erina (University of Michigan)**

**Abstract format: Oral**

Traditional interpretations of hillforts conclude that their role in prehistory was as defensible sites or refuges. While this was surely the case, I aim to further investigate this understanding by exploring the multiple additional roles these strategically located sites may have filled in prehistory. In this paper, I present some of the introductory results of my dissertation research in Western Kosova. For my dissertation, I explore how the prehistoric pastoral inhabitants of western Kosova and northern Albania used their landscape. I focus specifically on hillforts and assess their function(s) in the prehistoric landscape. This work is based on data from surface collections and magnetometry survey collected in July 2021 at three hillforts; Vrellë, Lubozhdë and Syriganë, as well as preliminary test excavation data collected in July of 2022 at Lubozhdë and Syriganë. Also considered is data from three survey seasons from the RAPID-Kosova project, which cover a large swath of the region of Dukagjii, where the above mentioned sites are situated. The sites of Vrellë, Lubozhdë and Syriganë were selected because they share a common characteristic; they are strategically located along the southern slopes of the Albanian Alps, overlooking the region of Dukagjii. This means they have wide views of their surroundings, which encompass key flat settlements below. However, the magnetometry and surface collection results return three different profiles, which I argue are influenced by their variations in their size, elevation, and underlying geology. Together, these physical constraints likely influenced the roles they may have played in prehistory.

#### **16 IRON AGE BETWEEN CENTRAL EUROPE AND BALKANS - CLASH OF THE WORLDS OR FINE EMBROIDERY**

**Abstract author(s): Potrebica, Hrvoje (Dept of archaeology)**

**Abstract format: Oral**

Balkans is more political than geographical term and the nature of it has been highly reflected in history of research in the area. Different approaches, language barriers and lack of knowledge transfer resulted in different narratives that somehow also determined notion of Balkans in prehistory of the southeastern Europe. The best illustration of that is probably the area between the central and southeastern Europe, or Northern Balkans. Even in the area of the Eastern Hallstatt Circle definition of the Iron Age cultural groups proves to be more arbitrary construct based on different theoretical criteria than actual reflection of archaeological data. In the area that we call Balkans this is even

more complicated by identification of cultural groups and ethnicities. This approach is both product of theoretical background of archaeology in this area and actual references in Roman and Greek sources. Solution to this could be switch of scale. Instead of trying to redefine larger cultural units we should probably start on level of individual communities and build knowledge and understanding of larger areas from bottom to the top. We will use example of the border between "Hallstatt", Central European, and Balkan cultures to illustrate all of the above mentioned concepts.

## 17 **BEYOND LIBURNIA: EXPLORING IRON AGE BOUNDARIES AND INTERREGIONAL CONNECTIONS IN NORTHERN DALMATIA**

**Abstract author(s):** Celhar, Martina (University of Zadar) - Zaro, Gregory (University of Maine)

**Abstract format:** Oral

The archaeological site of Nadin-Gradina has long been recognized as one of the largest and most distinctive Liburnian and Roman settlements in Dalmatia. Centrally located in the Ravni Kotari along Croatia's Adriatic coast, this Liburnian settlement was established by at least the 10th century B.C. and was transformed into the Roman municipium Nedinum by the 1st century A.D. The rich artifact assemblage from both settlement and necropolis contexts reflects continuous Iron Age occupation for nearly a millenium and can be used to evaluate the degree to which the Liburnians of northern Dalmatia were engaged politically and socially with cultures and communities around the Adriatic Basin, Balkan Peninsula, the Eastern Mediterranean, and beyond. Analysis of pottery, metal, and other artifact classes point to a complex and shifting array of cultural connections beyond the Liburnian heartland. Although varying in intensity and geography throughout the Iron Age, our results suggest that the Nadin community was strongly oriented toward the Italic world, particularly via cross-Adriatic connections, with additional significant ties to the neighboring Iapodian culture to the immediate northeast. Relationships with more distant societies across the Balkan Peninsula, however, remain much more ephemeral and difficult to characterize.

## 18 **COLONIALISM AND NATIONALISM IN EARLY BALKAN ARCHAEOLOGY**

**Abstract author(s):** Gimatzidis, Stefanos (Austrian Archaeological Institute, Austrian Academy of Sciences)

**Abstract format:** Oral

The Balkans were conceptualized as an archaeological entity within the wider field of European archaeology following previous paradigms such as that of the Mediterranean, the Aegean or even central Europe. The definition of all these notions suffers from a geographical and ecological determinism that often fosters the misrepresentation of the Balkans as cultural and historical entity. The conceptualization of the Balkans as a cultural and historical entity is an invention of Anglo-American scholarship that distanced itself in this way from their subject of their study in a similar way as they did with the Mediterranean. Previous anthropological critique has understood this approach as a disciplinary manifestation of Orientalism.

This paper scrutinizes the motivation, objectives and perception of some of the earliest archaeological explorations in the Balkans. These included the excavation of tumuli and tells, which were the most emblematic monuments encountered by the allied English and French troops in the Macedonian front during the First World War. Their treatment encompasses aspects of colonialism and regional nationalism, both inherent values of archaeology, and presents an opportunity for the examination of the notions of Balkanness, Balkanization and Balkanism.

## 19 **JOVAN CVIJIĆ'S ANTHROPOGEOGRAPHY OF THE BALKANS: LONGUE DUREÉ BEFORE BRAUDEL**

**Abstract author(s):** Novakovic, Predrag (University of Ljubljana)

**Abstract format:** Oral

Though Braudel's idea of observing the history through three temporalities (long-, middle- and short-term histories), presented in his book on the history of the Mediterranean in the Age of Philip II, is rightly considered as an important conceptual novum, several of his ideas are based on works of some earlier scholar, the idea (and content) of *longue dureé* in particular. The notion that historical processes are associated with the effects and changes of the natural environment is very traditional and is associated with anthropogeography, in Braudel's case, particularly with that of Paul Vidal de la Blache (1845 – 1918). While typical, e.g. Ratzelian anthropogeography at the end of the 19th century advocated strong geographic determinism, Vidal de la Blache proposed a softer version – possibilism. Though bound by the natural environment, humans still can choose between the possible alternatives (i.e. ways of life).

At the same time, similar ideas were also developed by Jovan Cijić (1865 – 1927), a Serbian geographer who authored a highly influential monograph on the Balkans (*La Péninsule Balkanique: Géographie Humaine*), published in Paris in 1918, later revised in the Serbian language (1922, 1931). Cvičić's synthesis of the Balkan's human geography soon became 'the book about the Balkans' and was very influential in many fields (geography, history and ethnology in the first place). A closer reading of his works reveals a combination of views of Ratzel, Vidal de la Blache, and his original ideas about the *genres de vie* in the Balkans. In this sense, this paper, to a certain degree, contradicts the title of this session (No Braudel for the Balkans) and aims to demonstrate the closeness of Cvičić's and Vidal de la Blache's concept of geography, and why, despite its great potential, Cvičić had only limited impact on local archaeology.

## A. WHAT TOOK YOU SO LONG? EXPLAINING GAPS BETWEEN THE INITIATION AND THE WIDE SPREAD OF TIN BRONZE IN THE BALKANS

**Abstract author(s):** Nessel, Bianka (Institute for Pre- and Protohistory, Mainz University)

**Abstract format:** Poster

Studies of early tin bronzes usually focusses on the provenance of the raw materials or the occurrence of individual artifacts at certain sites. It is obvious that tin bronze is adapted at different times and with different speed in various regions. Areas or communities, which are slow to embrace bronze metallurgy, are, however, usually investigated less intensively. In some cases, they were treated as "backwater regions" at least for the considered timeframe. Although this is not true for the Balkans, it remains a riddle why communities reject or ignore an innovation for a fairly long time, which has so much potential and such a high impact on everyday life? This poster presentation lays out an interpretation of the reasons behind fast or slow adaptations of tin bronze in the second half of the 3rd and first half of the 2nd millennium BC. It seems that not only the peculiar organization, but especially the longevity and stability of communities are key aspects regarding the participation in supra regional networks necessary to procure copper and tin. This research aims to reveal patterns of the handling of tin bronze during this early period, to get a better understanding of the mechanisms behind large-scale exchange networks for tin and bronze in Europe and their development in time and space.

## B. THE COMPLEX OF TUMULI IN NECROPOLIS OF DOLLC (KOSOVO)

**Abstract author(s):** Baraliu, Sedat (University of Pristina-Faculty of Philosophy; Faculty of Education) - Alaj, Premtim (Archaeological Institute of Kosovo)

**Abstract format:** Poster

The poster presentation, The Complex of Tumuli of Dollc, presents the archaeological data discovered during excavations in 2021, in the tumuli near the village of Dollc, Kosovo. The necropolis of Dollc consisted of 3 tumuli which lay on hilly-mountainous terrain. The tumuli were sized differently; their diameter reached from 12-15 m, with height 0.60-0.85. They lay on a surface of 10-12 gold and the distance between them was close. The maximum distance between each other was 37m meanwhile the minimum was 20m.

The tumuli were hemispherical in shape and were built largely of stones with very little soil. The tumuli were built of ground stones; the peripheral ring of the tumuli was built with larger stones, while the cover of the tumuli and tombs with medium and small stones. Each tumuli was erected over the central tomb and other accompanying tombs.

The three tumuli were bounded by rings built of large stones which surrounded the tumuli. The graves were contoured with stones of medium and large size; most of them were also rich in accompanying material such as: fragments of vessels, ornaments, weapons, etc. The burial rite in all cases is by cremation, with fine remains of the bones of which were very damaged. Based on the pottery discovered during the excavations, these tumuli belong to the last phase of the Iron Age, VI-IV centuries BC."

## C. USAGE OF PREHISTORIC TALI (ASTRAGALI) FROM NADIN, CROATIA

**Abstract author(s):** Kolenc, Magdalena - Korpes, Kim (Faculty of Veterinary Medicine, University of Zagreb) - Čelhar, Martina (Department of Archaeology, University of Zadar) - Trbojević Vukičević, Tajana (Faculty of Veterinary Medicine, University of Zagreb)

**Abstract format:** Poster

Talus (formerly known as astragalus) is one of the tarsal bones with prominent ridges proximally and cylindrical part distally. Due to their unique shape, tali have been used through history for games, divination, offerings to the gods, rituals, talismans, measuring and loom weights. A total of 70 tali were found in Nadin, Croatia. They were excavated from the Tomb 105 dated to 2nd and 1st century BC, where over 220 human skeletons were exhumed. The archaeozoological analysis was conducted in order to determine animal species and the type of modifications made by humans. Even 92,86% of tali belonged to small ruminants (sheep and goat) and the rest of them belonged to cattle, pigs, and dogs. Pigs' tali were artificially flattened distally, whereas 17 small ruminants' tali were flattened laterally and two laterally and distally. Drill holes were recorded on one goat and three sheep tali. The sheep talus with two holes on plantar side also had asterix engraved on its lateral side. Cutmarks were found on the dorsal side of two small ruminant tali. One sheep talus was horizontally cut on its proximal side. A large number of artificially flattend tali indicate their usage as dice or burnisher. Those which were found with holes could have been used as amulets. Unfortunately, it is not possible to establish the original position of the deceased in Tomb 105 due to their secondary movement, except for a few deceased in the crouched position in the lowest layers. So, it is not possible to attribute certain parts of an attire, jewelry or other material, including tali to a particular person, gender or age group. Therefore, without clear context, it is hard to infer the role of tali, however, we can conclude that they had special meaning to the people in Nadin.

**Theme: 2. [Re]integration**

**Organisers: Gomes, Francisco (UNIARQ - Centre for Archaeology of the University of Lisbon; School of Arts and Humanities of the University of Lisbon) - Machuca Prieto, Francisco (University of Málaga)**

**Format: Regular session**

In the last decades, interest in the topic of cultural memory has been growing in Archaeology. Pioneering studies of "the past in the past", focusing on the analysis of the (re)use(s) of older sites, structures, and objects, have been expanded by new approaches, such as landscape analysis, chronological modelling, mobility analysis, and archaeogenetics, to produce a more nuanced understanding of the ways narratives about the past were constructed and deployed by specific groups and agents.

While prehistoric, medieval, and later contexts deserved particular consideration, growing attention has been paid to the subject of memory-building and to narratives about the past in the European Iron Age, during which the spread of writing gave rise to interactions between non-written and written mnemonic regimes which transformed the ways in which memory was shaped and transmitted. Simultaneously, there has been a growing interest in the role of cultural memory in the Ancient World, as part of studies on the responses to the globalizing processes associated with empire-building and the emergence of local identities.

Cultural memory has been shown to be a critical aspect of the negotiation of sociopolitical structures and the construction of identities during these periods. This session aims to further explore the ways in which narratives about the past were built and deployed as part of broader processes of identity construction, while fostering a theoretical and methodological discussion on the study of cultural memory through archaeological sources.

For this purpose, we invite participants to present case studies from Europe and the Mediterranean which reflect the tools which can be used to trace memory-building processes in the archaeological record, to reconstruct the outline of narratives and discourses about the past built and deployed by ancient communities, and to assess the uses of cultural memory in the negotiation of social, political, and cultural identities.

## ABSTRACTS

### 1 CULTURAL MEMORY IN PROTOHISTORIC AND ANCIENT MEDITERRANEAN SOCIETIES: AN HISTORIOGRAPHICAL INTRODUCTION

**Abstract author(s): Machuca Prieto, Francisco (University of Malaga, Department of Historical Sciences) - B. Gomes, Francisco (UNIARQ - Centre for Archaeology of the University of Lisbon, School of Arts and Humanities of the University of Lisbon)**

**Abstract format: Oral**

Memory and its uses are not neutral. As noted by authors such as M. Halbwachs and J. Assmann, memory, in collective terms, is a powerful tool for identity building, and has been so since the dawn of Humanity. Within each particular society, the performative construction of collective memory consolidates a shared interpretation of what happened or what is worth remembering. This idea has made significant headway in archaeological research in the last three decades, as illustrated by a growing number of works dealing with memory in Prehistory and the Ancient world.

However, the different languages and vocabularies on this topic may confuse those who approach this field, so a necessary first step is to summarize the meanings ascribed to terms like "collective", "social" and "cultural memory". Of these three concepts, the latter, put forward by J. Assmann, has undoubtedly had the greatest impact. In his view, "cultural memory" is nothing other than the remembrance of the past from shifting perspectives in the present.

This phenomenon of production, reproduction, and transformation of narratives about a collective past was already common during the European Iron Age and Antiquity. Studies such as those by E. Bickerman on the Greek world, and, more recently, R. Goloseffi on Pre-Roman Gaul, F. Marco Simón on Pre-Roman Iberia or K. Galinsky and K. Lapatin on the Roman world have made this clear.

From a combination of literary, iconographic, and archaeological sources, the approaches of these authors to "cultural memory" confirm not only that remembering is an act of creation of meaning in the present through the past, but also that the exploration of the ways in which narratives about the past were built and deployed as part of broader processes of identity construction is a field of study which still holds great potential.

## 2 BUILDING MEMORIES: PAST ARCHITECTURES AND THE MATERIALIZATION OF A “SENSE OF PLACE” IN WESTERN SICILY, 9TH – 6TH CENTURIES BC

**Abstract author(s): Ferrer-Martín, Meritxell (Universitat Pompeu Fabra)**

**Abstract format: Oral**

Between the later Bronze Age and the Iron Age, Sicily experienced a deep process of social, political, and economic transformation that, from the mid-8th century, was stressed by the establishment of several Phoenician and Greek communities in its coast and the subsequent establishment of regular relationships among these three communities. Traditionally, this process of transformation has been read from the colonies, considering them as the only motor of change and, consequently, the presence or absence of colonial elements have been established as a perfect measurer of the grade of acculturation that the indigenous communities presented.

Against this discourse that subordinate the local agency to the interests of the colonies, turning them into simple receptors of the colonial innovations, my interest in this communication focuses on the analysis of the architectures of their main communal ritual places, the so-called acropolis, from a local and contextual perspective. Particularly, to examine how these communal architectures -mostly those that reuse ancient architectural models- participated in the creation, negotiation, and legitimation of the social memories that these communities constructed between the 9th and the 6th centuries BC.

## 3 (RE)INVENTING TRADITION: CULTURAL MEMORY AND THE RISE OF RURAL SOCIETIES IN THE EARLY IRON AGE OF SOUTHERN PORTUGAL

**Abstract author(s): Gomes, Francisco (University of Lisbon)**

**Abstract format: Oral**

The first contacts between the local Southern Portuguese communities and the groups of Levantine origin which settled in the Southern Iberia Peninsula at the beginning of the 1st millennium BCE set in motion a historic process which ultimately led to the rise of the regional Iron Age. This process, however, was far from linear or uniform: geographical conditions produced marked asymmetries between the communities in coastal areas, which quickly became embedded in the so-called “Orientalizing” networks and developed into urban social forms, and the communities of the interior.

In the latter area, the Late Bronze Age – Iron Age transition seems to have been a period of crisis, and the sociopolitical structures which arise after said crisis are quite different from those in coastal areas. Here, a dispersed settlement pattern organized in open, heterarchical networks of a markedly rural nature seems to have been the norm, and different groupings with a strong personality can be identified.

Several aspects of the archaeological record of these rural communities of the interior indicate that shared narratives about the past played a key role in the negotiation of their new sociopolitical structures. The highly visible settlements of the previous period were abandoned and almost avoided, while landmarks and practices connected to ancestral communities predating the Late Bronze Age increase in hierarchization, including Prehistoric monuments but especially funerary structures dating to the Middle Bronze Age, were revisited, reinvented, and appropriated as a blueprint for a new model of society.

It can therefore be argued that, in this case, Cultural Memory, built through the trauma of societal collapse and the shared experience of negotiating a new social model, was a key shaping force in the rise of this Early Iron Age rural communities and in the navigating the new geopolitical circumstances in which they became embedded.

## 4 THE SACRED PAST: MEMORY AND THE CONSTRUCTED LANDSCAPE OF THE SORTE MULD SETTLEMENT

**Abstract author(s): Maddox, Timmis (University of Wisconsin-Milwaukee) - Caretta, Nicolas (Bornholms Museum) - Czonstke-Świątkowska, Karolina - Świątkowski, Bartosz (University of Gdansk)**

**Abstract format: Oral**

Over the past five decades, the archaeological community has worked to understand why human communities choose certain points in the landscape to inhabit. Of the potential reasons listed, a popular argument is that certain spots may have possessed significant social value prior to occupation, giving communities extra incentive to gather there. This approach has often been used to investigate the Scandinavian central places, large complex sites which emerged throughout the region during the Iron Age. Representing the earliest examples of urbanism in Scandinavia, sites such as the Danish settlement complex of Sorte Muld were occupied for over a thousand years and housed large populations in comparison to earlier sites. In the summer of 2021, excavations at Sorte Muld uncovered a large Bronze Age mound close to the central site of the agglomeration. While not only giving excavators their first real glance of the earlier Bronze Age landscape of this site, the following paper argues that this structure also provides archaeologists with potential suggestions as to why so many gathered here: particularly the pre-existing social value invested in this landscape due to living collective memory.

## 5 COLLECTIVE MEMORY AND EXTREME EVENTS. SYMBOLIC IMPLICATIONS OF A POSSIBLE EARTHQUAKE IN THE ROMAN LEVELS OF LOS CASTILLEJOS (MÁLAGA, SPAIN)

**Abstract author(s):** Martín Casado, Juan Manuel (Universidad de Málaga)

**Abstract format:** Oral

In the last few years, the study of extreme environmental phenomena has been gaining protagonism in historical research, creating a denominated "history of disasters" (Van Babel et al. 2020). In this new field of research, important efforts have been made to delimit methodological and conceptual boundaries in order to provide it with the necessary framework for understanding and explaining the past. Two aspects that are being particularly focused on are the elaboration of solvent, non-reductionist explanations (Sessa, 2019) and the definition of the chronological frame of reference, an aspect that has already been highlighted as being of particular friction (Izdebski et al, 2016: 14) since the interdisciplinary nature of this research requires collaboration between disciplines with different interests.

In our communication we will approach a study from the temporal perspective of the *longue durée* (Braudel, 1958; Le Roy Ladurie, 2006), a formulation that we adopted in our thesis work as we consider that it offers a solvent interpretative platform to analyse the incidence of phenomena such as earthquakes, tsunamis or climactic changes. We will use a cross-cultural perspective (Bankoff, 2003: 159) to explore how the impact of this type of catastrophe is projected onto the material culture and the symbolic, religious and memory spaces of the affected communities. As a case study, we will expose how a possible seismic event documented at the Ibero-Roman site of the so-called Cerro de Los Castillejos (Martín Casado i.p.) may have contributed not only to cause physical damage with the abandonment of the settlement but also symbolic damage, turning part of the site into a "marked place" from which its inhabitants interpreted that it was important to disassociate from.

## 6 MAKING MEMORIES IN THE MOUNTAINS. THEORIZING CULTURAL MEMORY AT ROMAN IMPERIAL AND LATE ROMAN (25BCE-C.400CE) SAGALASSOS (SW ASIA MINOR)

**Abstract author(s):** Beaujean, Bas (Sagalassos Archaeological Research Project)

**Abstract format:** Oral

Jan Assmann subdivided collective memory into bonding and cultural memory. He considered the former as 'everyday communication' and limited its mnemonic efficacy to only 80-100 years. In contrast, cultural memory revolved around those parameters which are not restricted to the human body (e.g. texts, monuments, institutions), and are vital to the long-term continuation of social groups. While countless archaeological studies have nuanced and/or overcome this modernist dichotomy, the dynamics between the long- and short-term aspects of cultural or social memory processes often remain difficult to conceptualize. For Roman Imperial Asia Minor, this is partially an issue of preservation, as ashlar buildings and honorific monuments preserve better than the many activities which occurred within or around them. To address this disconnect, this paper considers several concepts from Assmann's cultural memory from the perspective of relational theories. Firstly, this paper presents the diachronic changes in the urban archaeological record of Roman Imperial to Late Roman (25 BCE-c. 400 CE) Sagalassos (SW Asia Minor). Secondly, by considering the little evidence of mundane activities at Sagalassos, as well as through contemporary analogies, the local diachronic potential of what Assmann called bonding memory is explored. Last, the considered concepts are used to theoretically explicate the dynamics, by determining if they can explain the diachronic patterns in the archaeological record (25 BCE-c. 400 CE), and do this without resorting to a modernist dichotomy.

---

## 208 TELLING STORIES ABOUT IMPACTS OF ACADEMIC RESEARCH IN ARCHAEOLOGY ON SOCIETY: WIDER LESSONS FROM THE UK RESEARCH EXCELLENCE FRAMEWORK EXPERIENCE [EAA EXB]

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Foster, Sally (University of Stirling; EAA) - Holtorf, Cornelius (Linnaeus University; UNESCO)

**Format:** Round table

This session asks what we can learn from the UK's recent Research Excellence Framework (REF) experience of university academics having to formally generate, measure and evaluate non-academic impact of their archaeological research.

The REF publishes the results of its 2021 assessment of the quality of research in UK higher education institutions (HEI) in May 2022. The outcomes of this massive enterprise, last undertaken in 2014, affect future HEI funding, with 25% of each score now relating to impact. Over 60 diverse Impact Case Studies for archaeological and related heritage research will be published ([www.ref.ac.uk](http://www.ref.ac.uk)) and offer insights into the character of existing practices.

We aim to explore the following:

- Should archaeological research be evaluated in relation to its public benefits and impact on society, what does that mean, and can it be measured by criteria such as reach and significance?
- What are the trends across Europe in evaluating archaeology's public benefits and impact on society?

- What are the practical challenges and opportunities that arise from any formal requirements of evaluation, and how can we help each other to enhance our performances or change the requirements?
- In the wider context of the drive for Archaeology to demonstrate and improve public benefits and impact, what can we learn going forward?
- We particularly welcome attendance from academics with diverse geographical experience of researching in European Universities. Discussants will include:
  - David Mattingly (University of Leicester, Chair of Archaeology REF Panel) – UK context, processes of measurement and evaluation
  - Sally Foster (University of Stirling) – character of non-academic impacts and pathways to impact in the UK context
  - Peter Hinton (Director, Chartered Institute for Archaeologists) – comparing the agenda for non-academic impact beyond universities
  - Cornelius Holtorf (Linnaeus University) – a non-UK counterpoint based on Sweden.

## 210 DIGGING WOMEN: USE AND MISUSE OF ANCIENT WOMEN AS ROLE MODELS IN ARCHAEOLOGICAL RESEARCH AND DISSEMINATION [AGE]

**Theme:** 4. Polls, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Garcia-Ventura, Agnes (Universitat Autònoma de Barcelona) - Droß-Krüpe, Kerstin (Ruhr-Universität Bochum) - Martins, Ana Cristina (IHC-FCSH NOVA – Pólo Universidade de Évora and Uniarq-UL) - Fulminante, Francesca (University College London; Bristol University; University Roma Tre) - Mouriño Schick, Andrea (Universidade de Vigo)

**Format:** Regular session

By the 1960s and 70s the absence of female protagonists from mainstream historical and archaeological narratives had been acknowledged; and “looking for women” in the past became a goal for women’s studies. Newly rediscovered women from the past were then integrated into courses, lectures, and books about women’s history, which generally caught the attention of a mostly female audience.

However, this scenario did not solely arise in the second half of the 20th century. For example, in her 1889-1890 public lecture tour, through the United States of America, the Egyptologist and writer Amelia B. Edwards (1831-1892) talked about “The Social and Political Position of Women in Ancient Egypt”. In her speeches Edwards used several ancient women to raise and discuss issues relevant to women in her time.

This session aims at highlighting further similar case studies, in the framework of archaeological research and dissemination, from any period or geographical area. We want to analyse and discuss which female role models were promoted or censored in different circumstances. Hence, we particularly encourage contributions that help to highlight how specific women from the past were used (and misused) as models in the education of women in the 19th and 20th centuries. Analyses of lectures, schoolbooks, diaries or correspondence will be especially welcome.

## ABSTRACTS

### 1 INTRODUCTION: ANCIENT WOMEN AS ROLE MODELS IN ARCHAEOLOGICAL RESEARCH AND DISSEMINATION

**Abstract author(s):** Droß-Krüpe, Kerstin (Ruhr-Universität Bochum; Universität Kassel) - Fulminante, Francesca (University College London; Bristol University; University Roma Tre) - Garcia-Ventura, Agnès (Universitat Autònoma de Barcelona) - Martins, Ana Cristina (Pólo Universidade de Évora and Uniarq-U) - Mouriño Schick, Andrea (Universidade de Vigo)

**Abstract format:** Oral

**Introduction:** Ancient women as role models in archaeological research and dissemination

**Abstract:** The analysis of the use of ancient women as exempla for education allows us to reflect about which were the promoted or censored female role models in specific geographies and chronologies. Besides, the activity developed by pioneer women scholars at the end of the 19th century and at the beginning of the 20th century also established feminine role models which, again, were supported or censored. In this introduction we will provide some questions we aim to discuss during the session. These questions include for instance: Which are the sources available to pursue these case studies? How were the female models selected and constructed? Is it possible to identify trends in some countries that differ from those expected in others? How was the influence of pioneer women archaeologists in the framework of archaeological research and dissemination of their time?



## 2 THE “MONA LISA OF NIMRUD” IN THE MUSEO DE REPRODUCCIONES ARTÍSTICAS OF MADRID (SPAIN): BEAUTY AS A FEMININE ROLE MODEL

**Abstract author(s):** Garcia-Ventura, Agnes (Universitat Autònoma de Barcelona)

**Abstract format:** Oral

During the archaeological campaigns directed by Max Mallowan at Nimrud between 1949 and 1956 were found many of the first millennium BCE ivories known as “the ivories from Nimrud”. These consist of a group of ivory plaques and figurines produced mainly in the Levant and in Egypt and then exported to Mesopotamia. Among them there is one that was nicknamed at the time of its finding as the “Mona Lisa of Nimrud”. In this communication I take this piece as a case study to reflect on the use of this image as feminine role model of beauty in archaeological dissemination. To do so, I will develop the communication in two parts. First, I will reflect on the nickname of the piece. It exemplifies the use of the image of a woman of the past – the so-called Mona Lisa (16th century CE) – to interpret in the 20th century CE another feminine image of an older past – the Nimrud ivory (9th-7th centuries BCE). Second, I will concentrate on the plaster cast of this piece in the collection of the extinct Museo de Reproducciones Artísticas of Madrid (Spain). In this museum there were thirteen plaster casts of ancient Near Eastern artifacts. All but this one portray exclusively male characters. This nearly absence of female characters is telling. It shows not only an imbalance in the ancient primary sources, but also a bias in the choices of modern institutions when dealing with archaeological dissemination. To better understand this bias, a brief overview on this collection will be also provided.

## 3 JEZEBEL IN THE CONTEMPORARY VISUAL CULTURE: AN EXAMPLE OF MISUSE OF ANCIENT WOMEN AS A NEGATIVE ROLE MODEL

**Abstract author(s):** López-Bertran, Mireia (Universitat de Valencia)

**Abstract format:** Oral

The Phoenician princess of Jezebel has been a paramount example of the misuse of ancient women in creating a feminine stereotype based on her sexual, sensorial, and sinful features. According to the Ancient Testament (Kings I and II), Jezebel was the daughter of Ithobaal, king of Tyre, who got married with Ahab, king of the Judahite kingdom of Samaria. She was the responsible of introducing the cult of Baal on the Israelite kingdom but was finally killed in accordance with Elijah's prophecy. This historical woman has become even an adjective: following the Merriam Webster dictionary the use of jezebel often as not capitalized defines “an impudent, shameless, or morally unrestrained woman”.

Although some publications have deconstructed this stereotype and empowered the princess (see T. Pippin, 1994; F. Stavrakopoulou 2013, R. Pla Orquín 2019), this communication will explore how the view of Jezebel as seductress have been strengthened through the analysis of some example of contemporary visual culture, mainly films of the second half of the 20th century as, among others, Jezebel by William Wyler or The Sins of Jezebel by Richard H. Landau. These examples participated actively in the promotion of patriarchal ideas of womanhood.

References:

- Pippin, T. 1994, “Jezebel Re-vamped,” in A. Brenner (ed.) *A Feminist Companion to Samuel and Kings. Companion to the Bible 5*; Sheffield: Sheffield Academic Press: 196–206.
- Pla Orquín, R. 2019, “Per una storia delle donne fenicie. Jezabel nella corte di Samaria”, *Folia Phoenicia. An international Journal*, 3: 9-30.
- Stavrakopoulou, F. 2013, “Making Bodies: On Body Modification and Religious Materiality in the Hebrew Bible”, *Hebrew Bible and Ancient Israel*, 4, 2: 532-553.

## 4 ROMAN WOMEN IN: COINS TO WAR, COINS TO PROSPER AND COINS TO HONOR

**Abstract author(s):** Pagoto Bélo, Tais (University of São Paulo)

**Abstract format:** Oral

This presentation will aim to explain the iconography of the coins of three important Roman women from the end of the Republic and the beginning of the Empire: Fulvia, Livia and Agrippina the Elder.

Fulvia, who was the wife of Mark Antony, and took control of her husband's affairs while he was away and became involved in the Perusine War against Octavius. Her coins show her as the personification of the goddess Victoria, who in the East was accompanied by Athena on the reverse. However, there are doubts whether this image is really Fulvia, since there is no caption that identifies it. However, such a personified image demonstrates the strength of a woman linked to war and leadership, symbolism that is extolled with Athena on the reverse.

Livia, who was the wife of Augustus, has an extensive monetary iconography, interspersed with personifications linked to goddesses associated with prosperity, fertility, procreation, abundance, such as Ceres/Demeter, Vesta/Hestia, Juno/Hera. Her coins are listed by captions that name her as mater patriae, Diva Augusta and even genetrix orbis, confirming her connection with fertility and sanctioning her characteristics of the ideal Roman matron.

The last Roman to be presented will be Agrippina Major, wife of Germanicus, who was poisoned and then, she was banished to an island at the behest of Tiberius. Her son, Caligula, ended up honoring her in coins during his government, demonstrating the importance of his mother and his ancestry.

The comparison of the iconography of these three Roman women will aim to conclude which were the gender strategies built for these coinages. Consequently, it will be questioned how these women were represented in such objects, since their reproductions should have been designed to send appropriate messages to the public, in view of governmental interests and power struggle.

## 5 **MODEL WOMEN AND WOMEN'S MODELS: ARCHAEOLOGY AND NARRATIVES DURING THE 'ESTADO NOVO'**

**Abstract author(s):** Martins, Ana Cristina (IHC - Polo da Universidade de Évora; Uniarq - Centro de Arqueologia da Universidade de Lisboa; Proyecto 'ArqueologAs' - Universitat de Barcelona)

**Abstract format:** Oral

The period between the 1950s and the 1970s was a period of transition in Portugal, including in scientific terms. Archaeology also bears witness to this, namely with the gradual increase of women contributing to the production of knowledge and archaeological heritage. This situation has resulted in an increase in the number of titles published by women, either as sole authors or as co-authors.

We wonder, however, if this greater involvement of women in archaeology in Portugal urged the search for the female element in primary sources and if there were consequences of this eventual search in (written or iconographic) historical and archaeological narratives published in the country.

Therefore, focusing on ancient period, we will analyse the Portuguese archaeological bibliography published at the end of the totalitarian 'Estado Novo' regime, with a view to identifying possible models of women of the past, as well as how these are presented and what is their expression in different means of their dissemination, for example school textbooks.

## 6 **FEMALE AND MALE ARCHAEOLOGIES IN ITALY FROM THE UNITY TO THE 21ST CENTURY**

**Abstract author(s):** Fulminante, Francesca (University College London; Bristol University; University Roma Tre)

**Abstract format:** Oral

This paper focus on the Archaeology of Italy from the creation of the unitary state (1960s-70s) to the 21st century to highlight the specific contribution of women to this field of research. By analysing the contribution of major female protagonists in Classical Archaeology and Etruscology of Italy, two very traditional and male dominated disciplines, this paper will investigate if the Archaeology made by women has been any different from that made by men. Did women and men have the same opportunities? Did they focused on the same agenda, or did women embrace different topics as their counterpart males? Did Women use figures from the past as exemplar to educate women? While it is undeniable that there have been exceptional protagonists in Italian archaeology who have been women is it sensible to talk about female archaeology in Italy or should we simply talk about great archaeologists who happened to be women?

## 7 **BREAKING THE MOULD WITHIN THE MOULD: GENDER, WOMEN, AND ARCHAEOLOGY DURING THE SPANISH FRANCO DICTATORSHIP**

**Abstract author(s):** Torres Gomariz, Octavio (Universitat d'Alacant; Universitat de Barcelona) - del Reguero González, Jorge (Universitat de Barcelona)

**Abstract format:** Oral

It is nothing new to say that History and Archaeology have been used as a political tool to justify and legitimise, or erase and misrepresent, whatever the ruling classes deem necessary. During the Spanish Franco dictatorship, women had to face a patriarchal regime that condemned them to silence, family, and home. To this end, the ideological apparatus of the regime designed institutions and means of dissemination so that women learned and reproduced what they were destined for. Education was fundamental in providing the ideological basis for the patriarchal regime, and ancient history played an important role in this: the women of the past were vindicated as pious, elegant, and traditional Spanish ancestors. At the same time, the women who dedicated themselves to archaeology, both in universities and museums, tried to make their way in this rigid framework confronting many obstacles and making difficult personal decisions. María Luisa Serra Belabre, María del Pilar Fernández Vega, Encarnación Cabré Herreros and Matilde Font de Tarradell are just some of them. Their trajectories show us their will to escape an imposed destiny for which they nevertheless had to work and collaborate. This work will recompose the model of the Spanish Francoist woman through the dichotomy between the misuse of the women of the past, while at the same time approaching the biographies of women who dedicated themselves to the archaeological exercise, breaking their mould, but still

within their frameworks. This paper is part of the ArqueólogAs project ([www.ub.edu/arqueologas](http://www.ub.edu/arqueologas)), a project aiming at discussing the role of women in Spanish archaeology.

## 8 FEMALE ROLE MODELS IN THE EDUCATION OF PREHISTORY

**Abstract author(s):** Mourriño-Schick, Andrea (University of Vigo)

**Abstract format:** Oral

Within the conceptual framework of Public Archaeology and Gender Studies, we present a case study on the discursive construction of gender in Prehistory's teaching. For this purpose, we analyse textbooks of all educational levels, courses and subjects in which the curriculum presents contents and competencies related to Prehistory between 1980 and 2019. The aim is to identify the prevailing informative patterns and define the historical situations and objects, both in their textual and visual aspects, about the discursive construction of gender, with emphasis on the configuration of the image of women. Similarly, to understand the exposed vision of the prehistoric past and to analyse the stereotypes and sexism installed, their origin and their repercussion on social perception and what role these ideas play in society, and more particularly, what implications they have for women. To this end, a systematic methodology created exprocess is implemented, based on the strategies and tools of analysis of Discourse Theory and Semiotics.

The results reveal how the gender dimension acts as a cultural filter through which a symbolic order originates from which we observe the world and apply it to what we conceive or try to know in which femininity is constructed by otherness. An image of women is projected and transmitted based on their bodies, both in their internal and external anatomical conditions, interpreted from a masculine point of view. Dynamics that we have dragged along overtime, where textbooks and schools play a fundamental role, as they are an almost unavoidable scenario for the majority of society where cultural, current and historical references come into play and contribute to shaping collective and individual identity.

## 9 THE PROBLEMATIC ABSENCE OF WOMEN AS ROLE MODELS FOR FIRST SEMESTER STUDENTS IN GERMANY

**Abstract author(s):** Gutmiedl-Schuemann, Doris - Schuster, Annette (Universität der Bundeswehr München, Department of Social Sciences and Public Affairs, Historical Institute)

**Abstract format:** Oral

In our paper, we will analyse the male dominance in propaedeutic publications, especially books, that were or are used as textbooks in introductory lectures and seminars for first semester students in study programs at Germany universities. For this purpose, we have selected textbooks that were published between the 1950s and 2010s for the use in German-speaking institutions. The books we are

analysing are mainly introductions into pre- and protohistoric

archaeology, and are used in introductory lectures and seminars into pre- and protohistoric archaeology in archaeology study programs. We will show that these publications are on the one hand focussing on methodology, but on the other hand, by introducing the methodology with examples from research history, they are systematically erasing women – both, ancient women as well as female archaeologists. Using narrations of male pioneers and their discoveries and achievements to teach methodology, female and non-binary students won't see humans like themselves represented in archaeology. Role models, however, are important to engage students with research topic and research fields: Therefore, introductory books representing diverse societies are important.

We will show that propaedeutic publications also have their own history, of which lecturers should be aware when using them. After our analysis, we will also discuss possible ways to make introductory lectures and seminars based on these books more inclusive.

This paper emerges from the recently started research project "AktArcha" that focusses on women working in archaeology and their past and present (in)visibility and also reflects the status of them as role models.

---

## 211 RIGHT HERE, LET'S GET IT RIGHT NOW. COLLABORATIVE CREATION OF STANDARDS AND GUIDANCE TO DEFINE GOOD ARCHAEOLOGY IN DIFFERENT JURISDICTIONS

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Hinton, Peter (Chartered Institute for Archaeologists) - Kyle, James (Institute of Archaeologists of Ireland) - Drummer, Clara (CIfA Deutschland) - Hessing, Wilfried (Vestigia Archeologie & Cultuurhistorie)

**Format:** Discussion session

This session is jointly organised by the Chartered Institute for Archaeologists (CIfA) and the Institute of Archaeologists of Ireland (IAI), and builds on CIfA 2020 session on professional standards.

In virtual Kiel we explored how professional standards and their supporting guidance, developed in one jurisdiction, can be adapted for use in others. There, we examined a new model for ClfA guidance, presenting

- the standard that must be met
- high-level guidance on the principles to be applied to different types of archaeological work, that should be applicable to all European jurisdictions and beyond (but needs to be tested and modified)
- detailed guidance on required practice in individual jurisdictions (which can only be prepared by archaeologists who work there – a long project!)

This year, in real Budapest, we will look at consultation versions of ClfA's high-level guidance, and will learn how IAI is reforming its codes and guidance. As an example, we will look at the detailed guidance for Northern Ireland, a product of IAI and ClfA collaboration to support the national heritage body (Historic Environment Division of the Department for Communities), and consider if this way of working translates to other states and regions.

We hope that the national heritage bodies in the UK and Ireland will explain why they are supporting the professional institutes to develop these standards and supporting guidance, what they hope they will achieve, and how – as regulators – they will use them.

But of course we want to hear from beyond that Atlantic archipelago, from those countries where ClfA has a presence and where it doesn't, about whether this approach could specify better outcomes of archaeological work.

## ABSTRACTS

### 1 THE CHALLENGE OF ESTABLISHING A 'LEVEL PLAYING FIELD' – THE ALIGNMENT OF STANDARDS AND GUIDANCE FOR USE IN NORTHERN IRELAND

**Abstract author(s):** Parker Wooding, Jen (Chartered Institute for Archaeologists) - Robinson, Rhonda (Department for Communities, Historic Environment Division)

**Abstract format:** Oral

The Chartered Institute for Archaeologists (ClfA) was commissioned in 2021 by the Department for Communities, Historic Environment Division (HED) to undertake a project focused on reviewing the applicability of Standard and guidance documentation (produced by ClfA and the Institute of Archaeologists of Ireland (IAI)) to archaeological practice in Northern Ireland. The project addresses recommendations in Archaeology 2030: A Strategic Approach for Northern Ireland and aligns with an ongoing ClfA initiative to ensure that their suite of Standards and guidance are up-to-date, accessible, and relevant across all the jurisdictions (where ClfA members practice). Working with consultants from IAC Archaeology this project focused on

- enabling the profession to deliver archaeological activities to consistent and professional standards, to support the delivery of public benefit
- enabling HED, as the regulatory and licencing body for Northern Ireland, to ensure consistent and appropriate standards are applied
- providing a 'level playing field' for all organisations participating in archaeological works or activities in Northern Ireland
- providing clear and consistent information which allow those commissioning archaeological works to understand processes and requirements
- benefiting the conservation of archaeological sites and their associated artefacts, records, and data by providing specific Northern Ireland guidance to help ensure their continued enjoyment by future generations.

This paper will introduce the project, highlighting the challenges involved in aligning Standards and guidance for use across jurisdictions whilst emphasising the potential solutions associated with doing just that.

### 2 STANDARDS AND GUIDANCE IN NORTHERN IRELAND. WHERE ARE WE, HOW DID WE GET HERE, AND WHAT HAVE WE ACHIEVED?

**Abstract author(s):** Robinson, Rhonda (DfC Historic Environment Division)

**Abstract format:** Oral

As the government body regulating archaeological practice in Northern Ireland, Historic Environment Division (HED) commissioned the Chartered Institute for Archaeologists (ClfA) to undertake a review of the application of standards and guidance documentation, produced by ClfA and the Institute of Archaeologists of Ireland (IAI), to archaeological practice in the region. This project emerged as a result of Archaeology 2030: A Strategic Approach for Northern Ireland, in which the archaeological sector identified revised standards and guidance as a key need – in fact it was Recommendation One in the report. What came across clearly in our sectoral engagement was that practitioners wanted easily understood advice on how to implement the standards provided by the Institutes in a specific Northern Ireland context, particularly to meet the requirements of our statutory excavation licensing system in the region. Not

only that, HED staff also strongly articulated the need for specific guidance, both to support them in their role as a regulator, and in undertaking our own range of duties as a government heritage body. This presentation from HED will discuss what we hoped to achieve from the Standards and Guidance project undertaken with the Institutes, and how the results are now being implemented considering:

- How can we achieve the most benefit, and who is the benefit for?
- Reviewing standards and guidance is great – but what about implementing them – both as a regulator and as an archaeologist on the ground?
- Collaboration between the professional institutes and the regulatory body seems obvious – so have we learnt anything new from this project?
- What has the feedback from the sector told us?
- Achieving the end goal - has the Standards and Guidance project got us to where we wanted to be, and have we met the need identified in Archaeology 2030?"

### 3 WHO CAN SET STANDARDS IN AUSTRIA AND GERMANY?

**Abstract author(s): Karl, Raimund (Universität Wien)**

**Abstract format: Oral**

Following a 1999 exemplar by the Verband der Landesarchäologen, all German State Monuments Agencies and also the Austrian Federal Monuments Agency have all adopted 'guidelines for archaeological fieldwork'. These, the heritage authorities pretend to be general quality standards applicable to all fieldwork in their respective jurisdiction, claiming they become legally binding by being attached as conditions to research permits issued for fieldwork. That there is a different one for each German state (and in one state, even more than one) is sometimes explained by 'legislative differences' between the various jurisdictions.

Yet, in this paper, I will argue that this is utter tosh. These 'standards' attached to permits – permits which themselves are sometimes issued illegally for fieldwork falling outside the issuing agency's jurisdiction – mostly are illegal. Neither are they primary nor secondary legislation themselves, nor are they based on any such. They are not even valid administrative rules; leaving aside that even if they were, they could not restrict the fundamental civil rights of archaeologists they interfere with because that would violate the fundamental constitutional principle of the rule of law. And for good measure, some rob archaeologists of their intellectual property rights or completely void their academic freedom, mainly for the benefit of the public officials who wrote them.

So if these are illegal, who can set standards? Certainly not the state, since where academic endeavours like archaeology are concerned, it is constitutionally prohibited from doing so. Ah, if only there were another system for setting standards in Austria and Germany!

Oh, but there is? In Austria, even one regulated by law, the Normengesetz (standards law), which has been around since, what, 1954? So why, then, haven't we been using that system? In this paper, I'll hazard a guess (or two).

### 4 BEWARE OF THE DIFFERENCE! A WARNING TO THE STANDARD-SETTERS

**Abstract author(s): Carman, John (University of Birmingham)**

**Abstract format: Oral**

All professions have their standards of acceptable performance: they would not be professions if they did not. Some such standards can be transferred across territorial and cultural boundaries without problem, but others travel less easily. While archaeology is certainly a global endeavour, in attempting to set professional standards for archaeology that can be applied globally, a number of complex issues have to be addressed which may make the adoption of common standards difficult or even impossible. They are issues that go deep into the history of archaeology as a field of endeavour and are not simply those that arise out of practical difficulties.

There are three areas that need to be taken into account in understanding how archaeology 'works' in any particular context and which need to be accommodated in setting any universal standards:

- Structures of governance and decision-making, which are determined by ideological rather than merely practical considerations and which establish in particular the regulatory framework under which archaeologists work;
- Ideas of what constitutes and can constitute archaeological material; and
- The historical development of archaeological policies and practices which 'act back' on both.

This paper will consider the consequences of these elements for setting a global standard for archaeological work.

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Rose, Thomas (Department of Archaeology, Ben-Gurion University of the Negev; Scienze dell'Antichità, Facoltà di Lettere e Filosofia, Sapienza - Università di Roma; Forschungsbereich Archäometallurgie, Leibniz-Forschungsmuseum für Georessourcen/Deutsches Bergbau-Museum Bochum) - Paladugu, Roshan (Universidade de Évora; Sapienza - Università di Roma) - Giaccari, Matteo (Department of Environmental Biology, Sapienza University of Rome)

**Format:** Regular session

The diversity of isotope studies in archaeological research is increasing at a rapid pace. Despite being initially limited to niche roles, applications like dietary reconstruction with stable carbon isotopes, the provenance of raw materials with lead isotopes or radiocarbon dating became popular over time and are now considered standard methods. Advancements in instrumentation, new isotope systems, and novel methods of interpreting data opened up new pathways for reconstructing ancient times. At the same time, standards for working with legacy data and for the publication of high-quality data become more and more critical because both the amount of both, legacy data and new analyses, are rapidly growing.

Unfortunately, discussions about good practices remained somewhat limited in isotope archaeology and are either restricted to a small part of the community and/or are happening in neighboring fields. However, many aspects of isotope archaeology are independent of specializations and materials. Moreover, everyday business, publication pressure, and the precariousness of today's Academia make it hard to find the time for strolling away from one's specialization, systematically exploring new research fields, and getting inspired by unconventional methodological approaches of colleagues.

We, therefore, invite contributions dealing with the application of isotopes to archaeological materials and research questions in the broadest sense possible. This session aims to offer inspiration from and discussion about the work of colleagues you otherwise might only come across by chance and to provide a forum for exchange beyond the borders of specializations and materials.

## ABSTRACTS

### 1 FOODWEB ISOTOPIC VARIABILITY IN THE EARLY NEOLITHIC: DETAILED ANIMAL BASELINE RELEVANCE AND IMPLICATION IN THE AISNE VALLEY (5100-4900 BC)

**Abstract author(s):** Herrscher, Estelle - André, Guy (CNRS, Aix Marseille Univ, LAMPEA) - Hachem, Lamys (Inrap; Trajectoires UMR 8215) - Bedault, Lisandre (Trajectoires UMR 8215) - Thévenet, Corinne (Inrap; Trajectoires UMR 8215) - Hamon, Caroline (Trajectoires UMR 8215) - Balasse, Marie (MNHN, CNRS, AASPE UMR 7209) - Ilett, Michael (Trajectoires UMR 8215)

**Abstract format:** Oral

Based on the great quality and abundance of archaeological data on the LBK in the Aisne Valley (Paris Basin, France), the study of food practices -faunal remains and cereal processing- revealed economic patterning within the settlements. As regards surplus in these first farmers' houses, the larger ones appear more involved in stockbreeding and cereal consumption, whereas the smaller houses show a slightly stronger contribution of hunting and its by-products, suggesting differences in the economic maturity of households. Expansion of the analysis to networks of know-how for pottery manufacture led to the proposal of a model of village organization marked by the integration of new inhabitants through time. Based on this exceptional context, an isotopic study (C, N S) of human dietary practices was designed to characterize the relationship between humans and their surrounding natural and anthropogenic environments and understand how the socio-cultural structure of can be reflected by dietary choices, at the individual and family levels. To ensure reliability of human isotopic ratios interpretation, a detailed analysis of animal isotopic data was firstly conducted to propose a high-resolution isotopic baseline representative of natural environment and herding management over 200 years (5000-4800 BC). This baseline is elaborated from 205 domestic and wild animal samples, corresponding to 11 taxa, sampled from 9 archaeological sites located east-west along the Aisne Valley, over a distance of about 50 km. In agreement with the geographical setting and taxa, isotopic ratios show expected wide ranges. This high-resolution analysis combining chronological, archaeological and biological criteria will make it possible to identify the impact of environmental and socio-cultural factors involved in the isotopic variability of animal proteins in order to propose and discuss the interest and limitations of a standard local food resource model.

This research is funded by the HOMES project directed by Caroline Hamon (ANR-18-CE27-0011-01).

## 2 THE DIET SYSTEM OF THE BRONZE AGE EAST EUROPE POPULATION AND DIETARY RESOURCES: INTERPRETATION OF STABLE ISOTOPE DATA

**Abstract author(s):** Shishlina, Natalia (-)

**Abstract format:** Oral

Reconstruction of Bronze Age food components by traditional archaeological methods has been successfully complemented by stable isotope analysis. Traditional archaeological materials and data of archaeozoological analysis suggest that the forest Volosovo population diet had many food components associated with hunting and fishing. Steppe Yamnaya inhabitants consumed meat and milk of domesticated animals, hunted games; the analysis of vessel residue and interdental teeth space revealed importance of the plant component. Determination of the nitrogen and carbon isotope ratios in the diet system components of the Volosovo populations inhabiting the forest belt and the Yamnaya population living in the steppe areas of eastern Europe in 4000–3000 has provided an opportunity to discuss the relationship between isotopic values of other diet components and specific isotopic composition of humans. Our study has demonstrated that the Volosovo population actively exploited forest resources and consumed mushrooms, probably, nuts and fish in smaller quantities as evidenced by a lack of the reservoir effect in the human bones. Elevated carbon and nitrogen isotope values of the Yamnaya population bone tissue were, probably, also caused by consumption of food products with an elevated nitrogen isotope value, most likely, mushrooms and nuts as well as water components. Differences in the isotopic composition of human bones can help clarify the areas of the exploited natural resources.

## 3 UNDERSTANDING THE PAST THROUGH THE PRESENT: THE IMPORTANCE OF CONTROLLED FEEDING EXPERIMENTS IN ISOTOPE ARCHAEOLOGY

**Abstract author(s):** Gutierrez, Eléa (Department of Archaeology, University of Aberdeen; Department of Biological Sciences, University of Aberdeen) - Mitchell, Sharon - Hambly, Catherine (Department of Biological Sciences, University of Aberdeen) - Speakman, John (Department of Biological Sciences, University of Aberdeen; Shenzhen Key Laboratory of Metabolic Health, Shenzhen Institutes of Advanced Technology; Centre of Excellence in Animal Evolution and Genetics, Chinese Academy of Sciences) - Britton, Kate (Department of Archaeology, University of Aberdeen; Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology)

**Abstract format:** Oral

The stable isotope analysis of human and animal remains has become an indispensable tool in palaeodietary reconstruction. Many feeding experiments have been undertaken to estimate the source of variation in trophic isotopic fractionation for carbon, nitrogen and sulphur. Typically these studies are conducted in ecological or biological sciences, and these have permitted archaeologists to estimate trophic isotopic fractionation factors and anticipated diet-tissue offsets for some of the most commonly preserved archaeological tissues e.g. bone, hair. However, beyond the reconstruction of dietary inputs, specific experimental studies under controlled nutritional conditions are needed to examine changes in isotopic fractionation that may be specifically related to the physiology of the individual, but which can also influence the isotope chemistry of preserved tissues. Indeed, there are uncertainties surrounding the effect of food deprivation (e.g., fasting, starvation) on macronutrient metabolism, diet-tissue isotopic offsets and tissue turnover in mammals. Despite numerous studies in other disciplines to understand how the metabolism is working in the context of starvation, very few studies have focused on the specific tissues in archaeology. In this context, the use of controlled feeding experiments is extremely relevant in order to better reconstruct the dietary conditions of past populations. To this matter, we will present various studies carried out on calorically restricted mice and how the alliance between biology and archaeology can enhance the application of multi-isotope methods for the study of the past.

## 4 PRESERVING BARLEY IN PEAT HEARTHES: EXPERIMENTAL ARCHAEOLOGY, STABLE ISOTOPES AND THE IRON AGE SITE OF CLACHTOLL BROCH, SCOTLAND

**Abstract author(s):** Walker-Friedrichs, Fiona - Gröcke, Darren (Durham University) - Heald, Andy - Cavers, Graeme - Robertson, Jackaline (AOC Archaeology Group) - Church, Mike (Durham University)

**Abstract format:** Oral

Little is known about how peat fires influence the preservation and stable isotope values of cereal grains recovered from archaeological hearths. Stable carbon and nitrogen isotope ratios ( $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$ ) can be used to reconstruct agrarian practices from these grains. Therefore, a series of archaeological experiments with peat hearths was conducted, adding a set number of grains of Bere barley, an Atlantic Scottish landrace, to each hearth. The experiments simulated Iron Age (IA) charring conditions in Atlantic Scotland, and the results were applied to archaeological barley grains from Clachtoll broch, Sutherland. Overall, the preservation of the experimental grains was poor except for one perfectly preserved grain. This matches archaeobotanical preservation profiles from IA Atlantic Scottish cereal assemblages. The experiments show a significant increase in  $\delta^{15}\text{N}$  values for the poorly-preserved cereal grains in the experimental hearths. A decrease in grain size and preservation were found to be correlated, as were preservation

and an increase in  $\delta^{15}\text{N}$ . Therefore, it is proposed that only very well-preserved cereal grains (P1-P3 following Hubbard and al Azm 1990) charred by peat fires should be used for stable isotope analysis in reconstructing ancient land management strategies in Atlantic Scotland and the wider North Atlantic region. Our archaeological application of the experimental findings to the barley grains at Clachtoll broch, produced an average  $\delta^{15}\text{N}$  value of  $5.30 \pm 1.70\%$  from 100+ grains, indicating that they were grown in fields with significant anthropogenic amendment.

## 5 STABLE ISOTOPES STUDIES IN SICILIAN PHOENICIAN AND PUNIC SETTLEMENTS

**Abstract author(s):** Meli, Francesca (Dept.Cultural Heritage-University of Palermo; LabHomo- Anthropology Laboratory of Department of Biological, Chemical and Pharmaceutical Sciences and Technologies-University of Palermo) - Tramati, Cecilia (Stable Isotope Ecology Laboratory of the Department of Earth and Marine Sciences-University of Palermo) - Greco, Caterina (Museo Archeologico Regionale "Antonino Salinas") - Griffo, Maria Grazia (Museo Archeologico Regionale Lilibeo di Marsala) - Nero, Carla (Soprintendenza Beni Culturali Palermo) - Fiorentino, Claudia (LabHomo- Anthropology Laboratory of Department of Biological, Chemical and Pharmaceutical Sciences and Technologies-University of Palermo) - Vizzini, Salvatrice (Stable Isotope Ecology Laboratory of the Department of Earth and Marine Sciences-University of Palermo) - Sineo, Luca (LabHomo- Anthropology Laboratory of Department of Biological, Chemical and Pharmaceutical Sciences and Technologies-University of Palermo)

**Abstract format:** Oral

The study of the dynamics and ecology of ancient populations in the central Mediterranean is a current topic in archaeological research. On the basis of several indicators, it is possible to record a significant increase in mobility and human interactions from enterprises beyond the sea of Carthage, around the 8th-7th centuries BCE, or at the latest the 6th century BCE according to traditional literature. When the colonial settlements in the central Mediterranean were established, such as in Sicily, they show an increasing influence of the Carthaginian cultural and urban model. Such phenomena of mixing probably continued even after the middle of the 3rd century BC, until the Roman conquest. This period was characterized by profound changes in the economic, demographic, and social patterns of the city in central-western Sicily, which probably influenced the ecological habits of its inhabitants. In this context, stable isotope studies are a major impetus for discussion.

In this paper, we present a project of the study of C and N stable isotopes in a representative osteoarchaeological sample of human and faunal remains selected from some of the main Phoenician and Punic, and partly Roman, necropolises in western Sicily, namely Solunto, Palermo and Lilybaeum.

This research assesses homologies and differences in ecological and dietary behavior.

## 6 INVESTIGATING HUMAN-ANIMAL INTERACTIONS IN PRECOLONIAL HISPANIOLA: USING BAYESIAN DIETARY MIXING MODELS TO DIFFERENTIATE WILD AND DOMESTICATED PLANT FOOD SOURCE CONTRIBUTIONS

**Abstract author(s):** Shev, Gene - Laffoon, Jason (Leiden University - Faculty of Archaeology)

**Abstract format:** Oral

The Late Ceramic Age (AD 600 – 1500) of the Caribbean is characterized by the emergence of new material cultures, migration and colonization, the widespread use of pottery, and the establishment of sedentary agricultural settlements. On the island of Hispaniola (modern day Dominican Republic and Haiti), new population centers emerged with palaeobotanical evidence suggesting that indigenous peoples were actively altering the landscape, likely due to slash-and-burn farming practices that facilitated the cultivation of a wide variety of domesticated plants. Notably, indigenous peoples did not rely upon domesticated animals as a food source, leading to their designation as hunter-fishers horticulturalists. There is however evidence suggesting that some animal species, in particularly a group of endemic Capromyd rodents known collectively as hutias, may have been managed by indigenous peoples, both based on their ubiquity at archaeological sites and due to evidence of human translocations of hutias from Hispaniola to other islands. This study follows from previous isotopic and zooarchaeological investigation into human-hutia relations, but applies a Bayesian dietary mixing model, Food Reconstruction Using Isotopic Transferred Signals (FRUITS), to differentiate between the dietary contributions of wild and domesticated plant food sources. Our aim is to establish the degree of human involvement in animal dietary behavior by establishing the relative dietary contributions of domesticated plants versus wild plants for several mammal species recovered from four indigenous sites in Hispaniola. Here we discuss: the utility of dietary mixing models to distinguish between 'wild' and 'domestic' plant food sources; our methodology that was specifically catered for herbivorous 'wild' animals compared to isotopic foodwebs curated for human isotope studies; the advantages and limitations of FRUITS and other dietary mixing models for studying human-animal interactions; and finally our results from the trial of three different food source models in FRUITS.



## 7 WEANING AGE FINDER (WEAN): A SIMPLE TOOL FOR ESTIMATING WEANING AGE FROM ISOTOPIC DATA

**Abstract author(s):** Ganiatsou, Elissavet - Souleles, Angelos - Papageorgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace)

**Abstract format:** Oral

Nitrogen stable isotope ratios ( $\delta^{15}\text{N}$ ) of incremental dentine collagen have been extensively applied in bioarchaeology for the reconstruction of breastfeeding and weaning practices in ancient populations. The shifts in  $\delta^{15}\text{N}$  values reveal the duration of exclusive breastfeeding, the onset and offset of weaning (weaning age), and potential signals of physiological stress. Contrary to the significant progress in measurement precision, estimating the duration of weaning is performed visually, a task that is time and labor intensive.

We generated a tool for automatically estimating weaning ages based on  $\delta^{15}\text{N}$  measurements of first permanent molars. The tool implements the elbow method, which consists of plots the  $\delta^{15}\text{N}$  values to assigned ages and picks the elbow of the curvature as the individual's weaning age. We applied our approach to published datasets with visually estimated weaning ages and compared the results to evaluate the error between visual assessment and elbow method estimation.

The results show a strong correlation between the two methods underlining that a mathematical framework can be accurately applied in weaning age estimation. The tool estimates the weaning age of a single or many individuals and combines current advances of bioarchaeological research and visually appealing graphics (scatter and line plots, Z-scores). Moreover, it identifies individuals whose  $\delta^{15}\text{N}$  values may indicate physiological stress and assists in the presentation and comparison of isotopic profiles. WEAN is a novel and robust method for weaning age estimation that streamlines the assessment of  $\delta^{15}\text{N}$  values for the exploration of breastfeeding and weaning patterns in antiquity.

Acknowledgment: This research has been co-financed by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH – CREATE – INNOVATE (project title: ECHOES-Development of a methodology for the digital reconstruction of ancient human biographies through the study of archaeo-anthropological material, project code:T2EDK-00152).

## 8 ARCHAEOLOGY OF BRAZILIAN SHELLMOUNDS: OLD QUESTIONS AND NEW MULTI-PROXY APPROACHES

**Abstract author(s):** Cardoso, Jessica (Géosciences Environnement Toulouse, Observatoire Midi Pyrénées, UMR 5563, CNRS, Toulouse; Museum of Archaeology and Ethnology, University of São Paulo) - Guiserix, Danaé (École Normale Supérieure de Lyon ENS) - Jaouen, Klervia (Géosciences Environnement Toulouse, Observatoire Midi Pyrénées, UMR 5563, CNRS; Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology, Leipzig) - Strauss, Andre (Museum of Archaeology and Ethnology, University of São Paulo)

**Abstract format:** Oral

The study of shellmounds can shed light in to human occupation and adaptations at coastal environments worldwide. In South America, human groups occupied the territory close to the Atlantic Ocean for millennia (at least 8000 to 1000 ca. years BP), building hundreds of shellmounds, some with impressive dimensions. It is assumed that these populations disappeared when an environmental change occurred and that new ceramicist populations arrived from the inland. We aim here is documenting the mobility of the shellmounds' populations before and after the arrival of ceramic and to study their subsistence strategies in order to test the aforementioned hypothesis. To do so, we conducted a combination of non-traditional and traditional isotope analyses ( $\text{d}^{13}\text{C}$  and  $\text{d}^{15}\text{N}$  of bulk collagen and amino acids,  $\text{d}^{88}\text{Sr}$ ,  $\text{d}^{66}\text{Zn}$  and  $87/86\text{Sr}$  of hydroxyapatite) as well as trace element ratio on fauna and human's bones and teeth of 8 Brazilian archaeological sites. Our preliminary results have shown that non-traditional isotopes can elucidate and improve our understanding on food webs, environment and diet of ancient populations, especially in cases where collagen is not preserved. We demonstrate that shellmound's people had a remarkable adaptation to the coast and weren't replaced by inland populations after the arrival of pottery.

## A COMBINED OSTEOLOGICAL, ISOTOPE AND PROTEOMICS APPROACH TO POORLY PRESERVED HUMAN REMAINS FROM A DUTCH EAST INDIA COMPANY BURIAL GROUND

**Abstract author(s):** Hall, Rachael (Laboratory of Human Osteoarchaeology, Faculty of Archaeology, Leiden University) - Olszewski, Judyta (Division of Clinical Anatomy and Biological Anthropology, Department of Human Biology, University of Cape Town; Laboratory of Human Osteoarchaeology, Faculty of Archaeology, Leiden University) - Kootker, Lisette (Geology & Geochemistry cluster, Department of Earth Sciences, Vrije Universiteit Amsterdam) - Layfield, Robert - Shaw, Barry - Oldham, Neil (The University of Nottingham Medical School, Faculty of Medicine & Health Sciences, University of Nottingham) - Hart, Tim (Archaeology Contracts Office - ACO - Associates, Cape Town) - Derksen, Leon (Independent Researcher) - Manders, Martijn (Cultural Heritage Agency of the Netherlands - RCE; Archaeological Heritage Management, Faculty of Archaeology, Leiden University) - Schrader, Sarah (Laboratory of Human Osteoarchaeology, Faculty of Archaeology, Leiden University)

**Abstract format:** Oral

Skeletal remains discovered in Simon's Town, South Africa were identified as being possibly associated with a formerly standing Dutch East India company hospital. The potential connection to Dutch heritage prompted an international research collaboration between South African archaeologists and the Cultural Heritage Agency of the Netherlands to investigate the poorly preserved remains. The objective of this research was to use a novel combined osteological and biochemical approach to inform the identities of these individuals. Methodologies included osteological observations, and utilising tooth enamel for isotope analysis using strontium (Sr), oxygen (O) and carbon (C) from carbonate, and proteomics. The methods chosen provided information on possible childhood origins, diet, biological sex, and pathological conditions, along with the individuals relation to the site.

Osteological analysis on 22 individuals presented evidence of residual rickets/osteomalacia, various dental pathological conditions, and pipe-notches. Sr-O-C isotope analysis yielded results for 39 individuals. One individual fell within all expected ranges of the Western Cape of South Africa. The remaining 38 individuals, however, did not fall within all expected Western Cape ranges. The majority exhibited ratios which could potentially fit within several relevant European countries. Two individuals likely did not have origins in either the Western Cape nor Europe due to their carbon isotope results. Proteomics analysis on the dental enamel of nine tested individuals confirmed that they were biologically male.

This study suggests that isolated enamel can provide crucial information about individuals pathological conditions, geographical origins, diet and biological sex. These data further demonstrate that a combined approach using multiple osteological and biochemical methods are advantageous for poorly preserved remains. The novel combination of isotope analysis and proteomics in determining biological and geographical profiles proved successful and contextualised the interred individuals with little other direct evidence.

## THE ISOTOPIC RATIO $87\text{Sr}/86\text{Sr}$ AS MOBILITY/PERMANENCE MARKER IN VELIA ARCHEOLOGICAL SITE

**Abstract author(s):** Giaccari, Matteo (Department of Environmental Biology, Sapienza University of Rome)

**Abstract format:** Oral

During roman times the mobility used to be forced by slavery, military reason or self-driven. Assessing the magnitude of this migration is critical to better understand a culture. During the last decades the scientific community agreed on the effectiveness of strontium isotope ratio ( $87\text{Sr}/86\text{Sr}$ ) to study this specific phenomenon.

The aim of this study is to individuate this mobility phenomena using invasive technique in order to characterize the  $87\text{Sr}/86\text{Sr}$  isotopic ratio of different human individua, analyzing the enamel of their teeth.

Strontium (Sr) substitutes calcium (Ca) in biogenic apatite. It is known that only  $87\text{Sr}$  fluctuate during time because of its radiogenic nature so it will varies depending on geological region. It is well known that strontium isn't influenced by isotopic fractionation and passes through the biological cycle unchanged. Due to those characteristics this ratio will result different and diagnostic for specific areas.

It is important to assess a local range therefore, in this case, archeological pigs' values were chosen because they were breed in loco and fed with leftovers. Additionally, values obtained from literature were used and helped to obtain a strong and valid proxy.

In conclusion, it is possible to say with a good margin of error that all the individua are Velian from their birth since the ratio variation from the human samples is negligible and in the range assessed using both literature faunal data and results from this study.

## CONSTRUCTING BIOAVAILABLE STRONTIUM BASELINES FROM THE LOCAL TO THE MULTI-NATIONAL SCALE USING NEW AND LEGACY DATA – CHALLENGES AND LIMITATIONS

**Abstract author(s):** James, Hannah - Cheung, Christina - Gerritzen, Carina - Griffith, Jacob - Snoeck, Christophe (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Maritime Cultures Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel)

**Abstract format:** Oral

As the use of strontium isotope analysis in archaeology to assess mobility and provenance of people, animals and objects expands, the need for robust baseline maps of bioavailable strontium to interpret these data increases. Isoscapes of varying scales, from archaeological site-specific, local, regional to national maps have been published. These isoscapes establish baselines from a variety of different archives; plants, soils, water, and archaeological and modern humans and fauna. The cost and effort to create these datasets is high, so previously published or legacy data is an important source to expand and increase the sampling density of baselines.

This research will present large scale bioavailable strontium datasets from across Europe, using the specific examples of published datasets from Portugal, France, and Ireland. We will discuss how combining datasets of different scales and archives can provide a robust baseline for tracing mobility and provenance in a variety of archaeological disciplines. The extent of other published datasets from Europe will be highlighted and sampling gaps identified. The importance of accessibility, that allows for comprehensive reuse of datasets, will also be discussed.

Reconstructing mobilities and provenances of archaeological materials can address important questions such as landscape use, trade networks or husbandry practices. By combining datasets researchers from across archaeological disciplines can interpret strontium isotope measurements on human, faunal or archaeological materials.

## THE APPLICATION OF SR ISOTOPES TO DECIPHER THE SOURCE OF NABATAEAN BRONZE COINS COLLECTED IN ISRAEL

**Abstract author(s):** Ercoles, Isabella (Department of Earth Sciences, Sapienza University of Rome)

**Abstract format:** Oral

This study presents the analyses of the strontium (Sr) isotope ratio of 40 copper-based coins, belonging to the Nabataean Kingdom and hailing from the Israel Antiquities Authority at the Israel Museum (Jerusalem).

The Nabataean Kingdom was a powerful political entity, that flourished in modern-day Jordan, Israel, and Syria between the 4th century B.C.-106 A.D.

The Nabataeans were a nomadic tribe, expert in trades, and able to control vast trading networks.

The elements concentration in the coin-solutions was analyzed using ICP-AES at the Geological Survey of Israel. Sr isotopic compositions were determined by TIMS and MC-ICP-MS-"Nu Plasma" at IGAG-CNR laboratories at La Sapienza - University of Rome and at the Geological Survey of Israel.

Additional samples, including a prill and an ore material from the Timna area, the most important local source of copper, were employed to detect the provenance of the samples under study.

Lead isotope ratios, commonly used to trace metal provenance sources, are powerful geochemical tracers but could not be sufficient to identify the original ore deposits due to some coinage processes such as mixing and re-melting.

The use of Sr isotope ratio as a geochemical tool (fingerprints) could overcome this obstacle, even if his application is not yet been explored due to the low Sr concentrations in metals. The results show that Sr isotope ratio can effectively trace the metal provenance.

So, the Nabataean copper archaeometallurgy was investigated thanks to the ubiquitous geological database of the Sr isotope ratio, identifying in the Arabah Valley the local source of Nabataean copper coins.

## FROM OXALID TO GLOBALID: A SUBSTANTIAL UPGRADE OF A WELL-KNOWN DATA POOL OF LEAD ISOTOPES FOR METAL PROVENANCING USING R

**Abstract author(s):** Rose, Thomas (Department of Archaeology, Ben-Gurion University of the Negev, Be'er Sheva; Dipartimento di Scienze dell'Antichità, Sapienza – Università di Roma; Forschungsbereich Archäometallurgie, Leibniz-Forschungsmuseum für Georessourcen/Deutsches Bergbau-Museum Bochum) - Klein, Sabine (Forschungsbereich Archäometallurgie, Leibniz-Forschungsmuseum für Georessourcen/Deutsches Bergbau-Museum Bochum; Institut für Archäologische Wissenschaften, Ruhr-Universität Bochum; FIERCE, Frankfurt Isotope & Element Research Centre, Goethe Universität, Frankfurt am Main) - Westner, Katrin (Ecole Normale Supérieure de Lyon, CNRS, Université de Lyon) - Hsu, Yiu-Kang (Forschungsbereich Archäometallurgie, Leibniz-Forschungsmuseum für Georessourcen/Deutsches Bergbau-Museum Bochum)

**Abstract format:** Oral

Lead (Pb) isotope geochemistry is an approved key method in archaeological sciences to reconstruct the resource provenance of metals and trade networks of the past civilisations. Successful application and interpretation of Pb isotope signatures of metal artefacts rely crucially on the published ore data, which are partly only available from pre- or re-digitalised publications. Most Pb isotope reference data collections were compiled by individual working groups, usually focussing on their projects and regions of interest. A great step towards a large-scale collection of Pb isotope data came with the release of the OXALID database in the early 2000s, which has benefited the scholars in the natural science discipline as well as the more untrained users from the archaeological community. Still up today, OXALID is the most used and cited source for reference data, despite the accumulation of many additional data sets since then. All of them are set up as static data collections, limiting the possibilities to expand, correct, and modify them with the publication of newer results or analyses. Additionally not all of them are easily available for people from across the world and only recently compilations for regions outside of Europe and the Mediterranean became widely available.

Riding the wave of open science and new data infrastructures, the authors are endeavouring to digitalise and construct a global Pb isotope data base using the statistical environment R and Shiny App. The presentation will demonstrate this highly promising application for the modernisation of archaeometry as an applied geoscience discipline.

## FURTHERING OUR UNDERSTANDING OF THE SOURCES OF THE METAL OF ROMAN DENARII – A MULTI-ISOTOPE AND ELEMENTAL ANALYSIS APPROACH

**Abstract author(s):** Greifelt, Tim (Forschungsbereich Archometallurgie, Leibniz-Forschungsmuseum für Georessourcen/Deutsches Bergbau-Museum Bochum; Institut für Geologie, Mineralogie & Geophysik, Ruhr-Universität Bochum) - Wigg-Wolf, David (Römisch-Germanische Kommission des Deutschen Archäologischen Instituts - RGK) - Klein, Sabine (Forschungsbereich Archäometallurgie, Leibniz-Forschungsmuseum für Georessourcen/Deutsches Bergbau-Museum Bochum; Institut für Archäologische Wissenschaften, Ruhr-Universität Bochum; FIERCE, Frankfurt Isotope & Element Research Centre, Goethe Universität)

**Abstract format:** Oral

Since coins are generally an officially produced medium, provenance studies of the metal used to produce them can provide important information on the logistical, infrastructural and organizational capacities of central authorities. Thus, it is not surprising that ancient coins have been the subject of a large number of archaeometallurgical studies, in particular involving lead isotopes.

The composition of the silver in the coin metal of Roman Imperial denarii has been intensively investigated in recent years by Kevin Butcher and Matthew Ponting (The Metallurgy of Roman Silver Coinage. Cambridge 2014). However, the work concentrated primarily on the chemical composition, with only a relatively smaller number of isotopic analyses being carried out, and concentrating on specific questions.

To complement the investigations of Butcher and Ponting, more than 200 additional coins from the period 30 BC to AD 240 have been sampled for isotopic analysis in a project based at the German Mining Museum in Bochum. Besides standard lead isotopes, these analyses also included copper and silver isotopes, which were performed in Bochum, at the Frankfurt Isotope and Element Research Center FIERCE, the Laboratoire de Géologie de Lyon, École normale supérieure de Lyon, and in the Institute for Geosciences at the Goethe University Frankfurt.

The combination of isotopic analyses of different elements has provided deeper, sometimes surprising insights, qualifying the information provided by lead isotopes alone. This paper will present the first results and interpretation of our analyses, so indicating how a combination of isotopic methods can advance our understanding of the provenance and the methods used to obtain the raw materials.

15

## SOCIAL TRAJECTORIES OF MEDITERRANEAN IMPORT IN THE TRANSALPINE WORLD BETWEEN THE 3RD CENTURY BC AND 2ND CENTURY AD

**Abstract author(s):** Bursak, Daniel - Frank-Danielisová, Alžběta (Institution of Archaeology of the CAS, Prague)

**Abstract format:** Oral

In the last years, a significant number of new archaeometric data on metal artefacts from Central European Iron Age and Roman period was collected and analysed. Using methods now considered as "standard" like major and trace element statistics with the lead isotope analysis of bronze and glass artefacts, we often obtained a surprising picture, which in many ways challenged the current view on the function of given items in local societies. We would like to bring into the discussion our experience with an archaeometry analyses from the perspective of archaeologists. Given the complexity of metallurgy, metal distribution and the role of various metal artefacts in the later prehistory, our focus and questions gradually shifted from classical provenance-oriented studies towards more complex questions on the role of artefacts in the society, their relevance as a proxy for mobility, socio-economic studies etc. Since archaeometry seems now to be perceived as an inevitable part of the research approach, our aim is to encourage a discussion on the future role of scientific analyses of artefacts in the complex societies of later prehistory. We would like to develop the process of finding new questions and a deeper and/or more complex involvement of the archaeometric analyses in the future research.

As a medium for our presentation, we selected one of the most conspicuous parts of the archaeological record in the Iron Age and Roman period: the phenomenon of Mediterranean imports. Their distinctiveness has always stood at the forefront of narratives concerning political power, economy and societal networks. Built over the years in the fields of art and cultural history, anthropology and archaeology, the phenomenon of exogenous items in indigenous Iron Age material culture now faces a very significant challenge in its perception due to the rapidly increasing involvement of archaeometric methods.

16

## DEVELOPMENTS TOWARDS FAIR AND LOUD INSTRUMENTAL DATA REPOSITORIES IN OTHER DISCIPLINES

**Abstract author(s):** Rose, Thomas (Department of Archaeology, Ben-Gurion University of the Negev, Be'er Sheva; Dipartimento di Scienze dell'Antichità, Sapienza – Università di Roma; Forschungsbereich Archäometallurgie, Leibniz-Forschungsmuseum für Georessourcen/Deutsches Bergbau-Museum Bochum)

**Abstract format:** Oral

Isotope data, like most other instrumental data, are used in an interdisciplinary setting. Sometimes the analytical methods are borrowed from other disciplines, sometimes the same type of data is also used in multiple disciplines or the data are interpreted using concepts from neighbouring fields. Furthermore, data from other disciplines are used by archaeologists and vice versa other disciplines used data obtained from archaeological material. More often than not a lot of time is still consumed to compile data from the literature and other sources, checking it and enriching it with the necessary metadata. Easy access to high quality data is however key in modern research. Research data should be FAIR and LOUD, i. e. findable, accessible, interoperable, reusable, and they should be linked open usable data. This means that they are easily accessible in the internet (e. g. in repositories) in open format under open licenses with rich metadata, that they are linked to other databases in their metadata (e. g. for geographical information about sampling locations), and that other databases can easily access them.

Great efforts were spent in the last years to develop suitable infrastructures for research data. Because of the extremely interdisciplinary character of the archaeological sciences, these developments and their huge potentials must not be ignored. Moreover, archaeologists should aim to contribute and shape the data infrastructures for instrumental data in neighbouring fields in a way that also meet their needs. There is no reason to build up parallel structures when archaeology-specific parts can be added to existing data pools.

This presentation provides some insights into current developments in other disciplines. Due to the background of the presenter mostly drawn the geosciences, some initiatives and projects that deal with instrumental data will be presented and how archaeologists could and sometimes already are participating in them.

A.

## HOW CAN WE BE SURE THAT OUR (OSSEOUS) FIND IS APPROPRIATE FOR AMS 14C MEASUREMENT?

**Abstract author(s):** Szigeti, Anna (International Radiocarbon AMS Competence and Training Center - INTERACT, Institute for Nuclear Research, Debrecen; Déri Museum, Debrecen) - Molnár, Mihály - Major, István (International Radiocarbon AMS Competence and Training Center - INTERACT, Institute for Nuclear Research, Debrecen)

**Abstract format:** Poster

Working in a 14C laboratory, you know several rules and techniques how the samples must be handled to avoid contamination, cross-contamination, etc. and get proper and reliable AMS results. Some studies have already drawn

some attention to these practices, covering the details from sample preparation to the reduction of CO<sub>2</sub> gas to graphite.

However, the age result of a bone sample also depends on what is the sample's condition like when it arrives at the laboratory. This poster aims to outline some tips and tricks to archaeologists, museologist and professionals of other fields about handling samples devoted to radiocarbon dating. This short study focuses on the following topics according our best practice at INTERACT AMS Laboratory:

- How do we select our find on the field for a sample, and what is the next step?
- Risks of pretreatments in the museum.
- How do we select our find for sample from the depths of the museum's store?
- How do we storage, label, etc. our sample before posting it to the laboratory?
- What can we do with the measured result of our sample?

We will try to provide some advice on such and similar issues, focusing primarily on osseous samples.

The research was supported by the European Union and the State of Hungary. Co-financed by the European Regional Development Fund in the project of GINOP-2.3.4-15-2020-00007 "INTERACT".

## **B. ROMAN CONNECTIONS IN VALKENBURG: A TRIPLE SR-O-C ISOTOPE APPROACH TO THE HUMAN REMAINS OF THE PEOPLE IN A MILITARISED BORDERSCAPE**

**Abstract author(s):** De Coster, Maura (Geology & Geochemistry, Department of Earth Sciences, Vrije Universiteit Amsterdam) - Vos, Wouter (Vos Archeo; Saxion University of Applied Sciences Deventer) - Stevens, Saskia (Ancient History and Classical Civilization, department of History and Art History, Utrecht University) - Davies, Gareth (Geology & Geochemistry, Department of Earth Sciences, Vrije Universiteit Amsterdam) - Kootker, Lisette (Geology & Geochemistry, Department of Earth Sciences, Vrije Universiteit Amsterdam)

**Abstract format:** Poster

The lower German limes, recently recognized as a World Heritage site by UNESCO, attracted people from across the Roman Empire. Not only did the limes have forts, watchtowers, linked infrastructure, and civilian centres, but its key settlements operated as trade hubs that made them unique meeting points between the Roman Empire and northern populations. Therefore, remains of the Lower German borderscape illustrate the important impacts of the Roman military presence on the landscape and society of the periphery of the Empire.

A few kilometres from where the Lower German limes ends in the North Sea, the unique Roman cemetery of Valkenburg Marktveld has been excavated. Located circa 500 m. south of the auxiliary fort, the archaeological site plays a key role in understanding the population dynamics in a Roman borderscape and coastal landscape. This cemetery was used between 50 – 300 CE for the entire military community that consisted of men, women and children, who lived in the vicinity of the auxiliary fort. Over 650 individuals were recovered, 145 of which are inhumations (41 adults, 104 children and infants); an extraordinary number as cremation dominates the Roman burial record in the Netherlands. A triple Sr-O-C isotope approach was adopted to infer more information about the geographical origin of the inhumed and cremated individuals. In this poster, the first results are presented that give a rare insight into the population dynamics within a militarised borderscape.

## **C. THE DIETARY IMPACT OF THE YAMNAYA HORIZON ON CONTEMPORARY AGRICULTURALIST POPULATIONS IN THE BALKANS**

**Abstract author(s):** Sandoval, Elena (University of Bristol; YMPACT project)

**Abstract format:** Poster

The migration of Yamnaya people in the Early Bronze Age, ca. 3,300 BCE–2,800 BCE, into the Pontic-Caspian steppe changed the genetic fabric of Europe. However, how much of the existing societal fabric, if any, was influenced by this migration and subsequent genetic mixing has not been thoroughly explored. Determining the extent of the Yamnaya influence on prehistoric Europe requires an interdisciplinary approach that combines multiple lines of evidence.

This poster presents how this potential cultural flow is being investigated through the lens of diet, via both organic residue and stable isotopic analysis. As Yamnaya are represented exclusively by burial mounds, faunal bones and pottery are rare. Heavily pastoralist subsistence patterns of Yamnaya are generally assumed, based on the lack of settlement evidence. Here, dietary practices within the Yamnaya are directly reconstructed using bulk and compound-specific stable isotope analysis of human skeletal remains. Faunal baseline carbon isotope values will be modelled based upon lipids extracted from pots from local contemporary non-Yamnaya settlements, and Yamnaya faunal bones where available. The analysis of pottery sherds from a diachronic perspective also allows for an investigation of potential cultural exchange between migrating Yamnaya and Balkan societies. Samples of 166 skeletal remains and 238 pottery sherds were chosen to reflect this angle of inquiry creating a sample group that is comprised of Eneolithic, Early Bronze Age, and Middle Bronze Age pots and skeletal remains from across modern day Bulgaria and Romania, creating an in-depth study of both spatial and temporal dietary trends.

This study will provide the first detailed picture of the subsistence patterns and change throughout the Yamnaya migration and subsequent contact with Eneolithic Balkan societies.

#### **D. COMPARISON OF REMOVAL METHODS OF CONSERVATION SUBSTANCES LAID ON ARCHAEOLOGICAL BONE SAMPLES DEDICATED TO CARBON ISOTOPIC ANALYSES**

**Abstract author(s):** Major, Istvan (International Radiocarbon AMS Competence and Training Center - INTERACT, Institute for Nuclear Research, Debrecen) - Szigeti, Anna (International Radiocarbon AMS Competence and Training Center - INTERACT, Institute for Nuclear Research, Debrecen; Déri Museum, Debrecen) - Fogarasi, Eszter (International Radiocarbon AMS Competence and Training Center - INTERACT, Institute for Nuclear Research, Debrecen; Department of Physical Chemistry, University of Debrecen) - Futó, István (International Radiocarbon AMS Competence and Training Center - INTERACT, Institute for Nuclear Research, Debrecen) - Lengyel, György (Department of Prehistory and Archaeology, University of Miskolc) - Jull, AJ - Molnár, Mihály (International Radiocarbon AMS Competence and Training Center - INTERACT, Institute for Nuclear Research, Debrecen)

**Abstract format:** Poster

Human- or animal-derived bone, teeth, ivory and antler archaeological finds have always been frequent samples submitted to radiocarbon laboratories. Nowadays, in excavation campaigns, increasing attention is devoted to the selection and handling of the most promising samples, also considering subsequent scientific analyses. However, in the past, this care was not in focus thus a lot of objects stored in museums had been chemically treated to preserve them for the future. For this purpose, a wide range of natural and artificially produced substances has been applied in archaeology so the analyses and dating of these objects are still laborious. At the Hertelendi Laboratory of Environmental Studies, we aimed to try to estimate the effect of some conservation substances to the actual age of a reference bone sample. A larger long bone was selected and split into fragments, which were then treated artificially by preservatives such as epoxy resin, superglue or paraffin. After drying, the surface of the samples was polished and the fragments were crushed. Regarding chemical pretreatment, a simple acid-base-acid (ABA) wash, a post-ABA ultrafiltration step and a complete Soxhlet-extraction, ABA and ultrafiltration protocol were selected for comparison. After gelatinization, the produced samples were measured by accelerator mass spectrometry and stable isotope ratio mass spectrometry and the results were evaluated and compared from a carbon isotopic aspect.

The research was supported by the European Union and the State of Hungary, co-financed by the European Regional Development Fund in the project of GINOP-2.3.4-15-2020-00007 "INTERACT".

#### **E. SAMPLING METHODOLOGY FOR THE RADIOCARBON DATING OF HISTORICAL MORTAR: EXAMPLES OF SAMPLES FROM THE OLDEST STRUCTURES AT PRAGUE CASTLE (CZ)**

**Abstract author(s):** Tomanova, Pavla (Institute of Archaeology of the CAS) - Válek, Jan (Institute of Theoretical and Applied Mechanics of the CAS) - Světlík, Ivo (Nuclear Physics Institute of the CAS) - Maříková-Kubková, Jana - Herichová, Iva (Institute of Archaeology of the CAS)

**Abstract format:** Poster

So far, nobody has systematically studied the radiocarbon dating of lime mortar binding agents in the Czech Republic. However, recent times have brought significant changes to the field of isotope analysis. Since 2005, the Institute of Archaeology of the Czech Academy of Sciences has been collaborating with the radiocarbon laboratory of the Nuclear Physics Institute of the CAS. This laboratory was later granted an international CRL code. In 2021 and 2022, the laboratory has acquired its own AMS system with a tandem accelerator capable of accurately measuring ultra-low radionuclide activities, which allows us to conduct routine measurements of  $^{14}\text{C}$  activity for the purposes of radiocarbon dating.

This poster presents the current results of the ongoing research project focused on the sampling methodology for historical mortar and aiming to improve the quality and credibility of carbonate binding agent dating results. We primarily work with mortar samples from the relics of the oldest Prague Castle masonry structures (9-12 century) uncovered by archaeological excavations starting in the 1920s. Some of the relics are still accessible at the archaeological site, while some of the samplings took place during the excavations, and the samples have been archived. The sample selection is connected to a previous study of the authenticity of historical mortars, a review of their find context, and an analysis of the used materials and lime technologies.

The ongoing research project aims to combine the knowledge from the field of historical material analysis (mortar) and archaeological data analysis to optimise the sampling process and the processing of samples for AMS dating. Another aim is to identify cases where radiocarbon dating may be helpful and define the reasons why relevant results have not been found in the case of some binding systems.

**F. STABLE ISOTOPE ANALYSIS IN HUMAN BONE COLLAGEN FOR THE RECONSTRUCTION OF DIETARY PATTERNS IN THE ANCIENT COLONY OF ABDERA (GREECE).**

**Abstract author(s):** Georgiadou, Angeliki - Zisis, Anastasios - Ganiatsou, Elissavet (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace) - Kallintzi, Constantina (Ephorate of Antiquities of Xanthi, Ministry of Culture and Sports) - Papageorgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace)

**Abstract format:** Poster

During the second Greek colonization (8th – 5th c. BC) numerous of colonies were founded across the region of Aegean Thrace. Abdera is a renowned and prosperous colony located in the littoral of Aegean Thrace. The geostrategic location in addition to fertile land and mineral resources turned Abdera into a notable commercial and political international hub. The colony shows a unique case of two-wave colonization. The city was firstly founded by Ionians from Clazomenae (c. 654 BC), but their endeavor did not succeed. Harsh environmental conditions and denoted aggression from local tribes, led the first colonists in demise within the first couple of generations. About a century later (545 BC), Abdera was re-founded by new settlers, from Teos, another Ionian city involved in colonial activity. Within these circumstances, previous anthropological research shows a high frequency of malnutrition expressed with the prevalence of infections and metabolic diseases in the population of Abdera, during its initial occupation phase. In this study, we present a diachronic dietary reconstruction from the ancient city of Abdera. We apply the established method of stable isotope analysis ( $\delta^{15}\text{N}$ ,  $\delta^{13}\text{C}$ ) in bone collagen of human skeletons from the cemetery of ancient Abdera. The sample has a vast chronological range beginning with the two phases of the city's foundation and re-foundation (archaic period) and extends to the Roman era. Our dataset consists of 94 human skeletons (26 males, 31 females, 30 subadults and 7 indet. indiv.). Our preliminary results show a diachronic preference in terrestrial animals during both periods with lesser contribution of C3, C4 plants. Our pilot observations depict a diachronic trend of the dietary habits in Abdera and offer a window to the dietary differentiation during historically diverse periods.

**G. DIET RECONSTRUCTION IN ANCIENT AMBRACIA: STABLE ISOTOPE ANALYSIS ( $\Delta^{15}\text{N}$ ,  $\Delta^{13}\text{C}$ ) FROM HUMAN BONE COLLAGEN, DURING THE ARCHAIC AND CLASSICAL YEARS**

**Abstract author(s):** Georgiadou, Angeliki - Ganiatsou, Elissavet - Xanthopoulos, Kyriakos - Zisis, Anastasios (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace) - Papadopoulou, Varvara (Ephorate of Antiquities of Arta, Ministry of Culture and Sports) - Papageorgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace)

**Abstract format:** Poster

The Greek colonial expansion of the early 1st millennium BC spread people, goods, art, ideas and lifestyles across the Mediterranean and the Black Sea. The relationships between the mother-cities and colonies were multidirectional, profitable for both entities, and in some cases the colonies preceded the motherland in terms of cultural and political developments. Within this context the reconstruction of dietary habits can shed significant light on these interactions, as food in ancient Greek societies was regarded as a marker of ethnic and cultural differentiation. To address pending questions about subsistence in ancient colonies, we apply the established method of stable isotope analysis in human bone collagen to present the diet in the colony of Ambracia, from its occupation phase (archaic era) up to its destruction (Hellenistic era). Ambracia was founded by the city of Corinth in 625 B.C. on the banks of the river Arachthos in western Greece. The geostrategic location, at the crossroad of southern and northern Greece, made the colony a melting pot of cultural and commercial exchange particularly during the classical period (480-323 BC). Our dataset consists values of stable isotope ratios of carbon and nitrogen ( $\delta^{15}\text{N}$ ,  $\delta^{13}\text{C}$ ) from bone collagen of 158 human skeletons from the western cemetery of ancient Ambracia. Preliminary results show that terrestrial animal protein played a pivotal role in the dietary habits of the population with a lesser contribution of C3 plants and marine resources. Our findings will be correlated with literary evidence and other dietary studies in total period datasets from ancient Greek colonies. Our observations aim to delineate the dietary shifts during the colonization process and shed light on the intensely debated subject of daily life during the second Greek colonization in mainland ancient Greece.

---

**215 FACING WATER RESOURCES AND VARIATIONS IN CENTRAL ASIA FROM PREHISTORY TO TIMURID PERIOD: DISASTER(S), ADAPTATION, ANTICIPATION**

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Rhoné-Quer, Camille (Aix-Marseille University; CNRS/IREMAM) - Brisset, Elodie (CNRS/IMBE; Aix-Marseille University) - Kholov, Vohid (Institute of History of the Academy of Sciences of Uzbekistan)

**Format:** Regular session

Context and challenges: The hydrological networks of Central Asia includes some of the major rivers of the world (Syr Darya and Amu Darya) and their mountainous watershed, as well as vast low-land oases and continental seas (Aral,



Caspian). Did perception and adaptation to hydrological risks influenced landscape construction as well as social organizations from Prehistory to Timurid periods?

This session aims to address this question and analyse these challenges in a multidisciplinary approach, including all disciplines related to archaeology, paleoenvironment, history, sociology or anthropology. What are the evidences and testimonies of climatic hazards (flood, drought, rivers' bed displacement, sea-level change), and disasters (people injuries, infrastructure losses and damages)? Can we distinguish the effects of abrupt, short-term events of the ones evolving over the *longue-durée* on the political, social, economic or cultural processes? Papers will investigate the ways to face water variations, as for example:

- shaping urban networks, and innovative architecture according to risk consciousness and accessibility to water resources (distance from rivers, irrigation canals, cisterns...);
- mobility (desired or unplanned/compulsory), either of nomadic or sedentary people, on a small or large scale (including military disorders and invasions);
- adaptations in agricultural practices (animal selection, floristic evolution);
- reflexion about role of political leaders in these adaptations (planned or unplanned attitudes/evolutions).

## ABSTRACTS

### 1 STUDYING RELATIONSHIP BETWEEN PREMODERN SOCIETIES AND WATER RESOURCES OR VARIATIONS IN CENTRAL ASIA: A STATE OF THE ART

**Abstract author(s):** Rhoné-Quer, Camille (Aix-Marseille University; CNRS/IREMAM) - Elodie, Brisset (CNRS/IMBE)

**Abstract format:** Oral

While environmental studies are increasingly popular and give rise to a multitude of publications, there are disparities in the way the various scientific disciplines deal with the issue of the relationship between pre-modern Central Asian societies and water resources. Of course, the climate changes underway in the 21st century are pushing researchers to analyse the resilience of populations. However, studies on the reaction of Central Asian societies to variations in water resources between prehistoric times and the Timurid period are far from being limited to this question alone, and are not necessarily part of an environmental studies approach. This contribution aims to identify the main areas of interest of researchers working on hydrology in premodern Central Asia as well as the methodological tools used for their analyses, and the specificities of the various disciplines in the field. This contribution will focus on the themes of the triptych "disasters, adaptation, anticipation". Are these three points of the panel's subtitle studied in equal measure or are there epistemic imbalances in this area? Some reflections will be proposed to explain the specificities of the various approaches as well as the persistence of grey areas. Furthermore, the role of interdisciplinarity in the treatment of this vast hydrological subject will be assessed, as well as the perspectives offered by the development of multidisciplinary research teams.

### 2 THE VALUE OF WATER IN THE STRATEGY OF CENTRAL ASIA

**Abstract author(s):** Kholov, Vohid (Institute of History of the Academy of Sciences of Uzbekistan)

**Abstract format:** Oral

The territory of Central Asia, mainly Mewara al-Nahr has always felt the deficiency of water. Because its economy is directly connected with water coming by rivers, rainfalls and snowfall shortage is the reason of vast deserts throughout the area. Water deficiency led to settled agricultural development based on artificial irrigation. According to Y. Gulyamov, artificial irrigation in Central Asia was first developed in Khwarazm that is the successor of Keltaminor culture where economy mainly based on fishing and hunting. Due to an increase in population number and their needs, water reservoirs started to become main strategic destinations in the area and the institution of Mirab was developed. Damming the source of canals was the best way of influencing the enemy, states Bayoniy.

There are numerous factors that impacted the development of medieval urban settlements of Central Asia. First was the change of water reservoirs' direction whose consequence can be seen in Varakhsha, Gonurtepa, Keltaminor and Cherekrobod that were deserted by their population because of water shortage.

Being strategic points as to be a gate and shield of the area, the Syrdarya and the Amudarya were main challenges for enemies to enter the area from the north and south and west which was defended by high mountains in the east. As Thomas Welsford stated, the Amudarya was main problem for armies to enter Mewara al-Nahr. In most cases, crossing the Amudarya safely without any loss was the key of victory. It is seen in the experience of Acheamanids, Macedonians, Hephthalites, Arabs, Amir Temur and etc.

To sum up, water in the area was not only the key of life, but the strategic factor in the area.

### 3 **THAT THIN RED LINE. WATER RESOURCES VARIABILITY AND AGRICULTURAL ADAPTATION IN SOUTHERN TURKMENISTAN DURING THE BRONZE AGE**

**Abstract author(s):** Arciero, Roberto (Leiden University)

**Abstract format:** Oral

Southern Turkmenistan in Central Asia is one of the main areas that witnessed the development of the Bactria and Margiana Archaeological Complex (BMAC) during the 3rd and 2nd millennium BCE. Over the last sixty years, archaeological teams working in the region have uncovered magnificent citadels and impressive material culture which showed cultural connections with Iran, Indus Valley, and Mesopotamia. Critical to the region was the Murghab inner delta and scholars have long argued for the importance of the water resource in the rise and development of the BMAC. However, crucial aspects such as the adaptation of agricultural practice and water management by local communities remain poorly investigated. Likewise, macro-scale investigation on the ancient Murghab hydrological system often failed to deliver a comprehensive overview of the possible differences in the water accessibility and settlement pattern between urban and peripheral areas. In this respect, I argue that a detailed micro-scale investigation on selected areas of the Murghab can help to disentangle many open research questions.

This paper aims to present selected results of my Ph.D. In my research, I investigated how the local hydrological variability may have (differently) impacted the agricultural strategies, water management, and landscape occupation of the Bronze Age areas of Togolok and Ojakly in the Murghab. These local areas were investigated with a multi-disciplinary approach through remote sensing analysis, walking survey, and geoarchaeological investigation of the paleochannels system. In short, the project aims to investigate how the ancient hydrological network and its variability shaped the local economic, agricultural, and settlements patterns during the 3rd and 2nd millennium BCE in the Murghab.

### 4 **THE CITY OF TERMEZ IN THE MIDDLE AGES AND ITS IMPORTANCE IN THE FLOODING OF THE AMOU DARYA**

**Abstract author(s):** Makhmasobirova, Feruza (Aix-Marseille university)

**Abstract format:** Oral

The first civilization of the Central Asian region appeared and developed in the Amou Darya and its surroundings. Many colonies, fortresses, and towns have sprung up over the centuries along the banks of the river. Termez is well known as one of the most important cities of the Amu Darya waterway in ancient and medieval times. The article discusses the development of the city of Termez in the Middle Ages and the role of the Amou Darya in this process. It is important to study the role of Termez, which has its own port, in the development of regional navigation, as well as its role in economic and cultural relations along the river. For this study, it is important to determine whether there are archaeological finds that confirm the information of historical written sources, and what aspects of these finds mainly serve to clarify the history of Termez. The article also analyzes the development of waterways and shipping professions in the Middle Ages in the city. Research is based on medieval Arabic, Persian, and ancient Turkic sources, as well as the results of archaeological excavations in Termez.

### 5 **BRINGING ENVIRONMENTAL AND HISTORICAL ARCHIVES TOGETHER TO ANALYZE ADAPTATION STRATEGIES OF AGROPASTORAL SYSTEMS VIS-À-VIS WATER STRESS IN CENTRAL ASIA**

**Abstract author(s):** Brisset, Elodie (IMBE, Aix Marseille Univ, Univ Avignon, CNRS, IRD) - Rhoné-Quer, Camille (IREMAM, Aix Marseille Univ, CNRS, MMSH) - Djamali, Morteza - Guiter, Frédéric - Gandouin, Emmanuel - Brousset, Lenka (IMBE, Aix Marseille Univ, Univ Avignon, CNRS, IRD)

**Abstract format:** Oral

While some works have suggested that large-scale mobilities and conflicts in Central Asia and Western Asia (e.g. Mongol invasions) have been linked to climatic events, in this contribution we choose to move the focus to local human-climate interactions. We will specifically investigate what were the adaptation strategies of agropastoral systems vis-à-vis water stress, in the frame of various political constructions, over the last 1500 years. Based on paleohydrological and paleoecological investigations carried out on selected lake sedimentary archives of Iran and Uzbekistan, we will reconstruct the long-term variability of lake evaporation and runoff processes (sedimentology, geochemistry), together with indicators on the nature and relative intensity of the agropastoral practices (palynology). Those results will be put into a Human perspective through comparisons with historical sources. In particular, we will propose a special focus on the Medieval Islamic Period to discuss the hypotheses that regional climate changes, by modifying water resource availability locally, might have impacted crops and pastoral livestock productions, triggering economic losses and social contestations unevenly addressed by the succeeding political powers.

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Ribeiro, Artur (University of Kiel) - Stutz, Liv Nilsson (Linnaeus University) - Kienlin, Tobias (University of Cologne)

**Format:** Discussion session

The prevalence of science in archaeology becomes more marked every passing year. By "science", we mean the hard sciences - methods, techniques, and approaches that derive from the natural sciences, computer sciences, and mathematics. This also includes scientific epistemologies, such as the hypothetico-deductive and quantitative approaches to the archaeological past. This science revolution has also been accompanied by an increase in research funding for archaeology, making our discipline appear more socially relevant to the wider public. In the process archaeology is now a staple form of research in high-ranking journals. Archaeology is no longer the handmaiden of history or anthropology, much on the contrary, archaeology has become a dominant discipline when it comes to research and popularity.

However, this development in archaeology re-establishes ideas and approaches that were popular 50 years ago, when processual archaeology became the most dominant way of conducting archaeology in the west. But processual archaeology did not last long; it underwent a radical critique that demonstrated the limitations of very strict scientific epistemologies, that there is no such thing as absolute objectivity, and that the ideas and approaches of the humanities can and should still play a role in archaeology.

Is archaeological science the new status quo or is there the possibility to harken back towards the humanities? The sciences are of crucial importance to archaeology, but we can certainly make a case that archaeology operates better when combining both science and humanities. The aim of this session is to discuss the current state of the art with regards to the practice of archaeology, what role the humanities can play, the current critique of the sciences in archaeology, the role of theory in current science research, and ultimately, whether we are happy with where the discipline is going.

## ABSTRACTS

### 1 ARCHAEOLOGY AS A FACTORY – THE ALLURE OF MASS PRODUCTION, STANDARDIZATION, AND STREAMLINING RESEARCH IN ARCHAEOLOGY

**Abstract author(s):** Ribeiro, Artur (Christian-Albrechts-Universität)

**Abstract format:** Oral

The main reference points when it comes to the history of archaeology are usually processual and postprocessual archaeology. Albeit having had considerable influence on how archaeology is practiced, processual and post-processual archaeology were theoretical movements that had lesser impact than most archaeologists assume. Additionally, many archaeologists also assume that processual and postprocessual archaeology form part of natural pendulum in how archaeology develops, with processual archaeology representing a pendular movement towards more scientific research and postprocessual archaeology representing a pendular movement towards more humanistic research.

While there might be some truth to this, what seems to be developing in archaeology today is much more than a return to processual archaeology and a strengthening of scientific research; the scientific revolution archaeology we are witnessing today represents an economic streamlining and corporatization of archaeological discourse. Rather than an intellectual exercise, a slow process of knowledge attainment and of discovery, archaeology seems to be favouring a fast-paced model of establishing scientific facts. To achieve this, research has gradually become more standardized, with archaeologists fulfilling pre-established roles in an assembly line.

More than embracing science, what archaeology is truly embracing is the short-term logic of late-stage capitalist economics. If this continues, it will not be long before we see the disappearance of our capacity to tell stories, to empathize, and to truly discover the archaeological past.

### 2 TRUE COLOURS? EGYPTOLOGY AND RACIALISM BETWEEN SCIENCE AND HUMANITIES

**Abstract author(s):** Matic, Uros (Österreichisches Archäologisches Institut)

**Abstract format:** Oral

Egyptology, a discipline encompassing philology, art history and archaeology of ancient Egypt is not really known in archaeological circles as a theoretically aware discipline. The consequences of the lack of interest for theoretical and methodological foundations of research in Egyptology are manifold, leading some Egyptologists to label it as a "cursed discipline". This paper will explore the consequences of the lack of serious interest in theory in Egyptology using racialism as a case study. It will be argued that the introduction of novel scientific methods such as isotope

analyses and ancient DNA in Egyptology did not really provide solutions to complex questions of identity in ancient Egypt and beyond. Instead, old concepts ("proto-ideas" sensu L. Fleck) prevail and they can be traced back to late 19th and early 20th century racial science and culture-historical archaeology. Now they are only enriched with results coming from laboratories instead of reports of physical anthropologists. The paper will propose different ways of using the same data to pose questions rooted in humanities.

### 3 WHITHER ARCHAEOLOGY: HOW TO ASSESS A DIVERSE AND VARIED DISCIPLINE

**Abstract author(s):** D'Aprix, Michael (University College London)

**Abstract format:** Oral

Archaeology is a diverse and varied discipline that draws method, theory, and philosophy from a range of social scientific and natural scientific fields. Some believe archaeology is parasitical in its adoption of ideas while others view archaeology to be pragmatically omnivorous. Regardless of these views, the way archaeology has developed has resulted in countless, varied forms of archaeology. Each tradition of archaeology has developed to address unique goals, various hurdles, or to address specific issues, whether those be methodological, theoretical, philosophical, or external to archaeology, political, cultural, societal, and so on.

The question 'whither archaeology' cannot be answered nor can the state of such a varied discipline be assumed without first understanding how diverse archaeology is and its context. We regularly make discipline-wide assumptions like that of a science revolution or that archaeology is 'no longer the handmaiden of history or anthropology' yet there is no grounding for such arguments in a discipline where the basic definition of archaeology can differ from nation to nation, region to region, institution to institution, and site to site.

This paper argues the need to better understand the context of archaeology, what do archaeologists do, not through philosophical or theoretical questioning but through actual surveys, systematic reviews, and international conventionality.

We cannot begin to question how science and humanities operate together without first asking how they are used by archaeologists. Are scientific tools like carbon dating, pollen or isotope analysis, or even GIS used systematically across the discipline or are they used sporadically, and if so, how does that impact our understanding of archaeology as a science?

We must take the time to better understand what it is that archaeologists actually do and how they do it before addressing and generalizing the state of a varied and diverse discipline.

### 4 THE GROWTH AND IMPACT OF SCIENCE UPON THE DISCIPLINE OF ARCHAEOLOGY 1960-2021: A VISUALISATION AND EXPLORATION THROUGH BIBLIOMETRIC DATA MAPPING

**Abstract author(s):** Sinclair, Anthony (University of Liverpool)

**Abstract format:** Oral

As a discipline, archaeology is consistently classified as either a social science or more often a humanity. Yet we also believe that archaeology has become 'scientific', with evidence for this change visible in the incorporation of new techniques of analysis, the 'discovery' of new forms of evidence and the adoption of a scientific approach to investigation and interpretation. Archaeological science dominates the most highly publicised archaeological findings to the exclusion of a more humanistic understanding of the past. However, to what extent is this a genuine transformation or our perception of change? With more than 110,000 documents related to archaeology indexed since 1960, an historical analysis of this process through a reading of the literature is no longer possible.

A visual 'mapping' of bibliometric data - the metadata concerning documents (including sources, authors, dates of publication, terms, etc.) - provides a different vantage point from which to explore how archaeology has developed. This paper will explore the developing shape of archaeology since 1960, exploring its language and terminology, its geography of specialists, its sources and venues of publication through a series of interactive science maps charting the discipline's direction of transformation across time.

### 5 IS ASKING THE CORRECT QUESTIONS A KEY TO THE BALANCE? A CASE OF TRANSDISCIPLINARY STUDY OF PORTABLE ROCK ART COLLECTION

**Abstract author(s):** Radchenko, Simon (University of Turin) - Kiosak, Dmytro (Ca' Foscari University of Venice)

**Abstract format:** Oral

The relations between science and humanities could never be described as a perfect balance. A history of science is rather a history of research trends consequent movement from one pole to another. Archaeology is not an exclusion — the oscillation between processual and post-processual worldview corresponds to the change of interpretative fashion from empiric and science-based to an artistic and humanities-oriented one. However, science and humanities will never be the pair of opposites, as they do not contradict each other. Both rather introduce a set of practices

that are applicable to different disciplines. Moreover, they present quite different questions. In one word, we apply to the science when trying to understand a phenomenon; furthermore, we use humanities when endeavor to explain it. This difference appears to be clear when it is not enough to do only one, ignoring the other. For instance, a portable rock art collection from Kamyana Mohyla in North Azov Sea region used to be interpreted from the prospects of humanities and the humanistic view on the engraved stones. However, technological study performed through image based 3D-modeling reveals an asset of wrong interpretations. Therefore, a new attempt that would take into account the new data is needed. A technological research was required to provide the understanding of the objects. Onward, a new approach based on the contemporary philosophy and new ontology was presented to propose the explanation to the studied phenomenon.

This case study introduces a model of science and humanities interaction that seems to be most promising nowadays: using both for the needs of the discipline instead of choosing between them. Such approach is not just fruitful; it corresponds both with the current total desire for transdisciplinarity and a contemporary cultural and social agenda of post-postmodern word.

## 6 **ARCHAEOLOGY OF PROBABILITIES: BRIDGING SCIENCE AND HUMANITIES**

**Abstract author(s): Santos, Joel (NOVA University of Lisbon, Portugal) - Carvalho, Daniel (UNIARQ; FCT; LAQU)**

**Abstract format: Oral**

Investigating the complex nature of the human past is of paramount importance to archaeology. Throughout the years, several theoretical proposals on how to perceive the past have been constructed. From formulating law-like statements to symbolic and contextual approaches, passing to symmetrical and ontological critiques, archaeological theory has experienced change and shifts in relative interest in the last several decades. However, a fundamental question arises: how are archaeologists able to face the near infinite possibilities that constitute the past? On top of this already difficult conundrum, the basis of our work is nothing but fragmented material remains, mere shadows of things that once were. Is this an impossible task?

Can archaeology go further than currently possible in its quest to unveil the past? In this communication, a framework that joins theory and method, sciences and humanities is proposed that intends to enable archaeologists to build, test and debate more complex epistemological issues. We argue that it can be achieved through the conjunction of three factors: uncertainty, relations and materiality, and a fundamental element that connects them all: probability. Thus, an "Archaeology of Probabilities" considers which hypotheses are more probable to explain past phenomena, utilizing mathematical and statistical models to achieve its goals. For the purpose of demonstrating how it can be relevant for archaeological research, two case studies are analyzed using this framework.

## 7 **WHERE IS THE VALUE OF HUMANITIES? PROVIDING PERSPECTIVES FOR INTERDISCIPLINARY RESEARCH**

**Abstract author(s): Paasikivi, Sofia - Moilanen, Ulla (University of Turku)**

**Abstract format: Oral**

The Third Science Revolution in archaeology has encouraged the use of big data and scientific methods. The fast development of methodologies has also led to scientific archaeology getting more publicity than purely humanistic archaeological research. To some extent, the issue lies in a hierarchy in which sciences are valued higher than humanities. This, on the other hand, results from fundamental differences in how we see the disciplines. Both researchers and the general public may be intrigued by the idea of sciences offering exact knowledge on the past, while traditional archaeological interpretations seem to include countless possibilities. However, this is misleading since scientific results are also based on interpretations of data, and they are not free from uncertainties either. For archaeologists, it is also clear that only humanities can provide the context for interpretations, and scientific data has very little meaning without it. How can we (and should we) raise the value of humanities in the eyes of scientists and scientific publications, and how can we tackle the imbalance between valuing journals and certain merits in different fields while working together in interdisciplinary projects?

## 8 **DEATH AND THE HUMAN BODY: FINDING A COMMON GROUND FOR ARCHAEOLOGY AND ANTHROPOLOGY**

**Abstract author(s): Gramsch, Alexander (RGK - Romano-Germanic Commission DAI)**

**Abstract format: Oral**

The late 20th and early 21st century saw an ever-increasing specialisation and various fractures between archaeology, bio-archaeology and physical anthropology. The so-called "Third Science Revolution" of recent decades has revealed both the possibilities of an intensified interdisciplinary exchange and the need to re-learn each other's disciplinary languages and modes of thinking. Starting from considerations on a focus on the historicity and sociality of the human body and on body 'itineraries' as a new field of research, this presentation aims to explain why and how such

a field can bridge the epistemologies, bringing together the social and bio-archaeologies and anthropologies, but also psychology, neuroscience, and philosophy. I will suggest approaching both the thanatology of bodily remains encountered in archaeological contexts and body-related practices combining both science and humanities. From an archaeologist's point of view, I will discuss the study of human remains and the practices associated with them as a starting point enabling us to find a new common ground for science and humanities in the archaeologies.

## 9 SCIENCE IS DEAD. LONG LIVE SCIENCE

**Abstract author(s): Griffiths, Seren (Manchester Metropolitan University)**

**Abstract format: Oral**

Discussions about the nature of archaeology as a discipline do more to serve the progression of individual scholars than to move the discipline forward. Recent developments in the application of science techniques in archaeology - especially Bayesian chronological modelling, isotope studies, aDNA and pottery residue studies - have allowed us to recover a range of data that were unimaginable 50 years ago. With these data come challenges of interpretation and dissemination, both within the archaeology community and with members of the public which require consideration of the nature of our knowledge claims and the structures within which we work, as well as the ethics of our practice. To attempt to define our discipline within terms of 'either science' 'or humanities' is mistaken. Archaeology is a unique approach to engaging with the world and we need to use this unique status as a major strength. Archaeology is archaeology or it is nothing.

## 10 TO ASK A SILLY QUESTION: NEED FUTURE ARCHAEOLOGICAL QUESTIONS ENTAIL SCIENTIFIC METHODS IN ORDER TO BE PROPOSED?

**Abstract author(s): Pantmann, Pernille (Museum North Zealand)**

**Abstract format: Oral**

Being an archaeologist of the 21st century, science is an integral part of my archaeological work. I welcome the perspectives that the results can offer, and I acknowledge that the various scientific disciplines are invaluable tools when unleashing new archaeological questions. But I have also realized that I cannot expect answers of 100% certainty. The outcomes and success of the scientific results depend entirely on the potential and quality of the archaeological samples. And even more important, the results are dependent on the scientific interpretation and understanding of data. From humanities we are familiar with data, which are based on estimates rather than certainties, but we do not necessarily expect such degree of uncertainty from science. We are used to have scientific results presented as solid, objective facts in various tables and graphs. Because of the often very convincing presentation of scientific facts, the critical archaeological approach towards science is perhaps not as confident as it should be. There is no such thing as exact science, therefore we should take pride in our own academic discipline and consider it to be equally important. Because there are questions to which science cannot give the answers. Topics such as personhood, ethnicity, social structures, identity, beliefs, ethics, and rituals cannot be proven scientifically. Yet, the question stands, if all future archaeological questions need to be based upon scientific results to be accepted as science with subsequent funding and publishing possibilities? Although interdisciplinary research has huge potentials and will increase our knowledge, archaeology is still an independent and relevant discipline with numerous perspectives. If we do not believe so, the entire basis of interdisciplinary research is at stake.

## 11 ANCIENT DNA AND KINSHIP ANALYSES IN BRONZE AGE EUROPE

**Abstract author(s): Wilson, Kathleen (SUNY University at Buffalo)**

**Abstract format: Oral**

Advancements in science and technology throughout the last several decades have created opportunities for new archaeological methods of analysis. These methodologies allow archaeologists to analyse and interpret aspects of past societies that may have been difficult to study using prior methods and technologies. By the 1990s, the use of ancient DNA (aDNA) analysis became widely utilized within the archaeological community as it enables more in-depth archaeological interpretations of past societies, such as migration patterns, kinship, and social structures. Although a valuable tool for archaeologists, aDNA has been the subject of much debate in recent years due to assumptions that have been made in the interpretation of data. This paper aims to provide a critical overview of how aDNA has been used to analyse kinship and familial relationships in studies of Bronze Age Europe, discuss the challenges of aDNA analysis, review assumptions that are often made regarding social structures based on aDNA evidence, and provide suggestions for future aDNA-kinship studies.

## POTENTIAL, LIMITATIONS, AND PERSPECTIVES ON THE COMBINATION OF HUMANITIES AND NATURAL SCIENCES: THE CASE OF THE TRANSCULTURAL PROJECT

**Abstract author(s):** Maurer, Anne-France (Universidade de Evora) - Oliveira, Luis Filipe (Universidade do Algarve / I.E.M-FCSH-Nova) - Vilar, Herminia (Universidade de Évora – Escola de Ciências Sociais – CIDEHUS, Evora) - Tété Garcia, Cristina (Research Center in Archaeology, Arts and Cultural Heritage, DRC Algarve, Faro) - Valente, Maria João (Centro de Estudos de Arqueologia, Artes e Ciências do Património, Universidade do Algarve – FCHS ; CEAACP) - Fernandes, Teresa (Research Centre for Anthropology and Health - CIAS, University of Coimbra; Departamento de Biologia. Escola de Ciências e Tecnologia. Universidade de Évora) - Barrocas Dias, Cristina (Laboratorio HERCULES, Universidade de Evora; Departamento de Química, Escola de Ciência e Tecnologia, Universidade de Évora) - Mac-Roberts, Rebecca - Lopez-Aceves, Judith - Ortega-Gonzalez, Alvaro (Laboratorio HERCULES, Universidade de Evora)

**Abstract format:** Oral

In 2018, the TRANSCULTURAL project was initiated to investigate cultural identity and inter-cultural contact which occurred at the dawn of the Portuguese Kingdom (10th-14th cent. AD) between Muslims and Christians. Diet and mobility are at the heart of this project as their pattern can help to enlighten the socio-economic organisation of Muslim and Christian individuals (identified according to their funerary habits) during this period of economic and political transition. Skeletal remains constitute a privileged archive of diet and mobility. Indeed, in addition to anthropological data, which allow estimation of sex, age at death and pathologies, the geochemical composition (isotopes) of bones and teeth is directly related to the nature (type of resource) and location (geographic and geological) of the food that has been consumed, therefore allowing for the reconstruction of dietary habits and population movements.

During this presentation, the results from the investigation of four necropolises dated from the 12th to 14th cent. AD and yielding individuals who have lived and witnessed this transition period will be presented. The individuals were Muslims, Christians and a military order.

As this project is using a multi-faceted approach combining history, archaeology and anthropo-biogeochemistry, the focus here will be on the necessary dialogue between Humanities and Natural Sciences accompanying the four case studies. What are the limits of this dialogue and how can this be improved? Have the Natural Sciences provided new evidence to the already existing archaeological and historical knowledge? What are the limitations of the Natural Sciences and how the Humanities can help to overcome these limitations? These are some of the general questions that arise within the attempt of using a transdisciplinary approach to answer archaeological and historical questions, and that we want to illustrate with this particular research project.

## BEYOND THE DIVIDE: THE UNCONSCIOUS, THE DIGITAL, AND THE POLITICAL IN ARCHAEOLOGY

**Abstract author(s):** Barruezo-Vaquero, Pablo (Independent) - Laguna Palma, David (Universidad de Granada) - López-López, Víctor (Spanish National Research Council - CSIC-INCIPIT)

**Abstract format:** Oral

Archaeological sciences seem to be the dominant topos in archaeology, at least in recent decades. These variegated 'sciences' (digital, biomolecular, genetic, etc.) has favoured new studies, accelerated data analyses, shed complex results, and attracted funding as well as media attention. So far, so good...so what!

We share a preoccupation for what this panorama means for archaeology—especially when it seems to be far from humanities' theoretical discourses. Our aim is not to argue against the new 'sciences' that have made their way into archaeology; they arguably bring positive outcomes. Instead, this paper aims at warning against some issues that come along with an all-too-scientific Archaeology, which must be defied. To make this "tour de force", we turn towards three interlinked topics, which also help in blurring the distinction between sciences and humanities: the unconscious of this research agenda, the status of digital data, and the political matters that should be part of our research.

- The concept of the Unconscious serves for questioning why the search for objectivity still endures: what archaeologists seek (in the Other)?
- Data, and more concretely, digital data sometimes generate much and quite heated debates. From utter suspicion against data's objectivity to over-trustiness, there seems to be no real consensus. J. Huggett argues in favour of the data in so far as we embrace a humanistic approach towards the debate. In this paper, we align with the latter idea whilst aiming at enhancing it still further. We thus argue that digital data should be contemplated from a humanistic point of view but within a posthuman understanding.
- Bringing politics to archaeological discourses is necessary for Archaeology not to be vanquished by Late Capitalism. This means embracing socio-political explanations (about the past and for the present) in our research (human-environment relationships, crisis-and-change, etc.) despite its undeniable scientific approach.

## INTERDISCIPLINARY PRACTICES, SCIENTISM AND SCIENTIFIC ATTITUDES

**Abstract author(s):** Niculescu, Gheorghe Alexandru (Vasile Pârvan Institute of Archaeology)

**Abstract format:** Oral

The widespread enthusiasm for incorporating results of scientific research, especially those generated by molecular biologists and physicists, is not necessarily accompanied by attitude changes towards science or by a shift from interpretation and induction to ways of thinking constructed around theory testing. This situation can be explained in part by the presence of scientism in what archaeologists think, something that does not seem to bother many of the scientists who work with them. Despite the hopes put forward by Kristian Kristiansen, frequently no new ways of thinking are borrowed from the hard sciences or generated as a reaction to the contact with them. The knowledge objects remain pre-constructed, shaped by unexamined assumptions and customary perception. The persistence of the dominant role of history in what aspires to become a scientific archaeology is visible in ontologies of the social world that make the old group making expectations suitable for the scientific data that has become recently available. However, the critical capacities of the historians do not seem useful for assessing interdisciplinary practices and their outcomes. For that we have to turn to the philosophy and sociology of scientific knowledge.

## ARCHAEOLOGY AND ARCHITECTURE AS COMPLEMENTARY AND COLLABORATING FIELDS

**Abstract author(s):** Benjamin, David (David N. Benjamin, Sivilarkitekt MNAL)

**Abstract format:** Oral

Many recent publications concern the interdisciplinary work of archaeological perspectives on architectural relics from prehistory and architectural perspectives on archaeological phenomena, mainly by archaeologists. Further, three new training programs in Europe, which bring post-graduates and professionals from archaeology and architecture to study together, show a sincere and deep interest in both camps to advance common understanding.

These methods used by each field for conceptualizing phenomena are similar and complementary, enabling co-learning. This includes methods of direct observation and analog tools for recording sensible evidence and projecting the characteristics of phenomena not immediately available to the senses (hand drawings, etc.). These methods help to maintain and enhance the person's facility for observation and understanding sites and artefacts, confirmed by recent work in brain myelination and cognitive science.

Architects bring to this collaboration skills at both direct observation and drawing records of complex sites and artefacts with analog methods, directing the work of autonomous digital devices and software, and observation, gaining understanding and mastery through continuous practice and extended cognition. Learning capability is further enhanced through motivation and the beneficial results are often evident with those archaeologists who are passionate about using and continually practicing these skills.

Architecture as a field contributes to this collaboration, methods for (1) conceptualizing buildings and sites as whole spatio-temporal forms, (2) recording extant sites and artefacts with a multiplicity of methods to create a musée imaginaire of modifiable forms that are ordered in the mind according to categories, use types and function in a form of bricolage, and (3) conceptualizing built and landscape forms in space and time as both diagram and a conceptually 'finished' form, thus allowing for a mental back and forth on-site, between immediate, thought experiments, multi-sensory site observations and reflecting at drawn records.

## APPRENTICESHIP AS RESEARCH METHOD

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** van Gijn, Annelou (Leiden University) - Wendrich, Willeke (Cotsen Institute of Archaeology, UCLA)

**Format:** Discussion session

Archaeology has a long and varied history, and one of the aspects that is in flux is the identity of the archaeologist. From 17th- and 18th-century European amateurs, through the professionalisation of archaeology, we are now in a period where decolonisation and diversification are at the centre. Engaging local communities, providing opportunities to members of society who do not have easy access to academia but are traditional caretakers of cultural heritage, listening rather than explaining, are just some of the activities that the present day archaeologist increasingly partakes in. Broadening participation in scientific or scholarly endeavors can be undertaken in several ways, for instance through citizen science, experimental archaeology and ethnoarchaeology. For archaeologists, embarking on experiments together with volunteers is an excellent way of cementing a community in which both academics and local specialists or community members can thrive. Creating a teaching-learning continuum enables archaeologists to learn as much as teach, and local communities to be initiators and contributors, thereby increasing the connection to their past and providing a sense of place. The same pertains to ethnoarchaeology: learning about traditional crafts, and the use of long-forgotten plants and their uses, are of great benefit to the interpretive models of archaeologists. At the same time, studying, appreciating and even reviving such traditions, be it in Africa, the Ameri-



cas, Asia or Europe, is a way to address issues of sustainability. By highlighting indigenous knowledge, local crafts and subsistence strategies, project participants can provide and exchange location specific knowledge where everybody both teaches and learns.

We invite papers dealing with the teaching-learning continuum: community initiatives and archaeology, indigenous knowledge and the benefits for archaeology, community and the future of our planet.

## ABSTRACTS

### 1 COMMUNAL ARCHAEOLOGY: INDIGENOUS KNOWLEDGE, SCIENTIFIC RESULTS AND LEARNING BY DOING

**Abstract author(s):** Wendrich, Willeke (UCLA Cotsen Institute of Archaeology)

**Abstract format:** Oral

As an archaeologist trained in western academia, but working in different countries and communities around the world, I have become increasingly aware of the importance of listening and learning, sharing and growing. Knowledge and knowledge transfer have many different forms ranging from scientific analyses to oral traditions and similarly, the form in which knowledge is held and remembered differs widely from databases to narratives, from imagery to ingrained body knowledge. Community archaeology or public archaeology have become increasingly important in archaeological projects, not necessarily as part of the research, but often as an activity that provides information, rather than being embedded in both the research and surrounding community. By taking indigenous knowledge seriously, while providing full insight in the archaeological process, we can create an atmosphere of mutual respect and shared interests, allowing all participants to bring questions and answers to the table, or to learn together. At the center of communal archaeology is curiosity, potentially leading to a number of different research questions, methods and results. This is a process that will require archaeologists (and funders) to be less rigid in our research design, because the interests of the archaeologist may not fit those of other participants.

### 2 BRINGING A STONE AGE DWELLING CONSTRUCTION TO LIFE: A JOINT VENTURE OF LOCAL VOLUNTEERS AND ARCHAEOLOGICAL SCIENTISTS

**Abstract author(s):** van Gijn, Annelou (Faculty of Archaeology, Leiden University) - ter Brugge, Jeroen (Masamuda Educational Archaeological Centre; Rijksmuseum Amsterdam)

**Abstract format:** Oral

Public participation in archaeological projects is becoming ever more essential and experimental archaeology is an excellent way of reaching out and creating a scientific community in which both the general public and archaeological scientists can learn from each other. In the town of Vlaardingen, near Rotterdam, local volunteers have set up an archaeological educational centre about the archaeology of the Rhine/Meuse delta, called Masamuda, where school children learn about the past of their region. Here volunteers and professional archaeologists together have built a late Neolithic dwelling, using Stone Age tools only, and documenting the entire chaîne opératoire. In a new collaborative project we attempt to fill in the details of daily life around this house: what kind of crafts were carried out, how did people process their food, and how did they move about in this water-rich landscape? Despite extensive archaeological excavations in the area, we actually know surprisingly little about the material culture and the technological organization. A combination of microwear and organic residue analysis, petrography and experimental archaeology will be used to get an understanding of technological processes. Workshops are organized in which experienced craftspeople teach both archaeological scientists and local volunteers about their craft. Discussions and practical interaction with such a varied group of people, each with their own knowledge and experience, have raised new questions not previously posed by archaeological scientists. These, in turn, have opened up new research avenues and alternative interpretations, to be explored by means of scientific analysis and further experiments. Last, the scientific knowledge and practical expertise obtained by the volunteers through interaction with traditional craftspeople and archaeological scientists is transferred to the school children, ensuring a teaching-learning continuum outlasting the current research project. In this paper I will discuss the results obtained so far in this exciting joint venture.

### TO DO OR...TO DO! FROM THE CHALCOLITHIC TO THE CARMO ARCHAEOLOGICAL MUSEUM: EXPERIMENTAL AND PUBLIC ARCHAEOLOGY

**Abstract author(s):** Martins, Andrea (UNIARQ - FLUL; Associação dos Arqueólogos Portugueses) - Cura, Pedro (PrehistoricSkills) - Neves, César (Associação dos Arqueólogos Portugueses; UNIARQ - FLUL) - Carrondo, Joana (PrehistoricSkills) - Diniz, Mariana (UNIARQ - FLUL; Associação dos Arqueólogos Portugueses) - Arnaud, José (Associação dos Arqueólogos Portugueses)

**Abstract format:** Oral

During 2019 and 2020, several Experimental Archeology workshops were held at the Carmo Archaeological Museum in Lisbon, under the VNSP3000 project. These workshops, aimed at a very diverse audience, were empirically based on the materials and structures identified in Vila Nova de São Pedro (Azambuja, Portugal). Thus, the holding of the Workshops entitled "How did you live 5000 years ago? A journey to Prehistory" and "Prehistory in Carmo", each with several thematic sessions, were one of the ways to combine two themes of the project, involving scientific research and experimental archaeology with the dissemination and sharing of knowledge to a wider audience. broad and not strictly scientific/archaeological.

In the field of Experimental Archaeology, the main focus is always on identifying the operative chains of production of artifacts, seeking to apprehend and replicate methods and gestures that may have been practiced by agents of prehistory, through the formulation of hypotheses and trial and error. In the workshops, this execution, carried out in a first phase by the team members, allows the demonstration and transfer of knowledge to a non-specialized audience. This practical and sensorial activity, in which the participants interact and are part of the experience, leads to the transmission not only of empirical and theoretical knowledge, but also of execution methods. Active participation, in contrast to the usual passivity where the audience just listens and observes, also makes it possible to achieve a feeling of personal fulfillment achieved with the execution of the proposed artifact or action. The experience becomes inclusive leading to, in a didactic way, the apprehension of the importance of archeology and the study of the past is achieved.

We intend to present this knowledge transmission project – starting from an experimental archeology program, to the creation and development of didactic workshops.

### REVISITING HUSBANDRY AND SUBSISTENCE IN SOUTHWESTERN ASIA USING INTEGRATED APPROACHES AND THE LATEST DEVELOPMENT IN BIOARCHAEOLOGY

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Casanova, Emmanuelle - Vuillien, Manon (UMR7209 Archaeozoology and Archaeobotany: Societies Practices and Environments, National Museum of Natural History, CNRS) - Davoudi, Hossein (Archaeozoological section, Bioarchaeological laboratory, University of Tehran)

**Format:** Regular session

Animal husbandry is a fundamental component of the economy of agropastoral societies since the beginning of the domestication of ungulates. It can be defined, in zootechny, as a technical sub-system of resource exploitation articulated around the breeders, the herds and the environment. Domestication also revolutionised means of food procurements and introduced new commodities in human diet such as dairy products. For nearly ten millennia, in Southwest Asia, animal husbandry and pastoralism, especially of caprine, have played a major role in the development of societies.

Animal husbandry studies in archaeology allows a better understanding of the economic and socio-cultural systems of past societies by investigating the available resources, as well as the needs, practices and traditions associated with the exploitation of these resources. However, a comprehensive understanding of animal husbandry and exploitation remain difficult to attain due to the relative scarcity of archaeological remains compared to the abundance and diversity of past activities. Over the last decades, pluridisciplinary studies on bioarchaeological remains are becoming more common and allow a better understanding of animal husbandry and their exploitation for food procurement.

This session seeks to bring together papers presenting cross-disciplinary studies on bioarchaeological remains from the beginnings of domestication to explore husbandry and subsistence in Southwestern Asia. We particularly focus on recent bioarchaeological tools which allow to go beyond and complement the traditional methods. We welcome pluridisciplinary contributions such as - but not limited to - geometrics morphometric, seasonality, cementochronology, organic residues analyses, isotopic, proteomic and genetic methods applied to husbandry and subsistence in this region.

**1 HUMAN DIETARY DYNAMICS AND EARLY CAPRINE HUSBANDRY: ISOTOPIC AND PROTEOMIC ANALYSES OF SKELETAL TISSUES AND DENTAL CALCULUS FROM 'AIN GHAZAL**

**Abstract author(s):** Makarewicz, Cheryl (University of Kiel) - Kendall, Iain (University of Bristol) - Palmer, Karren (University of Manchester) - Winter-Schuh, Christine (University of Kiel) - Buckley, Mike (University of Manchester) - Evershed, Richard (University of Bristol) - Rollefson, Gary (Whitman College)

**Abstract format:** Oral

The emergence of caprine husbandry in the southern Levant by approximately 8300 cal BCE is thought to have substantially increased the accessibility of animal resources available for human subsistence. Indeed, the zooarchaeological record indicates pronounced shifts in animal exploitation during the Pre-Pottery Neolithic, from strategies focused on intensive gazelle hunting to practices engaging both ungulate hunting and animal management and, later, dedicated husbandry of domesticated caprines. We investigate how the initial exploitation of managed goats and, later, domesticated sheep and goats may have altered human diets, in particular protein intake, through bulk and compound-specific isotopic analyses of faunal and human skeletal remains recovered from the key Pre-Pottery Neolithic settlement of 'Ain Ghazal, Jordan. We also investigate the potential role of dairying at 'Ain Ghazal through proteomic analyses of human dental calculus, and explore how human dietary dynamics articulated with spatial shifts in landscape use and the emergence of mobile pastoralism.

**2 HUMAN SUBSISTENCE IN IRANIAN PREHISTORY REVEALED THROUGH LIPID RESIDUE ANALYSIS IN POTTERY VESSELS**

**Abstract author(s):** Casanova, Emmanuelle (Muséum national d'Histoire naturelle) - Davoudi, Hossein (University of Teheran) - Zazzo, Antoine - Boco, Audrey (Muséum national d'Histoire naturelle) - Bernbeck, Reinhard - Pollock, Susan (Free University of Berlin) - Tsuneki, Akira (University of Tsukuba) - Ghafoori, Om ol Banin - Nokandeh, Jebreil (National museum of Iran) - Mashkour, Marjan (Muséum national d'Histoire naturelle)

**Abstract format:** Oral

The Fertile Crescent in SW Asia is a key region for the early domestication of ruminant animals. The domestication of caprine in the SW Asia started about 10000 years ago and took an important place in the development of a farming economy. With the introduction of caprine domestication come the question for which products they were exploited : their primary products (meat), their secondary products (milk, wool) or both.

The development of pottery technology in the early Neolithic also influenced food processing and pottery vessels have been extensively used for culinary preparations. The organic residues preserved in archaeological pottery vessels serve therefore as archives for ancient diet through prehistoric times. Using molecular and isotopic analyses on lipid residues recovered in the ceramic vessels, the source of the food residues can be discriminated, including carcass from the dairy products of ruminants.

We report here the study of lipid residues preserved in prehistoric iranian pottery assemblages dating between the late 7th and 5th millenium BC which provide insights into prehistoric human subsistence in Iran.

**3 ANIMAL EXPLOITATION DURING THE EARLY HARAPPAN PERIOD: A CASE STUDY FROM BHANDO QUBO (SINDH, PAKISTAN)**

**Abstract author(s):** Parque, Óscar - Jiménez-Arteaga, Carolina (CaSEs – Culture and Socio-Ecological Dynamics Research Group. Departament d'Humanitats, Universitat Pompeu Fabra) - Lancelotti, Carla (CaSEs – Culture and Socio-Ecological Dynamics Research Group. Departament d'Humanitats, Universitat Pompeu Fabra; ICREA – Institució Catalana de Recerca i Estudis Avançats) - Veesar, Ghulam Mohiuddin - Abro, Tasleem - Chandio, Ameen (Department of Archaeology, Shah Abdul Latif University) - Madella, Marco (CaSEs – Culture and Socio-Ecological Dynamics Research Group. Departament d'Humanitats, Universitat Pompeu Fabra; ICREA – Institució Catalana de Recerca i Estudis Avançats)

**Abstract format:** Oral

The Indus Valley Civilisation was one of the first urban societies of the Old World, leaving an archaeological record in what is today Pakistan, NW India and Afghanistan and Iran. The Pre-Urban or Early Harappan phase covers a chronology from 3300 to 2600 BCE. Afterwards, an unprecedented urban process took place along with the integration of local cultural traditions into a major Harappan "vener", which is known as the Mature Harappan period (2600-1900 BCE).

To date, there are only few archaeological sites in Pakistan with a long stratigraphic and absolute chronology dated sequence illustrating how small settlements became urban centres. Moreover, most zooarchaeological research in Pakistan has been carried out and published during the 90's while on the Indian side more data is available.

The aim of this paper is to present the preliminary results of the analysis of faunal remains from Bhandu Qubo (Sindh, Pakistan). The settlement lies in the core area of the Indus Valley Civilisation, the alluvial plain of the lower course of the Indus River. The site is found at around 60 km from Mohenjo-Dhara and about 20 km from the current course of the Indus River, while an old branch of the Indus has been identified nearby the site. Stratigraphically, the site comprises a long chrono-cultural sequence, spanning both Early Harappan (pre-Urban) and Mature Harappan (Urban) occupations.

In this presentation, we will illustrate the importance of analyzing very fragmented assemblages considering mortality profiles, bone surface modifications, and anatomical profiles. That information allows us to evaluate the subsistence strategies carried out during the Early Harappan occupation as well as livestock management practices in the period before the flourishing of the urban settlement.

#### 4 FEEDING PRACTICES AND MULTI-SEASON REPRODUCTION AMONG SHEEP AND GOATS IN EARLY AENEOLITHIC MONJUKLI DEPE, TURKMENISTAN

**Abstract author(s):** Eger, Jana (Freie Universität Berlin)

**Abstract format:** Oral

Sheep/goat predominate the Neolithic and Aeneolithic faunal assemblages in southern Central Asia, yet their husbandry is still incompletely understood. Some aspects of sheep/goat herding practices, such as the annual timing/seasons of birth and feeding in consideration of local conditions, have received little attention so far.

This paper focuses on these aspects by using an integrated approach, combining a multi-isotope analysis mainly on caprine teeth/bones with archaeozoological results and archaeobotanical data from Monjukli Depe. The small settlement in southern Turkmenistan was inhabited in the late Neolithic (ca. 6200-5650 BCE) and again in the early Aeneolithic (ca. 4800-4350 BCE). Excavations at this site have yielded a large, well-preserved animal bone assemblage.

The analysis reveals that sheep and goat were born across multiple seasons within the annual cycle, contrasting results such as from Neolithic sites in Europe with currently two main seasonal lambing patterns. Furthermore, a greater proportion of individuals received a more diverse vegetation than others with possible contribution of C4 plants in diet - both on a seasonal and long-term basis. Herding practices in the Monjukli case seemed to focus on landscape microvariability, where there might have been ecologically different grazing locations. Overall, the information gained from the investigation helps to draw a more detailed picture of sheep and goat husbandry, including a better understanding of breeding practices and controlled herd security by the people who tended the animals. The results demonstrate a wide zootechnical knowledge in this early village society.

#### 5 UNDERSTANDING HUMAN OCCUPATION IN GEORGIA'S MOUNTAINS DURING THE CHALCOLITHIC AND EARLY BRONZE AGE: CONTRIBUTIONS FROM ARCHAEOZOOLOGY, CEMENTOCHRONOLOGY AND ISOTOPE GEOCHEMISTRY

**Abstract author(s):** Vautrin, Adeline - Berthon, Rémi - Balasse, Marie (Muséum national d'Histoire naturelle, UMR 7209 AASPE, CNRS, Paris) - Bedianashvili, Giorgi (Georgian National Museum, Tbilisi) - Fiorillo, Denis (Muséum national d'Histoire naturelle, UMR 7209 AASPE, CNRS, Paris) - Gambashidze, Irina - Gogochuri, Giorgi (Georgian National Museum, Tbilisi) - Gourichon, Lionel (Université Côte d'Azur, UMR 7264 CEPAM, CNRS, Nice) - Stöllner, Thomas (Ruhr-Universität, Bochum; Deutsches Bergbau-Museum, Bochum) - Mashkour, Marjan (Muséum national d'Histoire naturelle, UMR 7209 AASPE, CNRS, Paris)

**Abstract format:** Oral

The exploitation of mountain ecosystems by agro-pastoral communities has played an important role in the development of these societies in the Caucasus. Providing access to raw materials such as obsidian and copper ores needed for tools, the mountains also offer herders ample pasture for their flocks. Nevertheless, in winter, these high-altitude areas seem less favourable to the permanent installation of agro-pastoral societies, notably because of the snow which prevents access to these pastures and restricts the parking of the animals.

As the archaeological occupations of the mountains in Georgia are still little studied, the archaeozoological approach that we use allows us to test the hypothesis according to which zootechnical innovations allowed a more perennial settlement of societies in the mountain ecosystems during the Chalcolithic and the Early Bronze Age periods.

To try to answer this hypothesis, the first phase of the study was devoted to recording archaeozoological remains to verify that the sites were indeed occupied by herders. The measurements of isotope ratios recorded in carbonates (dental enamel) and collagen (bone) have been carried out to account for breeding practices (mobility, feeding, seasonality of births). Finally, the season of site's occupation will be tested by cementochronology analyses.

## DRAW ME A SHEEP: A MORPHOLOGICAL INVESTIGATION ON APPENDICULAR BONES OF MODERN AND ANCIENT POPULATIONS FROM SOUTHWEST ASIA (EVOSHEEP PROJECT)

**Abstract author(s):** Vuillien, Manon (AASPE, Muséum national d'Histoire naturelle, CNRS, Paris) - Vila, Emmanuelle (Archéorient, CNRS, University of Lyon 2) - Chahoud, Jwana (Archéorient, CNRS, University of Lyon 2, France; Department of Archaeology, Lebanese University) - Davoudi, Hossein (Archaeozoological section, Bioarchaeological laboratory, University of Tehran) - De Cupere, Bea (Directorate Earth and History of Life, Royal Belgian Institute of Natural Sciences) - Helmer, Daniel (Archéorient, CNRS, University of Lyon 2) - Gourichon, Lionel (University Côte d'Azur, CNRS, CEPAM, Nice) - Mashkour, Marjan (AASPE, Muséum national d'Histoire naturelle, CNRS, Paris; Archaeozoological section, Bioarchaeological laboratory, University of Tehran) - Cucchi, Thomas (AASPE, Muséum national d'Histoire naturelle, CNRS, Paris)

**Abstract format:** Oral

Further co-authors: Manon Vuillien, Emmanuelle Vila, Jwana Chahoud, Hossein Davoudi, Bea de Cupere, Daniel Helmer, Moussab Albesso, Agraw Amane, Rémi Berthon, Sofiane Bouzid, Homa Fathi, Joséphine Lesur, Azadeh Mohaseb, Lionel Gourichon, Marjan Mashkour, Thomas Cucchi.

Sheep husbandry has played a major role in the economy of human societies in Southwest Asia over the last 10 millennia. However, if archaeological and archaeozoological "clues" provide insight into husbandry practices developed by early human societies, it is still difficult to assess the diversity of first breeds these societies relied on, such as, anthropogenic selective pressure and ecological conditions. To tackle this issue, EVOSHEEP project focuses on the complex history of early sheep husbandry in Southwest Asia between the Late Neolithic and the Bronze Age using an integrated approach including archaeozoology, morphometrics, genetics, iconography, philology. The objective is to identify the biological and anthropological components underlying the emergence and development of early sheep breeds. In this paper we present our first results based on modern breeds from Southwest Asia and East Africa using 3D geometric morphometrics on isolated elements from forelimb (distal humerus) and hindlimb (calcaneum and astragalus) as a proof of concept to explore the morphological diversity of sheep. These bones have proven to be powerful tools to understand both herding strategies and environmental conditions. The next step is to test the morphological patterns on ancient populations belonging to forty archaeological sites and covering five millennia of economic and cultural transformations, between the 6th and the 1st millennium BC.

## AD SALUBRITATEM CIVITATUM. THE ARCHAEOLOGY OF WATER EVACUATION INFRASTRUCTURES IN ROMAN URBAN SETTLEMENTS

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Acero Pérez, Jesús (Department of Prehistory and Archaeology, University of Seville) - Lebre, Jean-Baptiste (Casa de Velázquez) - Felício, Catarina (CHAM – Centre for Humanities, FCSH, Universidade NOVA de Lisboa)

**Format:** Regular session

The famous passage by Ulpianus in the Digest (43.23.1.2), referring to the need of repairing and cleaning the city's sewers to safeguard public health, highlights the interest of the ancient Romans in the construction and maintenance of water evacuation infrastructures. However, although Roman cities shared the same urban and hydraulic engineering principles, their execution was adapted to very different realities, from provincial capitals to secondary towns and other small urban settlements.

This session focuses on the archaeological evidence of structures related to urban sanitation in the Roman period, namely sewers, drains, latrines, and cesspits. Papers can present regional or local studies, but also more specific analyses on a particular site or building. The main objective is to discuss rain and wastewater disposal systems and to determine if there were differences based on the following variables: degree of urban development, legal status, geographical and climatic conditions, availability of water resources, and influence of pre-Roman traditions.

Papers addressing methodological aspects focused on the research and archaeological record of these structures are also welcome. In this sense, the results of both archaeometric analysis (geomorphology and bioarchaeology, including paleoparasitology) and new graphic documentation techniques (photogrammetry, laser scanner, 3D reconstructions, etc.) are considered of great interest. The combination of cultural and bioarchaeological data will allow to to deepen the understanding of the construction, operation, maintenance, and hygienic conditions of sanitation structures in Roman urban centres.

**1 THE BOUNDARIES OF THE UNWANTED: REFLECTIONS ON DRAINAGE NETWORKS IN THE ROMAN WORLD**

**Abstract author(s):** Lebreť, Jean-Baptiste (Casa de Velázquez)

**Abstract format:** Oral

Urban hydraulic networks within individual properties are nowadays compartmentalized between water drainage networks and water supply networks. The boundary between these two entities is marked by a water-consuming structure such as a sink, shower or toilet. Thus, one network supplies the facility (the supply network) and the other drains the water that has been altered as a result of its use in this structure (the drainage network).

This watertightness between the two networks reflects the hygienic theories of the 19th century. But what about hydraulic systems founded by societies where microbial theory was not yet known? It is through the archaeological analysis of Roman drainage systems that the question of the boundary between these two hydraulic systems will be addressed.

This questioning has a double interest. Firstly, historical, because the study of these networks allows us to question the perception of water in the Roman period, along their course, in the different structures that they cross. Secondly, methodologically, because archaeologists, like modern hydraulic networks, tend to separate the two entities: supplies on the one hand (aqueducts, fistulae, impluvia, cisterns...) and evacuations (drains, sewers, cesspools, sanitation) on the other. The question is whether this distinction should be maintained or eliminated.

**2 WHERE DOES THE WASTEWATER GO? DRAINAGE CHALLENGES AND SOLUTIONS ON THE AGORA IN NEA PAPHOS, CYPRUS**

**Abstract author(s):** Michalik, Michal (Doctoral School in the Humanities, Jagiellonian University) - Misk, Łukasz (Institute of Archaeology Jagiellonian University)

**Abstract format:** Oral

The Agora in Nea Paphos excavated by the expedition of the Jagiellonian University is the largest of its kind, known from Cyprus. From the 2nd century BCE to the first half of the 2nd century CE served as the main public space for the Hellenistic-Roman capital of the Island. Although its original design was in accordance with the Hellenistic-Alexandrian fashion, unearthed remains of the Agora comprise mainly superseding Roman Period habitation levels. This complex stratigraphical alignment is an imprint of major construction work prompted by the donation made by the emperor Augustus following the severe destruction of the city after the earthquake in the year 17/15 BCE. The reorganization of the Agora included the reconstruction of tetrastoon shaped porticos and the erection of the Odeon, but what is more, a new approach towards the design of the water evacuation infrastructure on the plaza.

In this paper, we would like to address the problems associated with precipitation disposal on Paphian Agora, which will be discussed in accordance with the site topography and character of attested monumental architecture. This will be confronted with the remains of wastewater infrastructure unearthed on the site during excavations and pinpointed in the course of non-invasive prospection. Additionally, the context of other sewage discoveries within the city will be taken into account.

This will permit the introduction of the challenges determining the wastewater treatment, and their solutions implemented into the hydraulic infrastructure of the monumental municipal plaza. Moreover, the diachronic perspective will allow presenting the transitions in the design of plaza drainage and outline of new ideas brought by the Roman engineers to the Island.

**3 THE HIDDEN FACE OF THE HYDRAULIC NETWORK OF A PROVINCIAL CAPITAL: THE WATER EVACUATION SYSTEM OF TARRACO**

**Abstract author(s):** Lebreť, Jean-Baptiste - Lasheras, Ada (Casa de Velázquez - EHEHI)

**Abstract format:** Oral

Between the 1980s and 1990s, numerous archaeological operations have allowed us to better understand the organization of the Roman city of Tarragona (Tarraco). The urban layout, the different monumental buildings of the town and its water supply network were all discovered. However, only part of the hydraulic network was analyzed. Indeed, if the water resources and the aqueducts of the capital of Hispania Citerior are globally known, the water evacuation system has not yet been the subject of a systematic study.

Thus, I propose to present the "hidden face" of the hydraulic network of the provincial capital. The drainage networks in the ancient period collected both run-off and wastewater (combined network) and functioned solely by gravity (gravity network). They are therefore dependent on topographical and more broadly environmental elements that we will analyze first.

Then, I will present the Tarraco drainage system through two levels of study. Firstly, at the neighborhood level, in order to understand the interactions that can exist between the individual drainage networks that are organized at the scale of a building, and the public/collective drainage network of the agglomeration. Secondly, I will focus on the collective drainage network, at the city level, in order to establish the articulations of Tarragona's management system of its undesirable water. The different drainage installations in the city will be described in the light of the structures found in other Roman towns, particularly in Gallia Narbonensis, and in other provincial capitals such as Merida and Lyon.

#### **4 URBAN SEWERAGE SYSTEMS IN THE ROMAN PROVINCE OF LUSITANIA: CONSTRUCTION AND OPERATION.**

**Abstract author(s): Acero Pérez, Jesús (Department of Prehistory and Archaeology, University of Seville)**

**Abstract format: Oral**

This work aims to present, through a selection of case studies, an overview of sewage networks in the cities of Lusitania, one of the three provinces in which the territory of Hispania was divided during the High Empire. The provincial capital, Augusta Emerita (Mérida, Spain), was an ex novo settlement founded by Augustus and it became one of the most important cities of Roman Hispania. In recent years, this city has been the subject of a specific study on urban waste management, including sewage disposal systems. This research has gathered detailed information about the implementation of the sewer network, already conceived in the founding urban project, its subsequent evolution and its main construction features.

In other cities of Lusitania, the knowledge of the wastewater collection systems is much more fragmentary. However, the preserved remains reveal the existence of sewage networks installed in the main streets and public buildings, as observed in cities such as Aeminium (Coimbra), Conimbriga (Condeixa-a-Velha), Olisipo (Lisbon) or Pax Iulia (Beja), all of them located in current Portuguese territory.

This global approach shows that among the Lusitanian cities there were differences in the sanitation networks based on the degree of urban development achieved in each of them, its geographical conditions and the local building materials and techniques.

#### **5 RAIN AND WASTEWATER MANAGEMENT IN ROMAN MIROBRIGA (SANTIAGO DO CACÉM, PORTUGAL). AN OVERVIEW OF THE EVACUATION SYSTEM**

**Abstract author(s): Felício, Catarina (CHAM - Centre for the Humanities, Universidade NOVA de Lisboa)**

**Abstract format: Oral**

From the turn of the Era onwards, the administrative reforms lead to the creation of numerous urban centres throughout Hispania. Some of which coincident with previous settlements whose importance or strategic geographic implantation were deemed as optimal for the creation of the new municipia.

Such was the case for the small urban centre identified with Mirobriga, an oppidum stipendiarium mentioned by Pliny (Nat. IV. 35. 118) and Ptolemy (Geo. II. V), located near what is now Santiago do Cacém, in Portugal. The site has its origins in the Iron Age and was subject to an extensive construction program in the second half of the 1st century CE, where most of the public buildings were built.

Unlike most of the cities created ex nihil or largely transformed in this period, Mirobriga never received an underground sewage network, leaving all the rain and wastewater to run freely throughout its streets.

In this presentation we analyse the town's topographical environ, characterized by a series of small to medium sized hills, and the way the different buildings were placed in the terrain, resulting in different strategies to evacuate and control the flow of water throughout the streets and to displace it outside the urban perimeter.

#### **6 ROMAN WATER EVACUATION STRUCTURES. ASSESSMENT OF FUNCTIONALITIES AND BUILDING TECHNIQUES PRESENT AT MIROBRIGA (SANTIAGO DO CACÉM, PORTUGAL)**

**Abstract author(s): Felício, Catarina (CHAM - Centre for the Humanities, Universidade NOVA de Lisboa) - Sousa, Filipe (CHAM - Universidade NOVA de Lisboa)**

**Abstract format: Oral**

While analysing two of Ulpianus' passages in the edict De Cloacis, namely (Dig. 42.23.1.4) and (Dig. 43.23.1.6), we can infer that in Antiquity all evacuation structures would have been encompassed under a single term, «cloaca». However, given the diversity in size, construction, and function of the existing remains, it becomes impractical for modern investigation to refer to all using the same designation.

In this presentation, we analyse the different evacuation structures related to the evacuation of rain and wastewater that have been identified in the town of Mirobriga (Santiago do Cacém, Portugal) and the role each of them played in the town's evacuation system. Comparing the construction of main conducts, secondary branches, and pipes,

and confronting the results with the type of residue that was evacuated and the sort of building they were located, we make a tentative effort to determine the degree of specialization, or multifunctionality of each type of structure.

## 7 TRANSFORMATIONS IN THE URBAN DRAINAGE SYSTEMS IN LATE ANTIQUE HISPANIA (3RD – 6TH CENTURIES CE)

**Abstract author(s):** Acero Pérez, Jesús (Department of Prehistory and Archaeology, University of Seville) - Romani Sala, Núria (Autonomous University of Barcelona)

**Abstract format:** Oral

Between the end of the 1st century BCE and the beginning of the 2nd century CE most of the Roman towns of Hispania were equipped with an extensive network of sewers, coinciding with a period of great urban development. In some cases, mainly in ex novo settlements, the sanitation network was unitarily planned from the outset of the urban project; in others it was gradually implemented during the various periods of urban renewal. These sewerage networks were very often related to the introduction of complex supply systems, mainly aqueducts. Regular cleaning and repair tasks were essential to ensure the correct operation of both sewers and aqueducts.

From the 3rd century CE onwards a process of transformation of the Classical city began, with important consequences for the urban organization in force until then. This was also clearly reflected in the water supply and sewerage systems, many of them becoming abandoned and clogged up.

This paper addresses the transformation of urban drainage networks from the 3rd to the 6th centuries CE, an issue which, along with several changes that occurred in Late Antique towns, has been largely overlooked. In this period, the ancient sewerage systems were no longer properly maintained due to the local government neglecting its erstwhile duties. However, certain devices were employed to keep the urban sanitation network operational, such as repairing and reusing former abandoned sewers or by rebuilding them using salvaged construction materials and previously unused construction techniques. By focusing on some examples from Hispania we will outline the final maintenance processes developed and the subsequent abandonment of the sanitation systems in the towns of that specific Roman region.

---

## 223 WINDS OF CHANGE? POST-MEDIEVAL AND HISTORICAL ARCHAEOLOGY IN SOUTHERN EUROPE AND THE MEDITERRANEAN

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Panetta, Alessandro (Università degli Studi di Genova) - Casimiro, Tânia (Universidade Nova de Lisboa)

**Format:** Regular session

Historical Archaeology and Post-Medieval Archaeology, sometimes divided into Early Modern and Contemporary Archaeology, seem to be well developed concepts in some parts of the world. The subject has been approached with several publications which summarize and address the key points in the debates that this concept generates in terms of material culture, mobility, inequality, globalization, social structures... among many other subjects. However, such discussions do not seem to be equally distributed. While in northern Europe this debate is decades long, even originating several written syntheses and frequent conferences, for the Mediterranean area the subject is seldom discussed, and southern European countries are under-represented in historical archaeology conferences. Although some exceptions exist, and historical and contemporary archaeology projects are being developed in countries such as Italy, Spain and Portugal, the general panorama is still fragmented in national traditions and lacks a large-scale discussion. Why weren't these ideas discussed and books written? Is it a problem of linguistic or cultural barriers? Lack of exchange of information? Maybe related to the paucity of theoretical debate in a type of archaeology that insists on providing more empirical data? Is it a problem linked to a still dominant classical archaeology perspective? Ceramology and other artefacts studies still seem the most flourishing field although lacking supra-local or -regional studies and rarely overcoming the firmly rooted typological studies.

In this session we invite people to think about what the specificities and themes for Historical/Post-Medieval Archaeology of the Mediterranean countries are. We encourage papers focusing on critical reviews of national and regional traditions, comparative studies between different nations, regions or border areas, relations and exchanges between east-west and north-south, not only from the European Mediterranean countries but engaging or in relation with a broader Mediterranean cultural perspective, but also single case studies that highlight themes of general interest.



**1 TO SHARE OR TO DIVIDE? DEFINING SPACES AT THE UPLAND SETTLEMENT OF COLANESI (GENOVA, ITALY) BETWEEN 19TH AND 20TH CENTURIES**

**Abstract author(s):** Bizzarri, Giulia (Laboratorio di Archeologia e Storia Ambientale - Università di Genova)

**Abstract format:** Oral

The contribution draws on ongoing studies carried out at the settlement of Colanesi, on the hillsides of Monte Fasce, to the east of Genova (Liguria, Italy). Throughout the Modern Age, the area was characterised by the presence of common lands, shared by social groups belonging to downstream villages. Between the 19th and the early 20th century, these lands were privatised. 19th century documents highlight how complex the privatisation process was. Social groups belonging to municipalities, local and state authorities were all involved into the discussion regarding the common lands on Monte Fasce. Access rights to these lands were negotiated and contested by different social groups and individuals, often through practical acts of possession. Here, archaeological, building archaeological and historical-ecological surveys have identified traces of past environmental resource management practices, recording signs of a diversified and extensive management of these hillsides for the post-Medieval period, such as settlements, terraced fields, chestnut tree groves and pastures. The settlement of Colanesi shows a specific complexity in how architectural structures were modified over time. Especially within buildings, walls were added and altered, entrances were moved, creating and dividing spaces. Within architectural complexes structures were built, showing different alignments or shifting spatial properties. Furthermore, 20th century cadastre data shows a high fragmentation of property within the settlement and speaks for a profound shift in spatial organisation, at least on paper. Building and use phases will be contextualised within the shifting nature of these lands during the 19th century, investigating how the privatisation and the discussion on common lands influenced how people redefined space within and around the settlement. The shift from common to private will be analysed, assessing whether this brought to changes in how spaces and resources were shared or divided, keeping a focus on architectural space as embodying social interactions, conflicts, and cooperation.

**2 WATER MANAGEMENT AND RESILIENCE IN SOUTHERN ITALY: THE CASE OF ARENA**

**Abstract author(s):** Mascarello, Chiara - Felicioni, Camilla - Patacchini, Andrea - Citter, Carlo (University of Siena)

**Abstract format:** Oral

The Arena Project derives its name from a small village within the Serre Calabre mountain, in southern Italy. It is focused on the resilience of local communities to landscape as well as political changes over time. In this paper we focus on water management. It is one of the key features that shaped this landscape, both from environmental and juridical point of view. A network of artificial channels runs all along the mountains around Arena, in order to irrigate a large number of artificial terraces. This system is nowadays still partially in use. However, we do not know exactly when it was established. We can find several comparisons throughout the Mediterranean. The nearest and more similar traditional irrigation system is located in the mountains of Trapani, in Sicily. It derives its origin from the Islamic domination (IX – XI centuries). The Calabrian network is composed of channels excavated in the ground, locally named "prise", and tanks named "gebbie". This last term is also used in the Sicilian system and derives from the Arabic word "jabh" (water tank for irrigation). All these elements could suggest an Islamic origin also for our set of water management. The objective of this research is to reconstruct the structure of this network and its different uses. We used historical sources, GIS elaborations and fieldwork. We propose a preliminary chronology and its development over time. Finally, we will underline the impact of this management's system on the local community and its juridical organization.

**3 A HIDDEN TRADING HUB OF THE OTTOMAN EMPIRE: SZOLNOK AND LONG-DISTANCE TRADE IN THE OTTOMAN PERIOD BASED ON ORIENTAL CERAMICS**

**Abstract author(s):** Komori, Tünde (Medieval Studies Department, Central European University, Vienna and Budapest) - Kertész, Róbert (János Damjanich Museum, Szolnok, Hungary)

**Abstract format:** Oral

Szolnok, situated Southeast from Budapest in Hungary, was occupied by the Ottomans between the mid-sixteenth and the late-seventeenth centuries. Based on recent excavations at the territory of the former castle, the sancak seat, located on the Tisza River, has been a vibrant trading hub of the period. The finds and the Ottoman-period buildings of the castle indicate high-ranking dwellers who probably took good use of the opportunities the river provided for trading.

Chinese porcelain and Central Asian faience started appearing in the material culture in Hungary along with the Ottoman occupation. To date, it has not been studied in detail how these objects moved around the Empire and who traded with them under what conditions. Finds from well- interpretable archaeological contexts are rare, as most of the Ottoman-period oriental ceramics are unearthed in Hungary from upper layers mixed with modern debris. The case of Szolnok provides an opportunity for a more complex analysis of the finds including the consumers who used

the pieces, as well as the trading connections and the routes through which they arrived in Szolnok, along with a clearer picture of the sancak seat's widespread connections in the early modern period.

The proposed paper summarizes the results of this analysis, with a special focus on revealing possible routes and connections through which Chinese porcelain reached the Ottoman Empire, an aspect of Ottoman trading connections that to date has not been studied in detail. These possible routes, based on different sources of trade, include an overland route through the Balkans; a partly maritime and partly overland route through the Black Sea and Wallachia and Transylvania; and for the Chinese objects possibly one from Egypt through the Eastern Mediterranean to Izmir, and from there to Istanbul.

#### **4 POTTERY CONSUMPTION IN MODERN BRAGA: FROM NATIONAL RESEARCHES TO REGIONAL TRADITIONS**

**Abstract author(s):** Fernandes, Lara (Laboratório de Paisagens, Património e Território - Lab2PT; Unidade de Arqueologia da Universidade do Minho - UAUM) - Machado, Diego (Fundação para a Ciência e Tecnologia - FCT; Laboratório de Paisagens, Património e Território - Lab2PT; Unidade de Arqueologia da Universidade do Minho - UAUM) - Martins, Manuela - Magalhães, Fernanda - Bofica, Natália (Unidade de Arqueologia da Universidade do Minho - UAUM; Laboratório de Paisagens, Património e Território - Lab2PT)

**Abstract format:** Oral

The studies conducted on the economic dynamics of Portugal in the modern period, and especially those dealing with ceramic materials, are still somewhat lacking. In fact, most of the work carried out in recent decades has been devoted to the systematization of pottery production, or to the consumption of these objects, whether in political or religious institutions, or from fragmentary interventions in urban centers. However, in general, there is a lack of studies on economic and social processes in the modern period that provide a synthesis of the consumption patterns of ceramic materials in the effervescent post-medieval Portuguese cities.

In Braga, the principles of Renaissance urbanism were inaugurated with the archbishopric of D. Diogo de Sousa in the early 16th century, which contributed to change the medieval profile of the city, whose morphological evolution is reasonably well studied. However, the state of the art is quite different regarding the pottery from the modern contexts, whose study or systematization is lacking, having been the target of occasional analyses within the scope of excavation reports. In this sense, we propose to develop a systematization of modern period ceramic production (16th-18th centuries) from several archaeological interventions under the responsibility of UAUM, in order to understand the economic dynamics of the city associated with the production and consumption of ceramic ware. In fact, the variety in its consumption can be understood as a reflection of the diversity of status of the inhabitants of Braga, since the urban population was made up of different social groups, whose acquisitions varied according to purchasing power and taste, as well as reflecting the impact of trade routes on the city's supply.

#### **5 ARCHAEOLOGY OF VENETIAN-MADE CERAMICS IN THE MODERN ERA. A CASE STUDY**

**Abstract author(s):** Ferri, Margherita (Ca' Foscari University of Venice)

**Abstract format:** Oral

In the past, the study of Venetian ceramics of the modern period has been approached from an art-historical perspective (the book *Ceramica nel Veneto*, the works of Nadir Stringa on Antinobon, the works of Angelica Alverà Bortolotto on the venetian majolica), highlighting above all the history of production starting from the data obtained from the abundant written sources on people who made that pottery.

From the point of view of archaeological research, however, Venetian ceramics of the 1600-1700s has played an absolutely marginal role, without ever entering into the great general themes of Italian post-medieval archaeology.

This tradition of studies has undoubtedly played a decisive role in strengthening the current local craft economy (i.e. the productive district of Nove and Bassano). This type of outcome is common in some ways to what has happened in other Italian ceramic cities.

The case study of the Venetian Terraferma will be compared to other ceramic historical cities and their museums (Faenza, Montelupo) with the intention of testing the unexplored potential of the theme.

#### **6 MATERIALIZING DEATH. AN INTERACTION OF PEOPLE AND THINGS AT THEIR FINAL HOUR IN EARLY MODERN PORTUGAL**

**Abstract author(s):** Casimiro, Tania (CFE HTC - Nova University of Lisbon) - Costa, Inês (Independent Archaeologist) - Iglesias, Jessica (Independent Archaeologist)

**Abstract format:** Oral

Material culture associated to graves is widely studied in southern Europe since pre-historic times, although not that much has been made in Portugal relating to a time between the 15th and the 19th centuries. During this period the ritualization of death was occasionally related to some objects, made from different raw materials. Most of them

correspond to religious and superstitious items, although others materialize identity, gender, age, ethnicity, and cultural backgrounds. While some structural social and cultural constructions such as religion makes some of them quite similar in wide regional areas, others reflect a more individual and personal choice allowing to discuss different stages of engagement between the deceased and the object.

Based on the evidence provided by several necropolis from every part of Portugal this paper aims to discuss what type of relations did people and objects shared at the time of death and how certain objects reflect religious, superstitious, economic and symbolic aspects in the reaction people had with their final moments. We hope to discuss with other colleagues if similar relational behaviours occur in other parts of the Mediterranean.

## 7 THE FUNERARY EPIGRAPHY OF THE NW IBERIA (1850-1940) OR HOW ARCHAEOLOGY CAN HANDLE THE SUBTLE NUANCES OF POWER

**Abstract author(s):** Álvarez, Samuel (Incipit, CSIC; Universidade de Santiago de Compostela)

**Abstract format:** Oral

The following proposal addresses an unusual topic in contemporary archaeology, especially in the Iberian Peninsula: the memorials and the funerary epigraphy. In this work, a social and epigraphic analysis is proposed which, using a very simple approach methodology, aims to highlight some of the main historical and sociolinguistic dynamics of the autonomous community of Galicia (NW Spain). The aims of this are twofold: on the one hand, it is intended to show how the epigraphic and memorial study materialises certain social and linguistic dynamics, providing a brief review of the historical and linguistic context and drawing a correlation with the data of the suggested analysis. On the other hand, and based on these results, it is intended to reflect about the extent to which some archaeological records may not be as "transparent" as they could be identified from an exclusively archaeological perspective. Furthermore, the need to analyse social contexts imbricated in strong power dynamics from broader perspectives is raised, along with some supporting tools for the identification of discordant records and hidden discourses from archaeological perspectives.

## 8 COFFEE CUPS FROM THE EAST: TRADING CONNECTIONS OF OTTOMAN SOFIA BASED ON ORIENTAL CERAMIC FINDS FROM THE POST-MEDIEVAL PERIOD

**Abstract author(s):** Komori, Tünde (Medieval Studies Department, Central European University, Vienna and Budapest) - Goryanova, Snezhana (National Archaeological Institute with Museum, Bulgarian Academy of Sciences, Sofia) - Dafova, Lyuba (Regional History Museum – Sofia)

**Abstract format:** Oral

The proposed paper discusses the faience and porcelain finds unearthed in Sofia, Bulgaria from the post-medieval period of the Ottoman rule, with a special focus on the sixteenth and seventeenth centuries. Sofia was a significant administrative and military center of the Western section of the Ottoman Empire, conquered by the Ottomans for about half a millennium. Oriental decorative ceramics started to be in use in this part of the Empire in the sixteenth century and have become more and more popular with the spread of coffee culture. Their use and distribution on the everyday level however is an under-studied topic in both Ottoman historical studies and archaeological research in all the concerned countries.

Although the trade of these objects is difficult to study based on written sources, since they rarely appear in them, their archaeological distribution may indicate the routes through which they travelled from the place of production to the place of use and disposal. Such a study involves several methodological approaches, such as object biography, economic history, and the historical archaeological examination of post-medieval overland and maritime trading routes. The latter aspect also concerns underwater archaeology, in connection with the Chinese porcelain sherds, and the study of shipwrecks along the possible trading routes.

From a broader perspective, this study touches upon the trading connections of the Ottoman-occupied Balkans and Eastern Europe from the aspect of these oriental ceramics that were part of the everyday material culture in these territories. The examination of such a material may lead to a broader picture of how Chinese porcelain first arrived in the Ottoman Empire, which so far is not clear, and how it affected the production of Iznik faience ware that has become widely popular throughout the Empire.

## 9 WHERE THE MIDDLE AGES DID NOT END

**Abstract author(s):** Citter, Carlo (University of Siena)

**Abstract format:** Oral

Archaeologists are still much inclined to please timelines provided by historians that are not suitable for the material record. To force data within prefabricated boxes prevents exploring the full potential of a changing scale factor analysis. On the contrary, to focus on the continuities allows to emphasize those features that persists notwithstanding changing sociopolitical assets. This paper provides two case studies in western Mediterranean (Mount Amiata-Tusca-

ny and Vibo Valentia-Calabria both in Italy), where the traditional breaks do not mark real changes in the archaeological record. However, there are dates that point out a change. In Calabria after the 1783 earthquake the feudal castles were abandoned and no longer reoccupied. In both areas there was no industrial turn and the great change came after WW2. In Amiata the Black Death (AD 1348) was a turning point. Both areas proved to be connected with other niches at a regional scale, though they developed local and peculiar structures.

## 10 TEAR ALONG THE ... BORDERS

**Abstract author(s):** Gattiglia, Gabriele - Anichini, Francesca - Di Pasquale, Caterina - Trabucco, Nicola (University of Pisa - Dipartimento di Civiltà e forme del sapere)

**Abstract format:** Oral

This presentation aims at reflecting on possible causes on why contemporary archaeology is a neglected research field in Italy, starting from the experience of the educational project "Archaeology of Border", developed by the MAPPA Lab of the University of Pisa. The project, carried out in 2021, promoted a trans-disciplinary archaeological and anthropological path and involved the students in an educational experience dedicated to contemporary borders: the stiff border on the mountains of Versilia, northern Tuscany (Italy), along the Gothic Line during the Second World War on one side and the "fluid" and changeable border of the contemporary migrations' traces on the Lampedusa Island (Sicily, Italy) on the other side. In both cases, approaching contemporary archaeology means adopting a holistic approach that merges archaeology and anthropology to investigate tangible and intangible traces as a unique palimpsest. It stems from a method of analysis for interpreting materiality, which combines documents analysis, field survey, excavations, spatial and statistical analysis, anthropological fieldwork and ethnographic data collection, interviews, ethnography of ritual moments and commemorations, and censuses of objects, monuments, memorial plaques, graves, other spatial landscape markers, etc. This approach implies a lively and up-to-date theoretical debate, which is missing in Italy, both inside and outside the academia and must start from educational activities for training students in approaching the archaeology of the contemporary era.

## 11 GUERRILLA WARFARE AND THE POLITICS OF MEMORY: A TRANS-NATIONAL COMPARATIVE PERSPECTIVE

**Abstract author(s):** Tejerizo, Carlos (Università degli Studi di Genova) - Santeramo, Riccardo - Bizzarri, Giulia - Piu, Caterina (Laboratorio di Archeologia e Storia Ambientale - Università degli Studi di Genova)

**Abstract format:** Oral

Conflict archaeology is one of the main pillars on which European Post-Medieval and Contemporary Archaeology have traditionally stood, expanding the chronology of Archaeological inquiry. Moreover, recent proposals from the so-called Modern Conflict Archaeology have furthered the scope of the discipline, introducing new topics and methodologies such as GIS, the material impact of conflicts on local societies or the phenomenology of war. However, Guerrilla warfare and its material memory has not been as deeply archaeologically addressed as open war conflicts, although some recent projects throughout Europe have opened the door to this topic. In this paper, we will assess them from a comparative perspective delving into the differences of the politics of memory on the guerrilla warfare in contemporary times. Taking as case studies the processes of memorialization of the guerrilla warfare in Spain, Italy, Greece and Lithuania—based on recent archaeological projects developed in these countries, we will reflect on the different factors that have configured the current memory of this traumatic past and consider how they have affected the way archaeology has been introduced as a methodology to study this phenomenon. By doing this, we will consider the role that Post-Medieval and Contemporary Archaeology could play in Western Europe with regards to the current political situation.

## 12 COMMON-LANDS, PRACTICES AND LOCAL KNOWLEDGE: AN ARCHAEOLOGICAL PERSPECTIVE TO THE INNER SOCIAL DIMENSION OF LANDSCAPE. CASE STUDIES FROM SOUTHERN EUROPE

**Abstract author(s):** Stagno, Anna Maria (University of Genova - Laboratory of Environmental Archaeology and History) - Panetta, Alessandro - Attolini, Davide - Bizzarri, Giulia - Cristina, Giovanni (Università di Genova) - Menéndez Blanco, Andrés (University of Oviedo) - Menozzi, Bruna - Piu, Caterina - Santeramo, Riccardo - Molinari, Chiara (Università di Genova)

**Abstract format:** Oral

During the last three centuries, numerous reforms addressed European mountain areas' social, economic, and environmental organisation to "rationalise" and, then, to "modernise" their uses. The impact of those reforms on the environmental resources management system was indeed profound. At European level, the 19th century has been defined as the century of collective property attacks (and sale). Even if several reforms were aimed at erasing the jurisdictional value of agro-sylvo-pastoral practices, conflicts over access rights to commons still preserved in 19th and 20th century central and local archives show that it never fully occurred. The vitality of commons and the many

national and transnational organisations related to their acknowledgement do not fit with the "generalised" idea of marginality associated with shared uses and collective ownerships.

These elements suggest that the complexity of these "recent" phases in the transformation of European landscapes and societies still has to be fully acknowledged.

The paper will focus on the first results of a series of research projects, carried out by the Laboratory of Environmental Archaeology and History, which are addressing – from various points of view – the process of the so-called marginalisation of mountain areas during the last centuries.

The aim is to reflect on archaeology's contribution to an historiographical debate on this process, which has mainly involved historians. Reflecting on the way through which archaeology brings to light temporal and spatial continuities and discontinuities in the use of spaces, our goal is to discuss how it could contribute to decipher the changes in access rights, the transmission of local knowledge (and its interruption) and finally changes in the relationships between local actors and local social groups, who managed, claimed and appropriated spaces.

### 13 EXPLORING CONNECTIONS BETWEEN ARCHAEOLOGIES OF EARLY MODERN SPAIN AND COLONIAL IBERO-AMERICA

**Abstract author(s):** Senatore, Maria - Gutierrez Lloret, Sonia (Instituto de Investigación en Arqueología y Patrimonio Histórico - INAPH, Dep. Prehistoria, Arqueología, Hª Antigua, Fil. Latina, Fil. Griega Universidad de Alicante)

**Abstract format:** Oral

This paper presents a review of the lines of research conducted on postmedieval contexts in Spain that could contribute to building an integrated approach to colonial and early modern worlds. In recent decades, archaeologists focused on modern Spanish colonialism in America have highlighted the relevance of understanding persistence, changes and continuities in the long term. These perspectives have shown significant insights extending comparative lessons beyond one area and time period in Ibero-America but have been limited to indigenous histories. We consider that these approaches could be enhanced by a broader perspective that includes studies of material and social changes taking place through centuries in diverse time periods and regions not only in Ibero-America but also in the Iberian Peninsula. Therefore, here, we explore to what extent the archaeologies developed in a variety of modern contexts in Spain could contribute to contextualizing and understanding changes and continuities in different temporal and spatial scales connecting colonial and modern contexts.

### 14 POST-MEDIEVAL ARCHAEOLOGY, ARCHAEOLOGY OF MODERN AGE OR ARCHAEOLOGY OF MODERNIZATION? REFLECTIONS ON LATER HISTORICAL ARCHAEOLOGY IN THE MEDITERRANEAN

**Abstract author(s):** Panetta, Alessandro - Cristina, Giovanni - Stagno, Anna Maria (Università degli Studi di Genova; LASA - Laboratorio di Archeologia e Storia Ambientale - Università degli Studi di Genova)

**Abstract format:** Oral

The archaeological study of the post-medieval age is now widely diffused in the Mediterranean area, to the point of including also the most recent centuries including the contemporary age. Although individual national traditions may proceed in an uncoordinated manner, this is a well-established practice in both research and conservation. Nevertheless, there are still few opportunities to reflect on the historiographical specificities of an archaeology of the modern age, i.e. how material traces found during excavations and surveys can be used as sources within specific historiographical themes of the modern and recent centuries.

Historical archaeology generally seems to identify the main significance of modernity with the process of globalisation that began as a result of European geographical explorations. At the same time, the archaeological study of industrialisation, although recently approached also from a social perspective, is often practised as a formal study of industrial architecture.

But the themes underlying the idea of Modernity, such as the emergence of large urban centres, central states or industry/enterprise seem to remain in the background, as do reflections on the ideologies underlying these transformations, such as improvements and rationalisations.

If these problems are tangible for archaeological research in general, they seem to become more acute with regard to the Mediterranean area, which seems to live 'in reflex' the consequences of geographical exploration and industrialisation.

This paper, based on a review of the general trend for post-medieval archaeology and a comparison with the research themes of historians, as well as on some specific case studies, aims to reflect on the contrary on what could be the specificities for an archaeology of the modern age of the Western Mediterranean.

## HUNTER-GATHERERS RESILIENCE: ADAPTATION PATTERNS TO CLIMATIC SHIFTS AT DIFFERENT LATITUDES FROM MIS3 TO MIS 1 [PAM]

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Mutri, Giuseppina (The Cyprus Institute - STARC) - Sari, Latifa (Centre National de Recherches Préhistoriques, Anthropologiques et Historiques)

**Format:** Regular session

The ability of Homo sapiens to adapt to the most diverse environments has been the key of the success of our species. Scholars have often paid attention to the adaptation models, assuming that the capability of coping with different environments was a response to the external stressful situations. But how exactly this happens? How humans react to sudden climates changes and which solutions they find when environmental conditions became extreme? Exceptionally dry climates, extremely cold environments, particularly humid ecological niches, represented and still represents nowadays, a major challenge for human societies. Hunter-gatherers have always found creative adaptive solutions, modelling their lifestyles, economy, settlement system, seasonality and social structure according to the environmental conditions to create a sustainable relationship with it.

The effect of this adaptation models may be reflected in their material culture and, in some cases, also their physical and biological features. From MIS 3 to MIS 1 major climatic shifts have occurred and different technological and behavioural traits have been developed by Modern Humans in Eurasia, Africa and Oceania. What role has the climate played in shaping global hunter-gatherer adaptability and cultural traits? This session aims to collect outstanding examples of Homo Sapiens hunter-gatherers adaptations in different parts of the world.

### ABSTRACTS

#### 1 NEW ELEMENTS ON THE GRAVETTIAN TO SOLUTREAN TRANSITION: THE OPEN-AIR SITE OF PORTELA 2 (LEIRIA, CENTRAL PORTUGAL)

**Abstract author(s):** Gameiro, Cristina (UNIARQ - Lisbon University) - Aubry, Thierry (Fundação Côa Parque / UNIARQ - Lisbon University) - Zambaldi, Maurizio (UNIARQ - Lisbon University) - Dimuccio, Luca (GEGOT - Coimbra University)

**Abstract format:** Oral

Severe cooling and the expansion of ice sheets during the Last Glacial Maximum (LGM), 27–19 ky ago, had a dramatic impact on plant, animal and human populations. In Southwest Europe, a pan-European technocomplex, using bone or wood projectile points armed with lithic barbs (Gravettian), was replaced by a regional technocomplex using stone points as hunting weaponry: the Solutrean. The origin of the Solutrean has been a central issue in the study of European Upper Palaeolithic. Nevertheless, in the mid-1990s a transition phase, characterized by the presence of Vale Comprido points, was identified in the littoral of Central Portugal.

In early 2009, the opening of a ditch related to the Maceira (Leiria, Central Portugal) sanitation network led to the discovery of the Portela 2 archaeological site. The recovery of Vale Comprido points suggests a Proto-Solutrean occupation. The fact that this is a transitional phase between the Gravettian and the Solutrean, poorly known in south-western Europe, prompted a new archaeological excavation, conducted in 2021 in the scope of the PALE-ORESCUE project. Field observations allowed considering the archaeological site within the surrounding landscape, recovering a larger artefacts assemblage, and laying the groundwork for investigating the site formation processes by means of petrographic, sedimentological and geochronological analyses. We will present the results of the lithic technology study and some conclusions concerning site formation process.

## WAS THE PROTO-SOLUTREAN OF SOUTHWEST EUROPE TRIGGERED BY HEINRICH STADIAL 2? NEW INSIGHTS ON THE PEÑA CAPÓN SEQUENCE (CENTRAL SPAIN)

**Abstract author(s):** Alcaraz-Castaño, Manuel (University of Alcalá) - Alcolea-González, José-Javier - Luque, Luis - Castillo-Jiménez, Samuel - Jiménez-Gisbert, Guillermo - Triguero, Ignacio (Area of Prehistory, Department of History and Philosophy, University of Alcalá) - Albert, Rosa-María (Department of History and Archeology, University of Barcelona) - de Andrés-Herrero, María (Department of Prehistory, Ancient History & Archaeology, Complutense University of Madrid) - Cuartero, Felipe (Spanish National Research Center for Human Evolution - CENIEH) - Cuenca-Bescós, Gloria (Aragosaurus-IUCA, Department of Geosciences, University of Zaragoza) - Kehl, Martin (Institute of Geography, University of Cologne) - López-Sáez, José-Antonio (Environmental Archeology Research Group, Institute of History, CCHS CSIC) - Mangado, Xavier (Department of History and Archeology, University of Barcelona) - Rodríguez-Antón, David (Department of Prehistory, Autonomous University of Barcelona), Ruiz-Alonso, Mónica (Environmental Archeology Research Group, Institute of History, CCHS CSIC) - Sánchez de la Torre, Marta (Department of History and Archeology, University of Barcelona) - Yravedra, José (Department of Prehistory, Ancient History & Archaeology, Complutense University of Madrid)

**Abstract format:** Oral

The relations between climate variability and cultural behaviors of Paleolithic hunter-gatherers, including population dynamics, techno-economic adaptations and settlement patterns, have been the object of intense debate for decades. In recent years, the Upper Paleolithic of Western Europe has become one of the main areas of study on this topic. In this context, research has recently focused on defining and understanding the Proto-Solutrean as a human adaptation potentially triggered by abrupt climate and environmental change caused by Heinrich stadial 2 around 26,000 years ago. Chrono-stratigraphically located immediately after the Gravettian and before the Solutrean, there are, however, relevant questions concerning the meaning of the Proto-Solutrean, both in terms of human adaptations and cultural change.

We present new data on Proto-Solutrean archaeological assemblages recently excavated in the Peña Capón rock shelter (Guadalajara province, central Spain). This site is located in the Iberian interior plateau, a large area that, until recently, was thought to be devoid of human settlement during the Last Glacial Maximum due to its harsh climatic and environmental conditions. The new geoarcheological, paleoecological and chronometric data obtained at this site demonstrate that hunter-gatherers with Proto-Solutrean technology occupied this area during Heinrich Stadial 2, in a period dominated by scarce vegetation cover and low forest and faunal diversity. Considered in the context of the Upper Paleolithic sequence of western Europe, we provide new elements to further current discussions on the apparent association between periods of significant decrease in vegetation cover and biodiversity with the appearance of large projectile stone points, as opposed to periods of increasing vegetation cover and forest density, which were potentially related to hunting technologies based on bladelet armatures and a stronger presence of bone and antler points. Although data obtained at Peña Capón broadly support this trend, some relevant questions are still open.

This research has been mainly funded by a European Research Council Grant (ERC-2018-STG-805478) within the Horizon 2020 Program, under the project "Population dynamics and cultural adaptations of the last Neandertals and first Modern humans in inland Iberia: a multi-proxy investigation" (MULTIPALEOIBERIA).

## "NOTHING HAPPENS UNTIL SOMETHING MOVES": SETTLEMENT PATTERNS IN THE BALKAN PENINSULA DURING MIS 3-1

**Abstract author(s):** Plavšić, Senka - Dragosavac, Sofija (University of Belgrade, Faculty of Philosophy) - Radović, Predrag (University of Belgrade, Faculty of Philosophy; National Museum Kraljevo) - Mihailović, Bojana (National Museum in Belgrade) - Mihailović, Dušan (University of Belgrade, Faculty of Philosophy) - Dogandžić, Tamara (MONREPOS Archaeological Research Centre and Museum for Human Behavioural Evolution)

**Abstract format:** Oral

As repeatedly demonstrated by archaeological and ethnoarchaeological data, hunter-gatherers' settlement patterns are known to differ between different groups and periods. How groups organized their movements and settlements in the landscape was to a large extent influenced by the important events in climate history and more intermediate environmental conditions. The goal of this study is to examine if and how hominin groups changed their settlement patterns as a response to fluctuating climatic and environmental conditions during the rather unstable Marine Isotope stages 3-1 on the Balkan peninsula. Based on the published data two analyses have been conducted: bivariate WABI (Whole assemblage behavior index) and multivariate PCA (Principal component analysis) analyses for the following variables: lithic density, retouched frequency, core, blanks and chips frequency as well as tool diversity, which are frequently used to access settlement patterns of prehistoric human populations. Both Middle and Upper Paleolithic sites are included in the study, which allowed us to detect changes in settlement in different time periods, different hominin populations and in different microregions of the Balkan Peninsula.

#### 4 **MESTEC/OSTROV, AN EARLY MESOLITHIC SITE IN BOHEMIA – SUBMISSION TO THE ISSUE OF HUMAN ADAPTATIONS TO THE PLEISTOCENE/HOLOCENE CLIMATIC SHIFT**

**Abstract author(s):** Mlejnek, Ondrej (Archaeological Centre in Olomouc) - Petr, Libor - Přichystal, Antonín (Faculty of Science, Masaryk University, Brno) - Záhorský, Vít (Archaeological Centre in Olomouc)

**Abstract format:** Oral

In this contribution the results of an excavation of an early Mesolithic site in Eastern Bohemia will be presented. The site was excavated in 2018 as a rescue archaeological project. A total of 4986 lithics were found in a circa 30 cm thick plough horizon. Another 141 lithics were collected nearby during surface surveys. An area of 343 m<sup>2</sup> was unearthed in a grid and all the sediment was wet-sieved. Ústí nad Orlicí type semi-local Cretaceous chert dominates in the raw material spectrum, however quartz, erratic flint and other imported raw materials are present as well. Most common technological categories include small cores, tiny fragments, flakes, blades, bladelets and microblades. Tools are represented by small end-scrapers, burins, backed bladelets, tiny points, splintered pieces, microlithic triangles and retouched flakes. Tanged tool with a retouched tip used for cutting and drilling is a unique find. The assemblage can be essentially dated back to the Early Mesolithic. A Late Palaeolithic admixture can be assumed due to the presence of a tanged tool and other slightly patinated bladelets made of erratic flint. The collection of lithic artefacts excavated at this site is one of the largest Mesolithic assemblages from eastern Bohemia. It provides a new dataset for comparisons with other sites. Nearby, we managed to obtain two sedimental drill cores, which provided us with the palynological environmental records dated to the Pleistocene/Holocene boundary. Together with the archaeological finds from the campsite, it can improve our understanding of the hunter-gatherers' adaptation patterns to the Pleistocene/Holocene climatic shift in this region. Finally, at the end of the presentation, our data will be compared to other Bohemian localities dated to this period and several concluding remarks concerning the issue of human adaptations to the MIS 2/MIS 1 climatic change in this region will be suggested.

#### 5 **PLEISTOCENE–HOLOCENE TRANSITION AND HUNTER–GATHERER ARCHAEOLOGY IN THE CARPATHIAN BASIN**

**Abstract author(s):** Szegedi, Kristóf (Hungarian National Museum; Mikoviny Sámuel Doctoral School of Earth Sciences, University of Miskolc) - Major, István (Institute for Nuclear Research, Eötvös Loránd Research Network) - Újvári, Gábor (Institute for Geological and Geochemical Research Research Centre for Astronomy and Earth Sciences Eötvös Loránd Research Network) - Lengyel, György (Department of Prehistory and Archaeology, University of Miskolc)

**Abstract format:** Oral

The Carpathian Basin faced a severe climatic amelioration during the Late Glacial period that culminated into the Holocene environment. Both the Late Glacial (14.7–11.7 ka cal BP) and the Early Holocene pre-Neolithic (11.7–8.2 ka cal BP) archaeological records of the Carpathian Basin are weak. There are a few sites dated to between 14.7 and 10.4 ka cal BP, for instance Lovas, Szekszárd-Palánk and Erk 1. and sporadic finds, such as the osseous harpoon of Mezőlak and Nádasladány, and no absolute nor relative chronological evidence for human occupation from 10.4 ka cal BP until the 9.4 ka cal BP NGRIP event that is approximately coeval with the earliest occurrence of the Mesolithic in Hungary. Thus, a reliable absolute and relative chronology for the Pleistocene–Holocene transition in the sense of human occupations is missing. The lack of integrity of archaeological evidences, on the one hand, emerged from the fact that the sites were excavated decades ago with the application of outdated excavation and sampling methods of the 1950's and 1960's, thus the spectrum of currently available dating methods were not available. On the other hand, such archaeological data after a critical evaluation suggested that the Carpathian basin was only sporadically visited by hunter-gatherers after the Late Epigravettian that left for the northern territories of Eastern Central Europe about 14.7 ka cal BP until the emergence of the Mesolithic type archaeological record at 10.4 ka/9.4 cal BP. Our research on the domain of the archaeological chronology of the Pleistocene–Holocene transition obtained new radiocarbon dates for yet undated archaeological sites, revised the cultural affiliation of archaeological assemblages, to reveal the ecological aspects of the hunter-gatherer population of Eastern Central Europe visiting the Carpathian Basin and reconsider the origin of the Mesolithic population that has long been linked with the local Epigravettian.



## 6 THE ECOLOGY OF AURIGNACIAN HUNTER-GATHERERS IN THE WESTERN CARPATHIANS, EASTERN CENTRAL EUROPE

**Abstract author(s):** Lengyel, Gyorgy (University of Miskolc, Miskolc, Hungary; Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków) - Dobos, Endre (University of Miskolc) - Krajcarz, Maciej (Institute of Geological Sciences, Polish Academy of Sciences, Warszawa) - Magyar, Enikő (Eötvös Loránd University, Budapest) - Major, István (Isotope Climatology and Environmental Research Centre - ICER, Institute for Nuclear Research, Debrecen) - Moskal-del Hoyo, Magdalena (W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków) - Palcsu, László (Isotope Climatology and Environmental Research Centre - ICER, Institute for Nuclear Research, Debrecen) - Szegedi, Kristóf (Hungarian National Museum, Budapest) - Újvári, Gábor (Research Center for Astronomy and Earth Sciences, Eötvös Loránd Research Network, Budapest) - Wilczyński, Jarosław (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków)

**Abstract format:** Oral

Aurignacian sites of the Western Carpathians are found in both caves and open-air locations. Caves often offer superior conditions for faunal and botanical remains preservation compared to open-air sites, but meanwhile, caves are more often subjected to admixtures between archaeological periods. Therefore, the preservation of the Aurignacian archaeological record divided between caves and open-air sites in the Western Carpathians is uneven, which makes the archaeological dialogues difficult. A striking feature of the Aurignacian cave sites in the Western Carpathians is a rarity or lack of typical Aurignacian lithic tools and an abundance of bone tools and faunal remains. Open-air sites did not preserve fauna nor osseous tools but plentiful specimens of Aurignacian-type lithics. Our analyses of the Aurignacian in the Western Carpathians involved new data from Istállóskő Cave and a newly discovered open-air site Alsódobsza Kerek Domb (ADKD) of northeast Hungary. Up to date, ADKD is the sole known open-air site of the Western Carpathians that preserved abundant faunal material comparable to cave sites. This gives a possibility to clarify whether the archaeological difference between caves and open-air sites is due to ecological or taphonomic reasons. The results of our research within the review of iconic Aurignacian archaeological assemblages from Poland, Hungary, Slovakia, Czechia, and Austria can contribute to the insight of the ecology and the subsistence strategies of the human population carrying Aurignacian artifacts in the territory of Eastern Central Europe.

## 7 THE HUMAN NICHE SPACE OF LATE UPPER PALEOLITHIC EUROPE AND THE EFFECTS OF CLIMATE AND POPULATION

**Abstract author(s):** Yaworsky, Peter - Hussain, Shumon (Aarhus University)

**Abstract format:** Oral

Between ca. 20 and 9kya, during the post-LGM (Late Glacial Maximum) Pleistocene and the transition to the Holocene, the volatility of Europe's climate resulted in environments and landscapes vastly different from any encountered today. Throughout this period, human populations of mobile hunter-gatherers, differentiated by their stone tool assemblages, occupied and abandoned various habitats across the landscape. Here, using radiocarbon-dated archaeological sites and downscaled TraCE21k paleoclimate data, we bracket the human climate niche of Late Upper Paleolithic Europe. Next, using general classifications of the stone tool macro-complexes, we test whether the different complexes represent adaptations to spatiotemporally defined climate niches. We find that the human climate niche during this timeframe is relatively narrow and that many of the tool complexes have overlapping climate niches. Additionally, we find that as populations grow, the niche envelope expands. We interpret this process of niche expansion in the light of the ideal free distribution model and as evidence of pan-European population pressure in the Late Glacial, particularly in regard to mounting resource competition and the gradual depression of higher-ranked, larger-bodied animal prey items as the Ice Age draws to its end.

## 8 LIMITING FACTOR MODELLING REVEALS CHANGING ADAPTIVE PRESSURES AND POPULATION DYNAMICS OF EUROPEAN HUNTER-GATHERERS FROM LATE MIS2 AND INTO MIS1

**Abstract author(s):** Riede, Felix (Department of Archaeology and Heritage Studies, Aarhus University; Center for Biodiversity Dynamics in a Changing World, Aarhus University) - Ordonez, Alejandro (Center for Biodiversity Dynamics in a Changing World, Aarhus University)

**Abstract format:** Oral

Population dynamics set the framework for understanding human genetic and cultural adaptations. For foragers, demographic and environmental changes correlate strongly, and much attention has focused on single explanatory values such as net primary productivity or insolation. Yet, the causal relations between different environmental variables and human responses through time and space likely varied. Building on the notion of limiting factors, namely that the scarcest resource regulates population size, and drawing on Binford's global sample of ethnographically documented hunter-gatherers, we present a statistical approach to identify the dominant climatic constraints for hunter-gatherer population densities and then hindcast their changing dynamics in Europe for the period between 20kyBP to 8kyBP (late MIS2 to early MIS1) when climatic regimes flipped from Pleistocene to Holocene mode. Limiting

factors shifted from ubiquitously temperature-related variables during the Pleistocene to a regional mosaic of limiting factors in the Holocene. This spatiotemporal variation suggests that hunter-gatherers needed to overcome very different adaptive challenges in different parts of Europe, and that these challenges varied over time. Knowledge of these changing limiting factors facilitates heightened attention to the specific biocultural adaptations necessary for contemporaneous hunter-gatherers to maintain viable populations in different regions. The signatures of some of these changing adaptations are visible archaeologically, and include specific technological innovations as well as the changes in mobility, land-use and social network structures observed across the Pleistocene-Holocene boundary.

## 9 **LATE EPIPALAEOLITHIC SETTLEMENT IN THE QA' SHUBAYQA: A CASE STUDY IN RESILIENCE IN THE ARID MARGIN OF THE SOUTHERN LEVANT**

**Abstract author(s): Richter, Tobias (University of Copenhagen)**

**Abstract format: Oral**

The Levant of Southwest Asia is characterised as a mosaic of habitats ranging from coastal, woodland and mountain zones with high rainfall, to semi-arid and arid steppe and desert regions. Expansion and contraction of these zones during the Late Glacial and Post-Glacial posed both opportunities and challenges to Epipalaeolithic hunter-gatherers. While the coastal and woodland zones of the Levant were more environmentally stable, the semi-arid and arid regions saw significant changes. Since 2012 the Shubayqa Archaeological Project has investigated human settlement in the Qa' Shubayqa area in northeast Jordan. A nowadays semi-arid region, this area was predicted to have been severely impacted during the Younger Dryas as cooler and drier conditions set in. Surveys and excavations at a number of Late Epipalaeolithic and early Neolithic (PPNA) sites around the edges of the Shubayqa mudflat indicate not only intensive and prolonged settlement in this area before, during and after the Younger Dryas, but also show how Late Epipalaeolithic hunter-gatherers adjusted settlement patterns and resource exploitation in subtle ways. The Qa' Shubayqa therefore provides a useful benchmark against which to evaluate the severence and impact of Late Glacial and post-glacial climatic changes on humans in the Levant. This research indicates that human groups appear to have been far better at adapting to adverse climate change than previously thought and only adjusted their activities in minimal ways.

## 10 **A PLACE CALLED HOME. LAND MANAGEMENT BETWEEN THE LIBYAN COAST AND THE EGYPTIAN WESTERN DESERT DURING MIS 2-1**

**Abstract author(s): Mutri, Giuseppina (The Cyprus Institute)**

**Abstract format: Oral**

The millennia that elapse between the MIS2 and MIS1 were strongly challenging for humans, mainly because of significant and sometimes abrupt climatic changes. The pic of the cold and dry conditions of the last glaciation (LGM) determined the abandon of the areas currently corresponding to the Egyptian Western Desert, whose reoccupation only took place, very slowly, at the end of MIS1. On the opposite, places which could offer a greater variety of resources, together with milder climatic conditions, experienced a demographic decline without being completely abandoned. This is the case of the Libyan sub-coastal strip (up to 100 km south from the Mediterranean shoreline), where two different areas, the Jebel Gharbi on the West and the Jebel Akhdar on the East, were interested by a continuity in the human occupation, despite the climatic shift at general and local scale. The two regions, which are separated by about 600 km (East to West), and present a few key environmental and geomorphological differences, are characterized by a series of similar choices, which may reflect the adoption of a wide-spectrum economy on a seasonal base, but, at the same time, may be an indicator of a commonly-shared cultural background. In this paper we will offer a complete framework of the human subsistence strategies adopted between the MIS2 and MIS1 in the Egyptian Western Desert and in the Libyan sub-coastal strip.

## 11 **HUMAN ADAPTATIONS TO CLIMATE CHANGE IN NORTHWESTERN AFRICA DURING MIS 2**

**Abstract author(s): Sari, Latifa (Centre national de recherches préhistoriques, anthropologiques et historiques)**

**Abstract format: Oral**

The LSA Iberomausian is subdivided into Early and Late phases, based on strictly defined typological and technological criteria in correlation with specific chronostratigraphic units in well stratified sites in Northwestern Africa. The emergence of early Iberomausian seems to have taken place during the Late Pleistocene (MIS 2) in a relatively warm and moist conditions indicated for the Late Glacial Maximum in these latitudes, while Late Iberomausian appears to be related to wetter climatic conditions. The transition between these two phases would have occurred around 16-15 ka cal BP during Greenland interstadial 1. This coincides with a change in core reduction strategies and the adoption of a broad subsistence spectrum, as well as the emergence of new forms of social and residential adaptations.

If the geographical and chronological limits of early and late Iberomausian are currently widely accepted, no specific morphotype of lithic armatures characterizing each of the two phases has been further defined in the literature.

In addition, geographical and chronological distribution of specific shaped lithic armatures within and out of Africa has not yet been crossed. Yet, seen as a vector of cultural identity, lithic armatures attest to the territoriality and participate efficiently as chrono-cultural entities in the definition of chronological phases. Furthermore, several questions remain unanswered: to what extent the paleoenvironmental changes have impacted the core reduction strategies and microlith production adopted by the hunter-gatherers during early and late Iberomaurusian? Can we consider microlith production variability as resulting from a diversified subsistence pattern in different ecological niches varying from early to late Iberomaurusian?

In this communication, we plan to discuss the relevance of the existing chrono-cultural sets in the Iberomaurusian of Northwestern Africa largely inspired by the Anglo-Saxon framework and the role of abrupt climate change in shaping distinct territories and techno-economic identities of the Late Pleistocene hunter-gatherers.

## 12 HUMAN ADAPTATION DURING THE MIS3 IN EASTERN AFRICA: GOTERA 10, A NEW MIDDLE STONE AGE SITE IN SOUTHERN ETHIOPIA

**Abstract author(s):** Fusco, Marianna (University of Rome La Sapienza; Universitat Rovira i Virgili) - Spinapolice, Enza (University of Rome La Sapienza)

**Abstract format:** Oral

This research reports new data on the GOT10 site, located within the Gotera area, southern Ethiopia. The site is characterised by robust evidence of high-density human exploitation during the MIS3, where the presence of past human groups is scattered in an area of more than two km<sup>2</sup>.

The Marine Isotopic Stage (MIS) 3 in East Africa is a period of critical technological changes within the Homo sapiens groups, probably linked to environmental conditions and climate fluctuations. From the archaeological point of view, this period is significant for the presence of a transitional phase, reflected in the progressive decrease of MSA technological traits and the increase of elements characterising the Later Stone Age (LSA).

The discovery of the GOT10 site, an open-air stratified sequence with the evidence of lithic artefacts and faunal remains in situ discovered in 2018, shed new lights on an almost unknown area, away from the Rift border, where most of the archaeological evidence is located.

The presence of lithic artefacts, faunal remains in situ with evidence of combustion features in association with the archaeological record reflects the frequent occupation of the area, suggesting the hypothesis of the Gotera area as even a refugee area. This hypothesis, further to be tested, may reveal new evidence of Homo sapiens adaptation to the local environment during climatic events leading to an additional model of the resilience of our species.

## A. ULUZZIAN AND AURIGNACIAN TECHNO-COMPLEXES OF GROTTA SERRA CICORA A (NARDÒ – LECCE, SOUTHERN ITALY)

**Abstract author(s):** Ranaldo, Filomena (Museo della Preistoria di Nardò; U.R. Università di Siena, Dipartimento di Scienze Fisiche) - Massafra, Dario (Museo della Preistoria di Nardò) - Eramo, Giacomo - Monno, Alessandro (Dipartimento di Scienze della Terra e Geoambientali, Università degli Studi di Bari Aldo Moro) - Kitagawa, Keiko (Institute of Prehistory, Early History and Medieval Archaeology, University of Tübingen; Museo della Preistoria di Nardò) - Bona, Fabio (Dipartimento di Scienze della Terra "Ardito Desio", Università degli Studi di Milano; Museo della Preistoria di Nardò) - Strafella, Silvia (Museo della Preistoria di Nardò)

**Abstract format:** Poster

Grotta Serra Cicora A opens in the Mesozoic limestone of the Park of Porto Selvaggio (Nardò, LE), roughly 35 m asl. It is part of a cave system in which archaeological research about Palaeolithic has been conducted since 1960s. The "Museo della Preistoria di Nardò" has lately started a review of the collections as part of a wider project aimed at the reconstruction of the evolution of coastal landscape in relation to the population dynamics of the area.

The stratigraphic sequence of this cave testifies the frequentations of Homo neanderthalensis and the ancient diffusion of Homo sapiens in Italy. New research, held in collaboration between the "Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente" of the University of Siena and the municipality of Nardò, increases the available data about the transition phases from Middle Palaeolithic to Upper Palaeolithic, considering that in this site it is possible to understand the relation existing between the Uluzzian and the following Aurignacian. For this purpose, a new study of the techno-complexes found in the layers that mark the transition Uluzzian/Aurignacian (Layer B) has been activated.

The study of the technical system of production allows to frame the typological differences of the tools inside the techno-cultural and organisational changes of the groups. The modifications observed in the technical characters of the tools couple with a different selection of the used raw materials and they will be correlated with the resources management strategies on the territory.

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Moshenska, Gabriel (UCL Institute of Archaeology) - Politopoulos, Aris - Arciero, Roberto (Leiden University) - Lerma Guijarro, Alma (Backset Archaeology) - Kiddey, Rachael (Oxford University)

**Format:** Regular session

This session aims to explore the implications of anarchist archaeology in both research, and contemporary political and social issues. In recent years, there have been various developments at the intersection between anarchism and archaeology. In the last decade there have been a growing number of studies, including collaborative research with indigenous groups, that reveal how both ancient and contemporary societies have functioned without, or actively rejected hierarchical forms of organization. Likewise, research on gender and queerness have created new, inclusive histories and archaeologies that look beyond binaries to focus on oppression and resistance.

In this session we want to explore anarchy as both archaeological theory and as praxis in our daily and professional lives. What can anarchist theories contribute to the interpretation of archaeological evidence? And how might anarchist practices transform our (often hierarchical) archaeological working environments?

We welcome contributions from speakers and collectives that explore (but are not limited to):

- Anarchist theories in archaeology,
- Archaeological evidence of non-hierarchical societies or rejection of power relations,
- Re-interpretation of data in the light of new anarchic perspective,
- Explorations of how and why societies rejected and opposed state level of organization,
- Theoretical and practical anti- or decolonial practice in archaeology.

Likewise, in times of pandemic and financial crisis, we encourage papers that present alternative/anarchist ways to fight against hierarchical structures, mental oppression, and gender discrimination by adopting egalitarian, bottom-up, and mutual-aid practices.

The main aim of the session is to broaden our knowledge of anarchy in practical and theoretical archaeology, and to have an opportunity to discuss and explore new forms of resistance.

## ABSTRACTS

### 1 MUTUAL AID IN ARCHAEOLOGY: THE BLACK TROWEL COLLECTIVE MICROGRANTS

**Abstract author(s):** Politopoulos, Aris (Leiden University)

**Abstract format:** Oral

The Black Trowel Collective Microgrants (BTCM) is a collective of archaeologists committed to the active support of archaeology students from working-class and historically looted communities who are both regularly excluded by traditional scholarship and academic programs, or who require more economic support than those resources cover.

We recognize that academia in its current form is ethnicity, class, ability, and gender-biased and discourages or even effectively forbids minorities and people from working classes from attending programs by enforcing prohibitively high tuition fees, expensive mandatory field schools and ignoring the often harsh reality of these students' lives outside of the academic bubble. All too often, we and our students have to work double shifts to get the extra money needed to buy a book, attend an excavation project, pay rent or internet bills to have access to online university materials from home, or even just buy a proper meal so that they do not have to attend the next class on an empty stomach! It is our goal to erode these barriers to make them more permeable for the next generation of archaeologists.

In this presentation we will be discussing the practice of caring and mutual aid in archaeology, as well as the first two years of the BTCM's actions.

### 2 THE PRACTICAL ANARCHIST, WORKING FOR BETTER ARCHAEOLOGICAL FUTURES

**Abstract author(s):** Morgan, Colleen (University of York) - Borck, Lewis (New Mexico Highlands University) - Herrmann, Corey (Yale University)

**Abstract format:** Oral

With this paper we will discuss how methods drawn from anarchist practice and tactics can foment more egalitarian approaches in archaeology. These methods include consensus-based decision making in the development and implementation of research and training projects, using the progressive stack for teaching and outreach, and anarchist approaches to ethics, including those that draw from immanent metaphysics and include advocacy for the dead. By discussing these practical approaches we hope to show the value of the anarchist toolbox. This toolbox has been added to and critically engaged with by thousands of practitioners for over a century. Our goal is to make anarchist methods more accessible for broad adoption within archaeology. Each of the authors works in a different

region of the world, time period, and with a variety of stakeholders, and will bring insights both specific to the local context and of broader relevance to the profession. We have found considerable power, creativity and benefits to wellbeing within these approaches, and have used them to enact significant change. As such, we seek to challenge archaeology's emphasis on authoritarian power structures in authorship and collaboration and to crack open the tightly bound circles of knowledge production that academia has woven. We encourage individuals to re-centre the local and to build networks and community, following the anarchist view of the social self. It is within and between these localised and relational practises that equitable changes accrue and prefigure better archaeological futures.

### 3 “CÍRCULA XONDA” OR THE MUTUAL AID AMONG PREDOCTORAL RESEARCHERS IN ARCHAEOLOGY

**Abstract author(s):** **Á. Granell, Carmen - Carbajo Usano, Matilde - Ramírez Corredor, Yvonne - Villena Rodríguez, Noelía - Moral de Eusebio, Enrique - Muriente Pastrana, Aurora (Universitat Pompeu Fabra)**

**Abstract format:** Oral

“Círcula Xonda” was born from the need and will of the PhD students and candidates of the ABERIGUA Research Project (Colonialism, Gender and Materialities - CGM research group, Pompeu Fabra University, Barcelona) to share and support each other in the day-to-day struggles and challenges that we face during our predoctoral journey. It is a space to verbalize archaeological concerns, celebrate strengths, and to help and be helped. It grew out of our personal and shared interest in producing engaged historical knowledge through a transformative process which eschews the unhealthy normative competition and individualism of academia.

The two main purposes of Círcula Xonda are: (1) to introduce a space where the interweaving of our personal and academic lives is acknowledged and (2) to collectively produce valuable historical knowledge. Our aim is to set up a space for common reflection that will benefit from and contribute to our individual predoctoral lives. We intend to build a deep and cohesive epistemological background that guides our archaeological praxis, and a net for personal support. To do so we established short, medium and long-term goals together with fortnightly meetings to keep track of each other's and mutual projects. We plan to publish our personal and professional experiences and theoretical reflections through a blog or zine to reach out to the broader community of which we are part and archive the process.

Círcula Xonda stands for the “Buen Vivir” tenets produced by decolonial thinkers from the Global South. Believing that solidarity and deep knowledge of the past are crucial to reshaping our present, we pursue a “Buen Vivir” that guides our predoctoral studies, archaeological practices and, ultimately, our attitudes beyond professional and academic life.

### 4 “UNPROOF IS THE GROUND OF ACTION” – AN ARCHAEOLOGY OF POSSIBILITIES

**Abstract author(s):** **Frieman, Catherine (Australian National University)**

**Abstract format:** Oral

My Life Is In Ruins” reads the slogan on a tee-shirt sold by US archaeology jobs hub Shovelbums. It's a joke many archaeologists have heard (and more have been told), and an acknowledgement that one of the field's preoccupations is piecing together a fragmented and incomplete past. The fragmentation of the archaeological record presents methodological challenges: as we analyse and construct models, we do not (and in most cases cannot and will not) know what's missing. Philosophers of science have cautioned that archaeological data is underdetermined—that is, that the evidence available to us is not sufficient to answer unequivocally many of the questions we pose. Empirical modellers address this dilemma in various ways, from inventing ever more complex quantitative methods to calls to eschew the small-scale and the individual in our stories of the past in favour of dehumanised big(gish) data to despair. The rest of us carry on MacGyvering our methods to suit our research questions and tacking back and forth across scales and data sources, not to fill the inevitable holes, but to define and work with them. In this paper, I will argue that these holes are not an impediment to good archaeology, but one of the field's greatest strengths. They not only force us to be reflective and complex in our understanding of and approach to studying the material traces of past people's lives, they create possibilities for interpretation, inventiveness, and inspiration that make space for social conformations, relations of power, and entanglements with the non-human world that are marginal to unthinkable in our present reality. The uncertainty of a past in ruins empowers us to imagine and work towards a better future.

### 5 HERITAGE AS A COMMONS: THE OCCUPATION OF HISTORIC BUILDINGS IN GREECE AND THE CASE OF ROSA NERA AT CHANIA, CRETE

**Abstract author(s):** **Lekakis, Stelios (McCord Centre, Newcastle University)**

**Abstract format:** Oral

In the current state of economic recess and the repurposing of social and political agendas in Greece and Europe, there has been a growing demand for economically efficient cultural products and various proposals for their sustainability in monetary terms. Hidden behind them is the omnipresent rhetoric of the “inability of the public bodies to

manage" and the "need to support competitiveness and entrepreneurship to leverage the cultural capital" for the benefit of the national economies. These discussions can be easily associated with various attempts to further enclose other goods of the public/common sphere, as natural resources, Internet and information. On the other hand, various movements for the re-appropriation of public/common goods have been springing around Europe associated with anti-austerity, anti-fascism and ecology, demanding the return of the resources to their rightful owners, the people.

Within this context, in this paper we will be discussing the potential and dynamics of placing heritage in the realm of the commons in Greece, examining it as a Common Pool Resource and progressively as a Common. We will be focusing on the historic building of the 5th Army Division/Rosa Nera squat (since 2004) in Chania, Crete that is currently being claimed by a shady company to be developed in a *hôtel de charme*.

## 6 **MAPPING THE DIFFERENCE BETWEEN UNEQUAL AND AGAINST-THE-STATE SOCIETIES. AN APPROACH FROM NW IBERIA (4TH-1ST BC)**

**Abstract author(s):** Álvarez, Samuel (Incipit, CSIC; Universidade de Santiago de Compostela)

**Abstract format:** Oral

The following proposal suggests a review of the social dynamics of the Iron Age societies in the NW of the Iberian Peninsula. A multidisciplinary approach is presented, purposing "built space" as a main thread. The aim is to synthesise the remarkable divergences between the forms of social organisation in different regions, which are particularly evident between the coastal and inland communities. However, the focus of the paper is not the archaeological characterisation of these divergences, although it is deemed necessary to understand the validity of the study. However, the focus of the paper is not the archaeological characterisation of these divergences, although it is deemed necessary to understand the validity of the study. Its aim is to explore the emergence of two apparently opposing social dynamics as a reflection of certain choices and decisions. Within this context, the usual relationship between "progress" and "development of social complexity", which assumes a teleological perception of history and suggests an inevitable linear evolutionism towards "more advanced forms", is rejected. Instead, we suggest a perspective of analysis that accepts indivision and resistance to change not as a "failure" in the development of these communities, but as a "success" that materialises both the effectiveness of these strategies and their lack of interest in transform their social ethos.

## 7 **INEQUALITIES, ENCLOSED SPACE, AND SOCIAL RESISTANCE: BUILDING FORTIFICATIONS AND NEW SOCIAL REALITIES IN SIBERIAN HUNTER-GATHERER PASTS**

**Abstract author(s):** Schreiber, Tanja (Institut fuer Ur- und Fruehgeschichte Kiel)

**Abstract format:** Oral

In Archaeology, the deep-rooted equation of hunter-gatherers with egalitarianism prevails in narratives of peaceful, non-stratified hunter-gatherer societies, that are viewed as having limited impacts on their environment. On the basis of these notions, hunter-gatherers have rarely been linked with monumental constructions. However, new research on fortified hunter-gatherer settlements in Western Siberia, presented here, proves the opposite: here, forager communities constructed distinct forms of fortification systems around their settlements, encompassing palisades, ramparts and ditches, from the 6th millennium BC to the Russian conquest of Siberia. The reasons for the appearance and endurance of fortified sites in this region are still poorly understood, however, their construction is often linked with territorial conflicts, surplus economies and wealth imbalance. In a pilot study, the levels of social inequality within the hunter-gatherer communities in focus were measured diachronically, by applying a common statistical method of wealth measurement: the Gini-Index. Additionally, a spatial analysis was conducted for over 100 fortified sites, in order to examine the amount of social and private space within the settlements as well as to record the size of their fortification systems. The results not only reveal a correlation between phases of higher social inequality and fortification construction activities, but also show architectural adjustments to societal changes in the form of denser cohabitation and thus the transformation of social space, in order to enhance new social solidarities. These architectural changes possibly occurred in response to rising social inequalities and suggest highly fluid social arrangements within the societies in study. The results obtained thus provide evidence, that the forager groups of West Siberia were self-consciously experimenting with different social possibilities to counteract social imbalances. Shedding new light on these practices of past social resistance may help to challenge the ways in which we respond to social and economic realities today.

## 8 **AN UNHEALTHY FASCINATION WITH INEQUALITY, OR ALTERNATIVE STORY LINES FOR EUROPEAN PREHISTORY**

**Abstract author(s):** Robb, John (University of Cambridge)

**Abstract format:** Oral

European prehistorians have long had an unhealthy fascination with inequality, seizing upon any evidence for inequality and using it to proclaim that prehistoric society was unequal. This has provided the major story line for

prehistory between farming and urbanism: social evolution and the inevitable rise of inequality. This approach has numerous conceptual and empirical flaws. Anthropologists have shown that inequality is present in all human societies, and that all societies have multiple forms of leadership; what matters is how overall social process is organised. We assume that collective action is difficult or impossible, rather than the norm in most societies; that people only use skill or exchange to further political ambitions; and that people are passively unconscious of their own social order rather than participating in it and managing it attentively. Empirically, like magpies, we are fascinated by shiny objects; a few objects of display in a burial outweigh a lack of distinction or accumulated capital in the all the rest of the archaeological evidence. This paper begins by asking why there is actually so little unambiguous evidence for entrenched social inequality in most of European prehistory. I argue that prehistoric Europeans used a wide range of tactics and social engineering – mobility, heterarchical organisation, forced redistribution and dispersing wealth, kinship relatedness, and many others – to prevent the growth of inequality and to safeguard their autonomy. They were largely successful. The result is a new storyline for European prehistory: the achievement of equality, of millennia of a stable, self-governing world.

## 9 ANARCHY IN ARCHAEOLOGY: HISTORIOGRAPHY AND PERSPECTIVES

**Abstract author(s):** Demoule, Jean Paul (University of Paris I - Panthéon-Sorbonne)

**Abstract format:** Oral

Recent archaeological studies bearing the anarchist label can be seen as belonging to a wider current termed Anarchist Anthropology. Since the 1970s, this movement has focused on phenomena of resistance to power (archê in Ancient Greek). In particular we can cite the names of Pierre Clastres in France (author of *Society against the State*), who died following an accident in 1979, and Marshall Sahlins (author of *Stone Age Economics*). Belonging to the same generation are James C. Scott (author of *Against the Grain*, for which I wrote the preface to the French edition) and Christian Sigrist in Germany. As regards the generation that followed, David Graeber, David Wengrow (archaeologist) and Alfredo Gonzalez Ruibal deserve mention. Central to these works, which deal with concrete cases, is the very topical and serious issue of power and inequality, or more accurately the question of their control and rejection by a certain number of societies in the past and present. While it is possible to observe such mechanisms through ethnographic studies, archaeologists are faced with the problem of identifying them in the archaeological record, especially when textual evidence is lacking. This paper provides a number of examples, particularly concerning the Neolithic and Iron Age in Europe and, following on from the work of David Graeber, questions the forms of current political engagement that such research might lead to.

## 10 A NORMIE HISTORY OF MAINSTREAM ANARCHIST ARCHAEOLOGIES

**Abstract author(s):** Flexner, James (University of Sydney) - Frieman, Catherine (Australian National University) - Birmingham, James (Institute for Anarchist Studies/Black Trowel Collective)

**Abstract format:** Oral

Anarchy and anarchists are often associated with society's margins in theory and in practice. While there have been anarchists in the field for at least several decades, it is only recently that anarchist thought and praxis has risen to prominence in archaeological literature. In the past decade there has been a substantive increase in academic publications focusing on 'anarchist archaeologies' of various stripes. This paper outlines a brief and incomplete history of anarchist archaeologies, primarily from an anglophone perspective, laying out common themes and approaches. These include identifying resistance to hierarchies as an intentional and active process rather than a 'lack' of complexity; work that emphasises solidarity with the lives of marginalised and oppressed people past and present; and generally egalitarian approaches to fieldwork and scholarship. The paper also examines what has been gained as well as lost in making anarchism part of the 'mainstream' literature within archaeology. On the one hand, having more people explicitly reading and talking about anarchist thought and praxis is an important step in proliferating anarchisms in the field, laboratory, classroom, and beyond. On the other, there is a risk that in doing so the approach loses its critical edge, becomes an empty label, or produces 'only' academic rhetoric. Knowing the past is key to understanding present and futures, as most archaeologists will acknowledge, but what futures can the history of anarchist archaeology prefigure?

## 11 ANARCHIST ARCHAEOLOGY: REVIEW FROM THE BEGINNING TO NOWADAYS

**Abstract author(s):** Lerma Gujjarro, Alma (Backset Archaeology)

**Abstract format:** Oral

Since anarchist archeology began to be suggested in 2004 by the anthropologist David Graeber and shortly after by Roca Martinez in 2008, without forgetting that its bases are in the anti-neo-Darwinian theories of Kropotkin and the father of anarchist anthropology Pierre Clastres (1960-1970), until nowadays, going through the impulses of projects such as Palimpsests proposed by the Argentine Leonardo Faryluk in 2015, we have been able to observe how

archaeologists and anarchists from all over the globe have been contributing their forces in pursuit of an anarchist archeology that beyond of theory focuses on practice through mutual aid and activism.

This paper try to carry out a review throughout the short history of anarchist archeology projects and put a state of the art of the present of the same discipline in order to continue with the work towards the future of anarchoarchaeology. Relying on the examples that the colleagues of the different projects have been giving for some years.

Likewise, examples will be mentioned in different areas where a methodology that starts from this discipline has been put into practice. In the Laboral scene; in the company and union spheres; in the social sphere; in the academic and proposals of different types of economic support or barter, but always from mutual aid; in the activist for archeology as anarchists and for anarchy as archaeologists; and so on.

Knowing our past to strengthen the load-bearing walls that drive our future. Stone by stone in pursuit of anarchoarchaeology.

---

226

## FOREIGN VS LOCAL IN MEDIEVAL AND MODERN AGE FOODWAYS IN THE BALTIC SEA REGION

**Theme: 5. Climate Change and Socioenvironmental Perspectives**

**Organisers: Rannamäe, Eve (Department of Archaeology, Institute of History and Archaeology, University of Tartu) - Bartosiewicz, László (Osteoarchaeological Research Laboratory, Department of Archaeology and Classical Studies, Stockholm University)**

**Format: Regular session**

The Medieval Period in the Baltic Sea region witnessed new power structures, growth of human population, urbanisation, and variability in cultures that brought along a growing and changing need for food resources – processes that continued into the post-medieval era as well. In addition, these socio-environmental transformations were most probably influenced by the oscillations in the natural environment and climate (e.g. Little Ice Age, modifications in land use, etc.). Trade, marine fishing, and animal husbandry expanded in order to provide both local and foreign goods. In order to explore the foodways of people living in the 13th–19th century around the Baltic Sea and understand the extent and importance of imported food vs that of local origin, we invite presentations discussing small- and large-scale developments in animal husbandry at that time and the exploitation of food resources visible in both zooarchaeological and human osteological material. Applications of zooarchaeological (food remains, animal husbandry), biomolecular (ancient DNA, stable isotopes), anthropological (human pathologies, population studies), archaeological (artefacts related to food processing and trade), and written sources (recipes, visual data, account books) are the core of this session. In addition to regional insights based on local materials and research questions, parallels and patterns between the areas around the Baltic Sea and beyond would be of most interest.

### ABSTRACTS

#### 1 BY THE BOOK? MEDIEVAL AND EARLY MODERN AGE HIGH STATUS MEAT CONSUMPTION IN THEORY AND PRACTICE

**Abstract author(s): Bartosiewicz, Laszlo (Department of Archaeology and Classical Studies, Stockholm University) - Gál, Erika (Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Research Network, Budapest)**

**Abstract format: Oral**

By the time of the High Middle Ages courtly life had consolidated in Europe and people of high social status could afford the luxury of consuming curious creatures. Tracing exotic animals, however, is difficult in archaeozoological assemblages as such species were by definition rare to begin with. Chances of actually recovering their odd remains are thus even more limited. Although the bones of non-native species sporadically occur in the Medieval and Early Modern Age Central European archaeological record, many are not related to meat consumption but were circulated as luxury items in other realms of high-status self-representation. Such artifacts indicate imports from Northern Europe and Southwest Asia. The paucity of exotic animals among food remains is in sharp contrast with the likely idealistic picture presented in the cookbook written for the Mainz Elector in 1581 and its Hungarian adaptation translated a century later. The integrated quantitative analysis of fish, birds and wild mammals in this work helps interpreting the meaning of its rich inventory of species in light of the environmental/zoogeographical realities of the time. A comparison with late Medieval animal bone assemblages from Hungary shows that patterns of meat consumption are consonant with those in the cookbook as far as ordinary, local species are concerned. However, the recovery of more exotic remains from the food refuse can probably be expected only when the analysis of large assemblages will make their occurrence increasingly more probable. Until then, exotica listed in the cookbook will look like wishful thinking rather than material reality.



## 2 WHAT ABOUT EXOTIC SPECIES?

**Abstract author(s):** Schmölcke, Ulrich (Centre for Baltic and Scandinavian Archaeology - ZBSA)

**Abstract format:** Oral

Regularly, in the large bone assemblages of medieval settlements, we find remains of animals that must have been exotic to the people of that time. Animal exotics are species or single individuals of special species that did not exist at all or only very sporadically in the area in question at a certain time. The reasons for their "rarity" can be manifold, among others:

1. "Last Chance to See". The reasons for their disappearance are diverse.
2. They are the "first of their kind" in the area, because of natural range expansion or following human landscape change.
3. Animals entered an area as individuals or smaller groups by humans (movement could have been for a variety of reasons). If the species is subsequently not noticeable for everybody, it will remain in exotic status.
4. Animals existed only in the imagination of people, but their existence was generally assumed (example: unicorn).

With a focus on the southwestern Baltic Sea region, this presentation will discuss examples from all four categories. In particular, the question of how people judged and reacted to "foreign animals" will be explored.

## 3 TASTY AND EXPENSIVE: FOREIGN ANIMALS AND PLANTS ON THE KINGS' TABLE. DATA FROM THE 13TH-17TH C. VILNIUS LOWER CASTLE, LITHUANIA

**Abstract author(s):** Piliciauskiene, Giedre (Vilnius University, Faculty of History) - Blaževičius, Povilas (National Museum of Lithuania) - Minkevičius, Karolis (Vilnius University, Faculty of History)

**Abstract format:** Oral

Vilnius Lower Castle and the Palace of the Grand Dukes of Lithuania (13th-17th c.) are objects of special significance for the history of the Lithuanian state. From the beginning of the 14th century to the middle of the 17th century, it was the main castle of the Grand Duke and the capital of the Grand Duchy of Lithuania. From the mid-16th century onwards, the Grand Duke of Lithuania was also the King of Poland, so he spent half the year in Vilnius. Various historical sources, zooarchaeological and archaeobotanical data provide an insight into the non-local species of animals and plants on the table of the ruler of two countries. Peacocks, pheasants, carp, grapes, dates, walnuts, etc. have been found in Vilnius Lower Castle since the end of the 14th and the beginning of the 15th century. However, the Lower Castle's account books, menus and zooarchaeological material do not contain some of the products that are very common in neighbouring countries. This suggests the specific and at the same time unique dietary habits of Lithuanian rulers.

## 4 STABLE ISOTOPE EVIDENCE FOR IMPORTED VS LOCAL FOOD CONSUMPTION IN HISTORIC PERIOD ESTONIA

**Abstract author(s):** Agurajua-Lätti, Ülle (Archaeological Research Collection, Tallinn University)

**Abstract format:** Oral

As part of a multidisciplinary project on the foodways of Medieval Estonia (Estonian Research Council grant no PRG29), stable carbon, nitrogen and sulphur isotope analysis has been conducted on a large dataset of faunal and human remains from the historic period (ca 1000-1800 AD). According to written accounts, fish was an important trade article and an affordable and widely available dietary resource in Medieval Estonia. Yet the current stable isotope evidence from the wider Baltic Sea region has failed to demonstrate a significant marine component in the diets of local people. By combining extensive new faunal isotope data from the local foodweb, including freshwater and marine fish, a better understanding of the local isoscape has been achieved. In particular, the stable isotope ranges for local marine and freshwater species show considerable overlap, most likely due to the brackish conditions prevalent in the Baltic Sea. This in turn has allowed for a more nuanced discussion on access and consumption of imported vs local (marine) foods among different social classes and geographical regions in Estonia.

## 5 DIET AND SOCIAL STATUS IN MEDIEVAL AND EARLY MODERN TARTU (DORPAT), ESTONIA

**Abstract author(s):** Malve, Martin (University of Tartu) - Agurajua-Lätti, Ülle (Tallinn University)

**Abstract format:** Oral

During the Medieval period, the Hanseatic town of Tartu (Dorpat) was an important trading center in the eastern Baltic, situated on the crossroads of regional transport networks. It was also the seat of the Bishopric of Dorpat and boasted an imposing Gothic cathedral situated on a hill overlooking the lower town. Most of the noblemen, clergy, and merchants living in medieval Tartu were ethnically foreign, whereas the poorest members of the society often lived outside the city walls and were commonly made up by ethnic Estonians. Here we present first stable carbon and nitrogen isotope evidence from various burial contexts in and around Tartu, spanning from the 13-18th century

AD, providing a broad picture of dietary preferences among different social classes (nobility and clergy from the Cathedral, foreign merchants, common townfolk, and rural peasants) and throughout the Medieval and Early Modern periods. Medieval Cathedral burials are very clearly distinct from all other analyzed groups, characterized by very high nitrogen isotope values. There is however very little variation between urban and rural commoners. We also detected a slight change between the dietary composition of medieval and Early Modern commoners, suggesting an increased reliance on foods enriched in  $^{13}\text{C}$ , most likely marine resources.

---

## 229 DEVELOPMENT AND USE OF GARDEN ARCHAEOLOGY IN DIFFERENT PARTS OF EUROPE, COMPARING INDIVIDUAL APPROACHES, INTERACTIONS, COOPERATION TO ASSES THEIR EFFECTIVENESS

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Vynckier, Geert (Flemish Heritage Agency) - Dix, Brian (Independent consultant) - Golembnik, Andrzej (INCEDO3D)

**Format:** Regular session

Archaeological methods of investigation, recording, and analysis are a standard requirement for studying past landscapes. But it is only recently that such techniques have begun to be used as part of a cross-disciplinary approach to trace the evolution and significant features of historic parks and gardens from early modern period (16th century) to the 19th century. The increased understanding that such archaeological investigation brings has enabled the accurate reconstruction of several historical gardens and related parkland, which enhanced their attraction to visitors as well as deepening the understanding of individual sites. The scope of work ranges from background studies using aerial photographs, historical maps and other records, through analytical fieldwork and non-intrusive geophysical surveys to detailed excavation. The results can be used as the basis for accurate restoration, repair, and reliable reconstruction in addition to informing conservation management plans and policies.

The creation of projects involving a cross-disciplinary team with specialists from separate areas of study is a helpful means of assessing the relative degrees of importance and value of the different sorts of evidence. Not all sources may point to the same conclusions and their divergence produces a healthy dialogue, in which the testing of one source against another can lead to a better understanding of the reliance that can be placed upon the evidence. Likewise, the significance of surviving groups of features and the individual physical remains which comprise the historic site can also be assessed.

The proposed session will review the development and use of Garden Archaeology in different parts of Europe, comparing individual approaches, interactions, and cooperation to assess their effectiveness in protection and revitalizing specific parks and gardens.

### ABSTRACTS

#### 1 THE DEVELOPMENT OF GARDEN ARCHAEOLOGY, WITH PARTICULAR REFERENCE TO THE UK

**Abstract author(s):** Dix, Brian (Independent consultant)

**Abstract format:** Oral

In Europe during the later twentieth century Britain was in the vanguard of using archaeological methods to study and, in some instances, to restore the remains of historic gardens. In a long tradition of archaeological fieldwork, the techniques of earthworks recognition together with advances in other forms of non-intrusive survey were applied to the analysis and interpretation of old gardens still being used in addition to abandoned sites. At the same time, conservation concerns impacted upon the desire to improve the presentation of some historic sites. Archaeological investigation, with concomitant excavation and recording, became as much an integral part of future repair and plans for restoration as other specialist work like archive research and botanical studies. The scope and relative values of the individual types of approach to studying these sites are well indicated by how the sub-discipline has developed. A full range of studies involves cooperation between experts in different disciplines, with research results fully integrated to provide a strategic and cost-effective programme.

#### 2 GARDEN ARCHAEOLOGY IN FLANDERS: A DIFFICULT AND CONTINUING PROCESS IN INTRODUCING THIS ARCHAEOLOGICAL DISCIPLINE IN THE NORTHERN PART OF BELGIUM

**Abstract author(s):** Vynckier, Geert (Flanders Heritage Agency)

**Abstract format:** Oral

Although garden archaeology has been used successfully throughout Europe for more than three decades, its entry into Flanders has been fairly recent. The first project was in 2007 as part of a conservation plan investigating the nature of 18th-century garden paths in the Neue Garten (1786) at the landcommandery 'Alden Biesen' in Limburg province.

In 2008, there was a search for traces of an early 17th-century garden in the courtyard of the Museum Plantin-Moretus in Antwerp as a part of the study for a museological evocation. Subsequent projects have been interdisciplinary investigations at the garden of the Norbertine Abbey at the Parc at Heverlee (2019) and of the Benedictine Abbey of Vlierbeek (2021), both near Leuven. First archival research and then geophysical examination took place in order to dig trenches to search for clues for a reconstruction of the gardens. The latest research (2021) took place in the garden of the castle of Gaasbeek (near Brussels) in order to better understanding of the original 19th -layout. This garden has always been open to the public and its redesign and renovation will provide the visitor with a good impression of its original form.

### 3 RECONSTRUCTION OF EARLY PHASE OF ROYAL BATHS PARK (WARSAW, POLAND) ON THE BASIS OF CARTOGRAPHIC, ICONOGRAPHIC AND ARCHAEOLOGICAL SOURCES

**Abstract author(s):** Solecki, Rafal (Cardinal Stefan Wyszyński University in Warsaw)

**Abstract format:** Oral

The Royal Baths Park is one of the largest park in Warsaw (Poland), occupying currently 76 hectares of the city centre. The setting of this park was initiated by Stanisław Herakliusz Lubomirski in late 17th century and its designer was Tylman van Gameren. Later, in late 18th century, it was bought and rearranged by King of Poland, Stanisław II August. There are sources – one cartographic and one iconographic – that show, that at the 1760-70s there was a different conception of the park, with channels which allowed to sail around it. For a long time it was not clear, are these sources were only a project of the park, that was not realized or they were scetched from nature? Now, on the basis of archaeological excavation, it was proven that these channels did existed and with help of DEM (Digital Terrain Model) of the park area imported into GIS environment it is possible to perform a virtual reconstruction of this little known phase of the Royal Baths Park.

### 4 INVESTIGATING THE ANCIENT GARDENS (16TH C.-18TH. C.) OF MARIEMONT (BELGIUM) : THE CONTRIBUTION OF ARCHAEOLOGICAL PROSPECTION

**Abstract author(s):** Demelenne, Marie (Musée royal de Mariemont) - De Smedt, Philippe (Department of Environment, Faculty of Bioscience Engineering, Ghent University; Department of Archaeology, Faculty of Arts and Philosophy, Ghent University)

**Abstract format:** Oral

Royal and imperial residences have been established in the Domain of Mariemont (B., Prov. Hainaut, Morlanwelz) between 16th c. and 18th c. Between the 16th and 18th century, royal and imperial residences were established in the Domain of Mariemont (Morlanwelz, Hainaut Province, Belgium). Following the French Revolution, at the end of the 18th century these residences were abandoned and the site was transformed in an industrial and bourgeois complex.

Now a public domain, a major restoration project is underway at Mariemont, for which sensitive archaeological areas (approximately 45 ha) have been identified to allow optimal curation. Among these areas is the 'Abundance terrace', named after a group of sculptures installed there in the 20th century. To evaluate the archaeological potential and characterise subsurface remains of the terrace, an integrated prospection approach – combining historical accounts with non-invasive prospection approaches – was deployed. On site, a multi-method geophysical survey was conducted. Both electromagnetic induction (EM) and electrical resistivity (ER) instruments were used to map the electrical and magnetic variations of different soil volumes down to a maximum depth of 3 m below the surface. This allowed targeting magnetic structures such as brick foundations and heated structures, as well as non-magnetic building elements (e.g. sandstone) and earthen banks, zones of increased soil compaction, and ditches.

The results of this field prospection were linked with iconographic and historical evidence, providing a first view on the nature and preservation of the archaeology of the site. In this presentation we will discuss the results of this campaign, along with a methodological blueprint for investigating the wider area of Mariemont.

### 5 THE MEDIEVAL MONASTIC GARDENS OF ØM ABBEY, DENMARK

**Abstract author(s):** Møllerup, Lene (Museum Skanderborg)

**Abstract format:** Oral

The monastic gardens is often identified as a symbol of monastic medical knowledge. However, gardens around monasteries are more than that. Medieval monasteries functioned as self-sufficient units and had a wide variety of gardens close by. In the monastic garden crops were grown for consumption, for making beverages, to use as insecticide, spices, textiles and rope as well as medicine and from the gardens came flowers to decorate the church during the liturgical calendar.

None monastic gardens from the Middle Ages have survived in northern Europe. It is necessary to gain information's elsewhere from and with the help of archaeology, historical sources, plant macrofossils and pollen analysis's it is possible to identify types of gardens and the landscape surrounding the monasteries.

This paper demonstrates how it is possible, through an interdisciplinary approach to get information's of the gardens and surrounding landscape of the medieval Cistercian Abbey Øm in Denmark, AD 1172-150.

## 6 USING GARDEN ARCHAEOLOGY -A CASE-STUDY FROM HAMPTON COURT, ENGLAND

**Abstract author(s):** Dix, Brian (Independent consultant)

**Abstract format:** Oral

The reconstruction of King William III's Privy Garden of 1701-02 at Hampton Court Palace represents a landmark of achievement in Garden Archaeology. The various features of its layout have been accurately and faithfully restored, each following precisely the details of the original design as revealed by archaeological excavation.

The arrangement of flowerbeds and paths, location of statues and steps, and the character of the flanking terrasses have been restored.

Working in close association with specialists historians, botanists and engineers, the garden has been authentically recreated. The way in which the work was carried out demonstrates the value of a staged programme and shows how accumulative evidence can be used to inform management decisions. Other work within the Palace's grounds and wider estate, whilst employing a variety of techniques according to the individual situation, similarly indicates how such projects should be integrated into the processes of overall planning and design execution as part of a cross-disciplinary approach.

## 7 THE HISTORY OF THE CONSTRUCTION OF THE ROYAL RESIDENCE IN WILANÓW - A ROMANTIC VERSION

**Abstract author(s):** Golembnik, Andrzej (INCEDO3D)

**Abstract format:** Oral

The archaeological research conducted in the years 2003-2011 at the residence of King Jan III Sobieski in Wilanów was probably one of the largest excavation projects in the post-war history of Poland. Almost four hundred different sized excavations and kilometers of supervised installation trenches, explored during renovation and conservation works, have become a testing ground for many new methodological solutions. They were based on measurements and recordings made with a laser scanner and spatial digital photogrammetry. These studies, apart from new methodological experiences, also provided a lot of interesting information, becoming the basis for intriguing conclusions.

Research results have weakened the value of the conclusions so far. New archaeological materials, artifacts and information collected during the analysis of the stratification processes of the earth embankments forming the space of the royal gardens have become the reason to verify the existing knowledge. They also constitute a solid basis for a discussion about the history of the residence, introducing new threads into it. They concern not only the obvious issues related to dating, the sequence of events and their consequences, but also touch on new, non-material aspects of the history of the construction process. They reveal the emotions of the king, apparently having a direct impact on the course of the work. According to archaeologists, they caused many ups and downs accompanying this royal investment. They are an unquestionable proof of the inconsistency of decisions resulting, on the one hand, from the king's engineering knowledge, and on the other, from impatience and haste. And these were undoubtedly a consequence of the expectations and dreams arising from the ardent love that the warrior monarch had for his French wife, Marie Casimire d'Arquien. This love thread, embedded in a sequence of layers and constructions, seems to be an interesting topic for more detailed research.

## 8 THE RUINS IN THE GARDENS OF MARIEMONT (B.): BETWEEN DISCOVERY AND DISPLAY

**Abstract author(s):** Demelenne, Marie (Musée royal de Mariemont) - Dosogne, Michele (Agence wallonne du Patrimoine)

**Abstract format:** Oral

In 1893, Raoul Warocqué, a wealthy industrialist and philanthropist, takes the lead of the family domain in Mariemont (Belgium, Hainaut province, Morlanwelz). This domain consists of a vast landscaped park surrounding the family castle. He leads large works in the park, including a display of an ancient castle and its gardens (16th c. -18th c.), an important archaeological site. This castle was built in 16th c., transformed in the second half of the 18th c. and abandoned after the French Revolution. At the turn of 19th and 20th c., Raoul Warocqué transformed some monuments from the 18th c. (the castle's main building, the orangery, and monumental stairs – the so-called "fer à cheval").

Since 2010, historical and archaeological research has been carried out to understand the evolution of the site and involve to the restoration of the gardens. We shall show how the chronology of the site as well as the owner's goals, intention and personality can be enlightened by garden archaeology.

To conclude, we will present how our research can involve the restoration project of the gardens and some prospects.

## 9 HISTORIC RENOVATION OF THE PERNŠTEJN GARDEN GROUNDS

**Abstract author(s):** Vágner, Michal (Department of Archaeology and Museology, Faculty of Arts, Masaryk University) - Dejmal, Miroslav - Šimík, Jakub - Těsnohlídek, Jakub (Archaia Brno z.ú.)

**Abstract format:** Oral

The garden grounds, founded in the baroque style in the 18th century and extended under the vogue of Anglo-Chinese (or "sentimental") style at the beginning of the 19th century below medieval Pernštejn Castle, was until recently in a state of disrepair. Therefore, their overall restoration was undertaken. During this process, it was necessary to subject the area to comprehensive archaeological research that comprised two approaches – a non-destructive geophysical survey combined with classical archaeological excavations. The first stage, which took place in 2016, was aimed to gather maximum information on the appearance and layout of the garden, including detailed data on extant structures. In this stage geophysical survey by ground-penetrating radar was conducted and small excavations verified the gathered results. The second stage, completed in 2019, consisted of standard protective archaeological excavations. Its purpose was to document the sites disturbed or exposed during construction works and, possibly, identify their value as cultural heritage so that they could be either integrated into the restoration plan or re-covered and conserved underground. The research was exceptional in terms of its contribution to the restoration of the castle grounds and it played an active part in the whole restoration effort. The survey partly helped to discern the original layout of the flat areas of the garden, and its findings had a substantial impact on the intended appearance of the grounds as projected in the initial stages of restoration. The preliminary test-pits provided answers to several questions concerning the construction and current condition of various structures historically located on the premises. The archaeological research proper, carried out simultaneously with the construction works, confirmed the validity of the initial conjectures about the layout of the gardens and delivered additional detailed information about their past appearance and chronological development.

## 10 BRONZE AGE AEGEAN RITUAL MEADOWSCAPES AS PREHISTORIC GARDENS

**Abstract author(s):** Daróczy, Tibor (Romanian Academy, Cluj chapter)

**Abstract format:** Oral

Ritual meadowscapes of the Aegean are recognised in sacred 'gardens' of the elites, information about which is conveyed to us mostly through visual (frescoes, glyptic, pottery) and written (Linear B) media that is exemplified through well-known finds. Evidence in the archaeological record for these is sought in archaeobotany, especially for flowers and trees, while palaeobotany is employed to understand how and when the human-nature relation represented by 'gardens' is born, that is to say is glocalised in the Aegean.

The paper argues for the Bronze Age glocalisations of human-nature relations, which are recognisable through landscape archaeology approaches and a phenomenological mind set. It proposes a methodology rooted in classical archaeology and only partially in natural sciences. Ultimately, this illustrates how Bronze Age people relate through all of their senses and perceptions to their environment and nature, but also how these are major factors in the choice of place, time and people for performative utterances and enactments of social memory. Lastly, the study demonstrates that similar ideas are in circulation in the same time over larger areas and their local adaptations give birth to the nuanced facets of what we call the Bronze Age world.

---

## 230 SEDIMENT AND SOIL ARCHIVES TO DECIPHER HUMAN-ENVIRONMENT INTERACTIONS IN WETLAND LANDSCAPES FROM THE NEOLITHIC TO THE XXTH CENTURY

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Mayoral, Alfredo (ICAC - Catalan Institute of Classical Archaeology) - Dendievel, André-Marie (Univ Lyon, Université Claude Bernard Lyon 1, ENTPE, CNRS, UMR 5023 LEHNA)

**Format:** Session with keynote presentation and discussion

This session focusses on the use of soils and sediments to decipher the interactions between climate, paleoenvironments and past societies in wetland landscapes. This approach relies on the collection and processing of geoarchaeological or paleoecological data to reconstruct socio-environmental changes in diverse cultural and chronological contexts. We propose to challenge the intercomparison of multidisciplinary data by discussing how multi-proxy analyses of soil and sediment archives from wetlands can be combined with archaeological data in order to reconstruct long-term trajectories of socio-ecosystems –and the resulting cultural landscapes– from the Neolithic to the XXth century.

The contributions will combine archaeological studies (excavation, surveys, historical data) with a broad analytical panel of sedimentary archives (from field geomorphology and paleopedology to physico-chemical characterization

and microscopic approaches). The geographical framework will include mainly (but not exclusively) European and circum-Mediterranean contexts. Communications should deal with one or more of the following reference topics:

- Wetlands and hydrosystems as a result of socio-environmental interactions: natural dynamics, resources, anthropogenic impacts and legacies
- Waterscapes: paleogeography and environmental changes in fluvial, lacustrine and coastal landscapes as a limiting factor/opportunity for human activities, adaptation and co-evolution
- Anthropocene records: impact of hydraulic infrastructures (drainage/irrigation networks, bridges, harbours...) and risk management (flooding, droughts, water level fluctuations) deciphered from wetland archives
- Soil formation/erosion under climatic and/or anthropogenic forcing and consequences for hydrosystems and wetlands evolution
- Cities and wetlands: environmental impacts of urban settlements in or around wetlands
- Paleo-pollutions in wetlands as a marker of human activities (mining, crafting, industry)
- Methods: intercomparison of data from soils/sediments archives and archaeological record; dating approaches and issues

Beyond discussing socio-environmental interaction, this session will also be the place to debate broader issues such as implications for cultural heritage, wetlands reclamation, and lessons for the future management and sustainability of cultural landscapes.

## ABSTRACTS

### 1 FROM THE PALEOANTHROPOCENE TO THE ANTHROPOCENE: TOWARDS A HIGH RESOLUTION OF THE LONG-TERM ANTHROPOGENIC IMPACT ON WETLANDS IN NORTHWESTERN FRANCE

**Abstract author(s):** Lespez, Laurent (Lab. Géographie Physique - LGP - CNRS; Univ. Paris Est Creteil) - Beauchamp, Axel (Nantes Métropole · Direction du patrimoine et de l'archéologie; CREAAH - CNRS) - De Milleville, Lucile (Lab. Géographie Physique - LGP - CNRS; Univ. Paris Est Creteil) - Lemer, Laurence (Lab. Géographie Physique - LGP - CNRS; Univ. Paris 1 Panthéon Sorbonne) - Gauthier, Agnès (Lab. Géographie Physique - LGP CNRS; Univ. Paris 1 Panthéon Sorbonne & Univ. Paris Est Creteil)

**Abstract format:** Oral

Numerous geomorphic and palaeoenvironmental studies have revealed the longstanding influence of anthropogenic processes on the wetland dynamics of northwest Europe. The impact of the agricultural exploitation of the catchments and the subsequent implementation of hydraulic installations is now better known in the long term. New geoarchaeological research conducted in the area surrounding archaeological sites has the objective of better identifying the initial impacts of agropastoral practices from the Early Neolithic period onwards, and of clarifying the effects of various types of hydraulic works (weir, dams, construction of ponds, etc.) on the wetlands.

The multiplication of the fluvial and wetland records and radiocarbon dating allows nowadays to clarify the timing of anthropogenic transformations in areas with no lake or peat bog environments. In this Moreover, in the plains of Northwest France, the combination of sediment (high resolution geochemical analysis) and biological (Pollen, Non-pollen Palynomorphs, fire signal, eDNA) proxies provides new data to improve the understanding of the environmental changes. In this paper, we propose, from a review of radiocarbon dating of Holocene sedimentation in the central and western Paris Basin and case studies in Normandy and Ile-de-France, to disentangle the punctual consequences of human activities from more generalized impacts of landscape transformation. We propose a spatial analysis of the impacts of anthropization, paving the way for a more precise definition of the Anthropocene of wetlands and highlighting the challenges to be overcome in the future.

This knowledge is also crucial to understand the extent of anthropogenic transformations, to place the present state of the wetlands in an ecological trajectory, and to define restoration pathways that consider the legacies.

### 2 ENVIRONMENTAL CHANGE DOCUMENTED IN A FLUVIAL LANDSCAPE: CASE STUDY ON THE LATE NEOLITHIC BRŠADIN-PAŠNJAK POD SELOM SITE (NE CROATIA)

**Abstract author(s):** Botić, Katarina (Institute of Archaeology, Zagreb) - Marks, Leszek (Polish Geological Institute – National Research Institute, Warsaw) - Welc, Fabian (Cardinal Stefan Wyszyński University, Institute of Archaeology, Warsaw) - Nitychoruk, Jerzy - Rogóż-Matyszczyk, Anna (Pope John Paul 2nd State Higher School, Faculty of Technical Sciences, Białá Podlaska) - Szymanek, Marcin - Czajkowska, Monika - Cabała, Izabela (University of Warsaw, Faculty of Geology)

**Abstract format:** Oral

The Late Neolithic site Bršadin – Pašnjak pod selom is located on the former bank of the Vuka River, one of the Danube's tributaries in north-eastern Croatia (southern Carpathian Basin). At present, the site consists of several oval elevations, probably a result of past major landscape modifications. Archaeological excavations were carried out in

two test trenches in which stratified remains of the Late Neolithic settlement were explored. The formation of a Late Neolithic settlement on the very edge of the river bank just after 5000 BC, and not earlier, raised questions about environmental conditions in that period.

In 2016 two geological cores were drilled, the first (Br 1) through the cultural layers of the north-eastern part of the site, and the second (Br 2) through natural layers in a shallow marshy depression between two elevations. Freshwater molluscs and ostracods and geochemical composition of these cores were analysed and record a substantial change in the immediate environment of the Neolithic settlement after it was established. They also provide insight into the environmental conditions just before formation of the Neolithic settlement.

### 3 HUMAN ACTIVITIES AND WETLAND ENVIRONMENT DECIPHERED BY USING MACROFOSSILS IN URBAN AND PERI-URBAN CONTEXTS FROM THE ROMAN PERIOD TO NOWADAYS

**Abstract author(s):** Dendievel, André-Marie (Univ Lyon, Université Claude Bernard Lyon 1, ENTPE, CNRS, UMR 5023 LEHNA) - Gaillot, Stéphane (Service Archéologique de la Ville de Lyon) - Pruvost, Jean (Univ Lyon, Université Claude Bernard Lyon 1, ENTPE, CNRS, UMR 5023 LEHNA) - Dessaint, Philippe - Monin, Michèle (Service Archéologique de la Ville de Lyon) - Mourier, Brice - Winiarski, Thierry (Univ Lyon, Université Claude Bernard Lyon 1, ENTPE, CNRS, UMR 5023 LEHNA)

**Abstract format:** Oral

Preserved in various depositional environments, the study of sediment deposits and their macrofossil content can be considered as an effective tool revealing local socio-environmental changes at different temporal scales. This communication presents a palaeoecological-based approach to decipher changes in urban and peri-urban freshwater ecosystems at two different periods: (1) on pond deposits dated back to the beginning of the Roman Era at Fourvière's hill (Lyon, France), and (2) on a recent (XXth century) semi-aquatic environment located along the Rhône River, downstream of Lyon (France). Achieved on well-characterised and dated sediments, we outline the benefits of studying plant macrofossils (seeds, wood remains, buds, leaves), as well as animal macrofossils (small crustaceans, fish vertebrae) and inorganic particles (sands, slags) in silty-clayey deposits to provide key elements to understand the local evolution of wetland landscape closely related to human activities. Macrofossil evidence of flora and fauna highlighted the ecosystem response to land-use changes and to the establishment of pathways and dams by the presence of typical macrofossil assemblages (plant tolerant to trampling, nitrophilous and silicicolous plants, new semi-aquatic communities, etc.). This analysis also provided information on consumption and production releases at the two periods: grape seeds, olives or fig achenes during the Roman period, nettle seeds, iron slags and microplastics in the recent times. This work demonstrates the potential of macrofossil analysis in understanding changes in the local environment close to urban contexts over different time periods.

### 4 3D-MODELLING OF HOLOCENE LANDSCAPE CHANGE IN THE AREA OF THE LATE NEOLITHIC WETLAND SETTLEMENT SITE OF PESTENACKER, SOUTHERN GERMANY(PART1)

**Abstract author(s):** Wanger-O'Neill, Anneli (Bavarian State Department for Cultural Heritage - BfLd) - Köhler, Anne - Schneider, Birgit (Leipzig University, Institute for Geography) - Rabiger-Völlmer, Johannes (Leipzig University, Institute for Geography) - Werban, Ulrike (Helmholtz Centre for Environmental Research - UFZ, Department Monitoring and Exploration Technologies) - Werther, Lukas (University of Tuebingen, Institute for Prehistoric and Medieval Archaeology) - Dietrich, Peter (Helmholtz Centre for Environmental Research - UFZ, Department Monitoring and Exploration Technologies) - Berg, Stefanie (Bavarian State Department for Cultural Heritage - BfLd) - Zielhofer, Christoph (Leipzig University, Institute for Geography)

**Abstract format:** Oral

Wetland settlement sites are valuable geoarchaeological archives. A high groundwater table provides excellent preservation conditions for palaeoecological and geomorphological proxies as well as for archaeological features and artefacts.

The Late Neolithic settlement site of Pestenacker near Landsberg am Lech in the Upper Bavarian Alpine foothills represents such an exceptionally well-preserved wetland settlement of the Altheim Culture. It is located in the valley of the Verlorener Bach and was extensively excavated between 1988 and 2004. Its founding can be dated dendrochronologically to the year 3,496 BC. Due to its great archaeological and supra-regional importance, it has been part of the UNESCO World Heritage Site "Prehistoric Pile Dwellings around the Alps" since 2011.

The extraordinarily high amount of analogue excavation documentation is being digitally processed in the course of ongoing scientific evaluation. This enables us to handle the high information density of the excavation site, covering 900 m<sup>2</sup>, and to understand the highly complex stratigraphy of up to 200 overlapping archaeological layers. GIS-based vectorisation and 3D-visualisation allow three-dimensional mapping of archaeological finds and findings as well as 3D-modelling not only of archaeological structures, but also of the surrounding landscape.

By combining these 3D-modellings with two direct-push colour-log transects, percussion drillings and numerous 14C-datings, a high-resolution chronostratigraphy of the floodplain with several former stream courses can be recon-

structed. The first fluvial activity began in the Middle Holocene. The incision of the stream enabled drainage of the surrounding sediments resulting in a lowering of the groundwater level. This condition probably led to the occupation of the floodplain by the Late Neolithic settlers.

## 5 3D-MODELLING OF HOLOCENE LANDSCAPE CHANGE IN THE AREA OF THE LATE NEOLITHIC WETLAND SETTLEMENT SITE OF PESTENACKER, SOUTHERN GERMANY (PART2)

**Abstract author(s):** Köhler, Anne (Leipzig University, Institute for Geography) - Wanger-O'Neill, Anneli (Bavarian State Department for Cultural Heritage - BLfD) - Schneider, Birgit - Rabiger-Völlmer, Johannes (Leipzig University, Institute for Geography) - Werban, Ulrike (Helmholtz Centre for Environmental Research - UFZ, Department Monitoring and Exploration Technologies) - Werther, Lukas (University of Tuebingen, Institute for Prehistoric and Medieval Archaeology) - Dietrich, Peter (Helmholtz Centre for Environmental Research - UFZ, Department Monitoring and Exploration Technologies) - Berg, Stefanie (Bavarian State Department for Cultural Heritage - BLfD) - Zielhofer, Christoph (Leipzig University, Institute for Geography)

**Abstract format:** Oral

Wetland settlement sites are valuable geoarchaeological archives. A high groundwater table provides excellent preservation conditions for palaeoecological and geomorphological proxies as well as for archaeological features and artefacts.

The Late Neolithic settlement site of Pestenacker near Landsberg am Lech in the Upper Bavarian Alpine foothills represents such an exceptionally well-preserved wetland settlement of the Altheim Culture. It is located in the valley of the Verlorener Bach and was extensively excavated between 1988 and 2004. Its founding can be dated dendrochronologically to the year 3,496 BC. Due to its great archaeological and supra-regional importance, it has been part of the UNESCO World Heritage Site "Prehistoric Pile Dwellings around the Alps" since 2011.

The extraordinarily high amount of analogue excavation documentation is being digitally processed in the course of ongoing scientific evaluation. The resulting new evaluation possibilities allow 3D-modelling not only of archaeological structures, but also of the surrounding landscape.

By combining these 3D-modellings with two direct-push colour- and electrical conductivity-log transects, selected percussion drillings, geochemical analysis and numerous <sup>14</sup>C-datings, a high-resolution chronostratigraphy of the floodplain with several former stream courses can be reconstructed (Köhler et al. 2022). The first fluvial activity began in the Middle Holocene. The incision of the stream enabled drainage of the surrounding sediments resulting in a lowering of the groundwater level. This condition probably led to the occupation of the floodplain by the Late Neolithic settlers.

Köhler, A.; Wanger-O'Neill, A.; Rabiger-Völlmer, J.; Herzig, H.; Schneider, B.; Nebel, S.; Werban, U.; Pohle, M.; Kreck, M.; Dietrich, P.; Werther, L.; Gronenborn, D.; Berg, S.; Zielhofer, C. (2022): A hydrological tipping point and onset of Neolithic wetland occupation in Pestenacker (Lech catchment, S Germany), *Quaternary Science Reviews* 278, 107370, <https://doi.org/10.1016/j.quascirev.2022.107370>.

## 6 HUMAN FOOTPRINT IN CHANGING ENVIRONMENT REVEALED THROUGH MULTI-PROXY RECONSTRUCTION: THE STUDY OF BRUSZCZEWO MICROREGION IN WESTERN POLAND

**Abstract author(s):** Niebieszczanski, Jakub (Adam Mickiewicz University in Poznań) - Gałka, Mariusz (University of Łódź) - Hildebrandt-Radke, Iwona - Karpińska-Kołaczek, Monika - Kołaczek, Piotr - Rzodkiewicz, Monika (Adam Mickiewicz University in Poznań) - Spsychalski, Waldemar (Poznań University of Life Sciences)

**Abstract format:** Oral

Numerous lakes and wetlands has formed since the retreat of the Vistulian ice sheet (~22 000 BC) in the territory of Poland and Northern Central Europe. These environments were occupied due to the water- and aquaculture-dependent subsistence strategies already by Neolithic farmers and even earlier. In some instances, waterscapes have been inhabited throughout the ages, while some lakes and wetlands ceased to exist due to climatic or anthropogenic factors. The changing environmental conditions and thus the changes in settlement patterns can be traced through the multi-proxy reconstruction on the one hand, and the detailed archaeological survey on the other. The combination of settlement archaeology and palaeoecological investigations provides an opportunity to discover the human-environment relations in temporal scale.

The following presentation concerns the archaeological and palaeoenvironmental reconstruction of the Bruszczevo microregion in Western Poland. This relatively small area has witnessed human occupation since Neolithic, but its most widely known settlement stage is connected to the Early Bronze Age and the Unétice culture fortified settlement. There are also several later stages of occupation (e.g. Late Bronze Age, Early Iron Age and Roman Times), the last of which is being dated to Medieval. Bruszczevo microregion spans the middle section of Samica River, which has adopted the glacial tunnel valley. In the following research we present the evolution of the valley, starting from the Late Pleistocene glacial meltwater lake, through Holocene ribbon lake and wetland/peatland, which has finally demised in result of the river drainage around 1300 AD. The multi-proxy reconstruction (palynology, macrobotanical



remains, diatom, sedimentology and geochemistry) was compared to the extensive archaeological knowledge (excavations and survey) on the sedentary practices and subsistence strategies related to the changing environment. This study was funded by the National Science Center, Poland, grant no. 2019/33/N/HS3/00193.

## 7 **LARGE-SCALE GEO-ARCHAEOLOGICAL PROSPECTION OF MID- TO LATE HOLOCENE WETLAND LANDSCAPES IN THE CENTRAL NETHERLANDS USING A MULTI-DISCIPLINARY APPROACH**

**Abstract author(s):** De Moor, Jos - Van Zijverden, Wilko (EARTH Integrated Archaeology) - Troelstra, Simon (VU University Amsterdam) - Verweij, Geurt (Bureau Waardenburg Ecology & Landscape)

**Abstract format:** Oral

The city of Almere (central Netherlands) is one of the fastest growing cities in the Netherlands. Planning and development of a large new residential area (4300 hectares with 15000 houses, including infrastructure) is currently taking place and according to Dutch legislation, archaeological research had to be carried out prior to construction activities.

The region contains a well preserved buried late Pleistocene aeolian landscape, covered by several meters of Holocene sediments. The archaeological value of the late Pleistocene landscape is rather well known and tens of Mesolithic hunter-gatherer sites have been discovered here during the last 20 years.

However, the prehistoric to historic archaeological value of the Holocene deposits in the area is still largely unknown. Therefore, as part of the compulsory archaeological research, a large scale geo-archaeological assessment of the Holocene sediments has been carried out. This assessment consisted of an integrated multi-disciplinary approach aimed at landscape and palaeogeographic reconstructions of mid- to late Holocene wetland environments. Using a combination of lithological descriptions of sediments, soil-micromorphology, radiocarbon dating, botanical analyses, diatom analyses and micropalaeontological analyses, we were able to reconstruct Holocene sedimentary environments and landscapes and - in combination with existing archaeological data - to assess their archaeological value.

The research has not only resulted in new insights in the archaeological value, usability and habitability of Holocene wetland environments in this part of the Netherlands, but it has also revealed new and valuable information on mid- to late Holocene landscape development of the region. The research has shown that the applied multi-disciplinary geo-archaeological approach is not only highly effective for this type of large-scale (regional) compulsory archaeological investigations, but it also generates new research themes, scientific information and datasets regarding the regional Holocene stratigraphy.

## 8 **RECONSTRUCTING THE LANDSCAPE OF THE SOUTHERN DANUBE DELTA IN ANTIQUITY: A SOCIO-ENVIRONMENTAL APPROACH**

**Abstract author(s):** Bivolaru, Alexandra (Aix Marseille Université, CNRS, IRD, INRA) - Morhange, Christophe (Aix Marseille Université, CNRS, IRD, INRA; EPHE, Section des Sciences Historiques et Philologiques, UMR 8546, Archéologie et philologie d'Orient et d'Occident - AOrOc) - Baralis, Alexandre (Musée du Louvre, Department of Greek, Roman and Etruscan Antiquities)

**Abstract format:** Oral

In this paper, we investigate the natural constraints and potentialities in terms of resources, communication, accessibility and navigability from the Archaic (7th c BC) to the Late Roman period (7th c AD) in the southern lagoons of the Danube Delta (Razelm-Sinoe lagoon system, Romania). The study is focused on two complementary directions: firstly, we reconstruct the palaeo-environmental evolution of the southern Danube Delta using a multi-proxy approach and secondly, we characterise the natural constraints and potentialities in the determined environment, with an in-depth comparative analysis of navigation conditions, accessibility and harbour and economic activities for three Graeco-Roman settlements: Orgame, Caraburun, Istros. The selected study-cases are key archaeological multi-layered sites, that testify for long-term human occupation and interaction with the environment.

The palaeo-environmental reconstruction is based on the sedimentological, biological and chrono-stratigraphic study of sedimentary cores extracted from each of the three sites. Through an integrative comparative approach (historical, archaeological and bio-sedimentological data), we propose an in-depth socio-environmental analysis of the historical evolution of the settlements and their entanglement with their milieu, from micro-ecologies to regional scale.

## A GEOARCHAEOLOGICAL TALE OF TWO CITIES: PALAEOGEOGRAPHY, SOCIO-ENVIRONMENTAL INTERACTION AND COASTAL LANDSCAPE EVOLUTION AROUND ANCIENT ABDERA (THRACE, GR.)

**Abstract author(s):** Mayoral, Alfredo (Catalan Institute of Classical Archaeology. Landscape Archaeology Research Group - ICAC-GIAP; Université Clermont Auvergne, CNRS, GEOLAB) - Ejarque, Ana (ISEM, Univ Montpellier, CNRS, IRD) - García-Molsosa, Arnau - Georgiadis, Mercourios - Apostolou, Giannis (Catalan Institute of Classical Archaeology. Landscape Archaeology Research Group - ICAC-GIAP) - Gaertner, Vincent (CNRS, UMR 5600, EVS-IRG & University of Lyon) - Kallintzi, Constantina (Director of the Eforia of Antiquities at Xanthi, Archaeological Museum of Avdira) - Kefalidou, Eurydice (National and Kapodistrian University of Athens, School of Philosophy, Department of History and Archaeology) - Palet, Josep María - Orengo, Hèctor A. (Catalan Institute of Classical Archaeology. Landscape Archaeology Research Group - ICAC-GIAP)

**Abstract format:** Oral

Long-term socio-environmental interaction is the main factor in the development of Mediterranean landscapes. Within the TransLands project, focused on the landscapes of Greek colonization, we undertook the geoarchaeological study of Abdera, a phocaeon colony founded in VIIIth c. BC in coastal Thrace. We implemented an integrated approach including remote sensing, geomorphological mapping, borehole drilling, radiocarbon dating and archaeological data. The main objective was to reconstruct Holocene coastal dynamics, and landscape changes related to the colony. Detailed litho-stratigraphic and sedimentological data from 19 coring points distributed in five transects, together with 32 <sup>14</sup>C dates, allowed to outline the palaeogeographical evolution from the Neolithic to the Antiquity. Small coastal valleys were submerged by marine transgression since c. 5000 cal BC, and beach-barrier systems with lagoons developed quickly and remained stable during several millennia. The Klazomenians settled at c. 650 cal BC in a rocky promontory dominating a large bay, which was gradually silted as a result of accelerated coastal progradation from IVth c. BC, perhaps due to anthropogenic forcing. The harbour area itself was likely silted by sediments coming directly from the colony. The relocation of the city slightly southwards in this period, although coastal advance was only incipient and the bay was probably still navigable, suggests that the causes of this displacement were rather historical events. By the late Roman period the coastline was very close to its present-day position. Lagoons were almost totally silted and had become shallow marshes. Abdera's decay since the IVth c. AD was certainly reinforced by a high energy marine event, likely a tsunami, which devastated the coastal lowlands in the Vth c. AD. Forthcoming multiproxy palaeoenvironmental and geoarchaeological analyses will certainly provide a more comprehensive perspective of socio-environmental interaction and landscape change in the area around the colony.

## HUMAN-ENVIRONMENTAL INTERACTIONS AT HAIMENKOU- A LATE NEOLITHIC AND EARLY BRONZE AGE WETLAND SITE IN SOUTHWEST CHINA

**Abstract author(s):** Su, Kai - Kidder, Tristram (Washington University in St. Louis)

**Abstract format:** Oral

Haimenkou is a wetland site with exceptional preservation and represents one of the earliest Neolithic occupations in Southwest China at ca. 3600 cal. BP. The site is located on the margin of the alpine Jianhu Lake (ca. 2200 m a.s.l.). A coring survey along the lakeshore reveals nearly 10 m fluctuation of the water level and complex intercalations of occupational layers, lacustrine deposits, and alluvial fans developed from the surrounding mountains. During the prolonged settlement (over 1,000 years) at Haimenkou, people changed the land- and waterscape significantly through deforestation and cultivation. Using the sediments and buried soils around the site, we reconstruct the environmental context and diachronic changes during the occupational period (ca. 3600-2300 cal. BP) at Haimenkou. Field survey has identified exposed profiles that preserve evidence of lake level changes, drainage shifts, and alluvial fan developments. Multi-proxy methods allow us to detect the major environmental changes during the flourish of the settlement and to explore the reason behind site abandonment, and to investigate the complex relationships between climate-driven and anthropogenic changes in this fragile environment.

## RISK ASSESSMENT OF GLOBAL CHANGE IMPACTS ON MEDITERRANEAN LAKE SITES

**Abstract author(s):** Piqué, Raquel (Universitat Autònoma de Barcelona, Departament de Prehistòria) - Romagnoli, Manuela (Dept. for Innovation in Biological, Agro-food and Forest systems - DIBAF, University of Tuscia) - Barbaro, Barbara (Soprintendenza for Archaeology, Arts and landscape, Rome) - Galotta, Giulia (Institute for Cultural Heritage Conservation and Restoration) - Chaumat, Gilles - Martínez-Carballal, Xavier (ARC-Nucléart) - Palomo, Antoni (Museu d'Arqueologia de Catalunya) - Terradas, Xavier (Consejo Superior de Investigaciones Científicas) - García, Irene (Universitat Autònoma de Barcelona) - Moscatelli, Cristina (Department for Innovation in Biological, Agro-food and Forest systems - DIBAF - University of Tuscia)

**Abstract format:** Oral

Assessing the impact of climate change poses one of the main challenges for implementing better practices for the study and conservation of wetland cultural heritage. The greatest risks come from certain exacerbating factors, namely the rise in minimum temperatures, extreme climate events, global warming, intense rainfall, and prolonged droughts, besides human activity. The main goal of the current project "Archaeological Wooden Pile-Dwelling in Mediterranean European lakes: strategies for their exploitation, monitoring, and conservation" is to assess the impact of climate change and extreme climate events on the conservation and safeguard of pile dwellings in Mediterranean lakes. The project has selected three case studies: the Neolithic site of La Draga (Spain) and the Bronze Age sites of Bolsena and Mezzano (Central Italy) with the aim to assess the concrete impact of climate changes and global warming on waterlogged wood, providing also the correlation with the lake ecosystems in the Mediterranean. We present the first results of the analysis of some parameters that could influence the state of conservation of wood, such as the provenance environment, like water characteristics and lying conditions (e.g. sediments), climate and landscape reconstructions on a wide-ranging time scale as well as environmental data acquired by different organisms (municipalities, deputy environmental agencies, researchers, etc.).

## A MULTI-PROXY APPROACH TO ANALYSIS OF IRON AGE SETTLEMENT ON THE WETLAND MARGINS: CASE STUDIES FROM TWO SITES IN SCOTLAND

**Abstract author(s):** Roy, Lynne - Robertson, Jackaline (AOC Archaeology Group)

**Abstract format:** Oral

Throughout Scotland there is evidence that Iron Age communities were able to successfully settle in and around wetland margins. This research studied the sediment deposits from two sites; a wetland village and a terrestrial broch, which produced evidence of damp or wet conditions to varying degrees throughout their occupation. The main objectives of this paper are to demonstrate how using a multi-proxy geoarchaeological and palaeoenvironmental approach better informs us about the strategies used to manage living conditions in saturated environments.

The study of well preserved deeply stratified organic rich floor layers from the wetland site of Black Loch of Myrton, Dumfries and Galloway revealed evidence for the importation of large quantities of vegetation to create floors which were continually augmented with plant litter to raise the surfaces above the rising water levels and soak up the inevitable damp. Multi-proxy analyses of these deposits allowed us to better understand and appreciate the role of organic matter in the formation of floors as a means of managing settlement in wetland environments.

The multi-proxy approach applied at Black Loch provided an opportunity to consider how evidence for use of organic material in floors is often overlooked on terrestrial sites where organics are preserved largely through carbonisation. This was true at Clach toll Broch, Assynt which was destroyed by a catastrophic fire leaving behind a large and well preserved ecofact assemblage. Stratified organic rich saturated deposits were identified within the terrestrial broch. By analysing these deposits using the same methodology applied to Black Loch it was possible to identify similarities in the approaches used by both communities to manage settlement in challenging damp conditions.

## USING SEDADNA TO IDENTIFY PAST ECOSYSTEM ENGINEERING SPECIES

**Abstract author(s):** Vernot, Benjamin (Ancient Environmental Genomics, Max Planck Institute for Evolutionary Anthropology) - Sperisen, Christoph (Swiss Federal Institute for Forest Snow and Landscape Research WSL) - Robin, Vincent (Laboratoire Interdisciplinaire des Environnements Continentaux, UMR 7360 CNRS - Université de Lorraine) - Larsen, Annegret (Environmental Sciences, Wageningen University & Research)

**Abstract format:** Poster

Before humans assumed the dominant role in engineering streams and floodplains, native taxa controlled ecosystem engineering and surface change within river-floodplain systems. However, little is known about this pre-human, natural condition of European rivers and their floodplains. Furthermore, for periods where human activity was a major driver of river floodplain evolution, it can be challenging to distinguish between sites affected by human vs faunal behavior in the absence of physical evidence. In this pilot study, we aim to reconstruct the pre-human environmental condition of central European, low order streams and their floodplains. Further, we develop a methodology to identify the major drivers of ecosystem engineering at specific riparian sites. We selected two research sites in central

Europe, and reconstruct the pre-human palaeo-environmental conditions at these sites. We then use ancient DNA from sediments (sedaDNA) to test for the presence and absence of specific wetland vegetation, and compare with an analysis of botanical macroremains from the same sediments. We also test for animal ecosystem engineers, such as the beaver, water vole and aurochs – which are globally or locally extinct, but instrumental to healthy, sustainable riparian ecosystems. Locating where and when these species were present will not only give us an understanding of the natural and most sustainable environmental conditions of riparian areas, but will also create a baseline for a better understanding of subsequent human-environment interaction.

## **B. HUMAN-ENVIRONMENT INTERACTIONS IN AND AROUND VENICE LAGOON: MICRO-ECOLOGIES AND GEOARCHAEOLOGICAL NARRATIVES FROM ROMAN PERIOD TO MIDDLE AGES**

**Abstract author(s):** Bivolaru, Alexandra (Aix-Marseille Université, CNRS, IRD, INRA, Coll. France, CEREGE, EPHE-PSL, Chaire d'archéosciences) - Morhange, Christophe (Aix-Marseille Université, CNRS, IRD, INRA, Coll. France, CEREGE, EPHE-PSL, Chaire d'archéosciences; EPHE, Section des Sciences Historiques et Philologiques, UMR 8546, Archéologie et philologie d'Orient et d'Occident - AOrOc) - Cottica, Daniela (Dipartimento di Studi Umanistici Università Ca' Foscari Venezia Palazzo Malcanton - Marcorà)

**Abstract format:** Poster

This paper addresses the question of social aggregations and environmental transformation in and around Venice Lagoon from Roman times to Medieval period (2nd c. BC to 9th c. AD). Our aim is to bring completely novel perspectives to the interpretation of archaeological dataset in an environment with plentiful of potentialities (communication hub, dense forests, salt pans, fishy waters, calm estuaries, wild game, and animals), but also constrained by paleo-hazards (coastal and fluvial mobility, hyper-sedimentation at base systems, storms, inundations etc.). The human-ecological relationships that underpinned social transformations on the longue durée in and around Venice Lagoon form the core of this paper. The area is evaluated in an historic and anthro-ecological perspective, providing unique insights into the study of vulnerability, resilience and adaptation of human societies to challenging environments. Using a new set of sedimentary cores and a novel multi-proxy analysis (archaeological, sedimentological, biological, geochemical and radiocarbon), we examine the socio-ecological relationships that underpinned social transformations on the longue durée from Venice Lagoon to Aquileia and Grado. The selected key sites (Venice, Altinum, Lio Piccolo, Torcello, Aquileia and Grado), reflect pivotal moments in human-environment interaction, technical advancement and societal differentiation, inside peculiar and challenging environments. Hence, their study through an eco-anthropological and geoarchaeological approach will describe how people became entangled in the maintenance of a very particular eco-anthropological system.

## **C. INSIGHTS INTO THE IMPACTS OF NEOLITHIC LAND USE AND CLIMATE CHANGE ON THE VEGETATION OF NORTHERN GREECE**

**Abstract author(s):** van Vugt, Lieveke - Morales-Molino, César - Gobet, Erika - Lotter, André (Institute of Plant Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern) - Vogel, Hendrik (Institute of Geological Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern) - Hafner, Albert (Institute of Archaeological Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern) - Tinner, Willy (Institute of Plant Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern)

**Abstract format:** Poster

More than 8000 years ago agriculture was introduced to Greece, starting the European neolithisation process. This cultural shift led to the arrival of new crops and livestock and changed the natural environments of Europe forever. Early farming societies developed new land use practices, which had an impact on vegetation and fire regimes. At the same time, early farmers were influenced by changes in climate and their environment. This relationship between Neolithisation, vegetation and climate is complex and not well understood.

Here, we present a continuous and high-resolution multi-proxy time series of past vegetation dynamics and fire history from Limni Zazari, spanning the Late Mesolithic and the Neolithic. We analysed pollen, spores and microscopic charcoal from lake sediments, to study the long-term relationships between Neolithic people and their environment. Limni Zazari is a small lake in Northern Greece and multiple Neolithic settlements were excavated nearby.

During the Mesolithic, the area around Limni Zazari was covered by mixed deciduous oak forests interspersed with open grasslands. The first decline in forest vegetation occurred around 6600 cal. BC, but it is unclear whether land use alone or also climate played a role. In the region first Neolithic settlements are dated to c. 6500 cal. BC, however, after the establishment of several local settlements around 5500 cal. BC, regular disturbances of the forest vegetation occurred. These disturbances likely led to changes in the forest composition. The presence of *Hordeum*-type and *Triticum*-type pollen suggest that people grew crops like barley, einkorn and emmer close to Zazari.

Our study describes vegetation dynamics in response to climate change and Neolithic farming disturbances of primeval forests. The results will lead to a better understanding of the complex interactions between climate, vegetation and human societies and may help our society to prepare for a future under global change conditions.

#### **D. RECONSTRUCTING ROMAN AGE LAND COVER CHANGES IN TRANSDANUBIA (HUNGARY) USING POLLEN, ANTHRACOLOGICAL AND GIS STUDIES**

**Abstract author(s):** Merkl, Máté (Department of Environmental and Landscape Geography, Eötvös Loránd University; Tata Kuny Domokos Múzeum) - Csüllög, Gábor - Hajdúné Darabos, Gabriella (Department of Environmental and Landscape Geography, Eötvös Loránd University) - Magyarai, Enikő (Department of Environmental and Landscape Geography, Eötvös Loránd University; MTA-MTM-ELTE Research Group for Palaeontology)

**Abstract format:** Poster

We present the results of a pollen analytical study of Lake Balaton (Cores 34 and 35) for the Late Holocene together with the results of anthracological investigations on archaeological sites dating to the Roman period from the surrounding of Lake Balaton in Hungary. The Romans conquered Transdanubia between 13 and 8 BC. By the 2nd century, the area around Lake Balaton had been Romanized through settlements. In the 4th century, in addition to smaller settlements and farmsteads, we also find military forts near Lake Balaton. To reconstruct how the Roman occupation altered the land cover and vegetation of the area, we use two 60 cm sediment cores from the Szemes Basin of Lake Balaton. For the pollen-based land cover reconstruction we use the LRA-Reveals (LRA-Landscape Reconstruction Algorithm) model, which estimates the true vegetation distribution from pollen distribution, taking into account the pollen dispersal and production capabilities of the species.

Pollen productivity estimates (PPE) differ significantly in different geographical areas, which can be connected to the climate of the area, soil characteristics, land use and other factors. In this study we apply the recent PPE European compilation of Githumbi et al. (2022) and the more proximal PPE dataset of Kunes et al. (2019) from Southern Moravia (Czech Republic). Two REVEALS based land cover reconstructions are performed with these two PPE datasets.

Pollen analyses are supplemented with the macro botanical results of the archaeological sites of Balatonlelle, Balatonfőkajka, Szabadbattyán and Tác. The archaeobotanical records come from various archaeological objects, such as storage pits, post holes, fireplaces and dwelling pits. Among the carpological findings cereals (*Triticum* sp.) dominate. Based on our observations so far, oak-wood (*Quercus* sp.) dominated the charcoal assemblages, which may show the effect of human selection.

With our macro botanical study we determine the nature of the environment and land use of the sites, we also deal with similarities and differences in the land use in Roman times. The examination of the macro remains also makes it possible to identify the location of different vegetation types around the settlements and its transformation by Roman age agriculture. We process, evaluate and present the data with the ArcGIS software, generalized to different coverage categories.

#### **E. HOLOCENE VEGETATION CHANGES IN SOUTHERN UKRAINE UNDER CHANGING LAND USE AND CLIMATE**

**Abstract author(s):** Ganz, Kathrin - Morales-Molino, César (Institute of Plant Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern) - Kiosak, Dmytro (Dipartimento di Studi sull'Asia e sull'Africa Mediterranea, Università Ca' Foscari) - van Leeuwen, Jacqueline - Gobet, Erika - Tinner, Willy (Institute of Plant Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern)

**Abstract format:** Poster

Humans drastically increased their impact on vegetation when they changed from nomadic hunter and gatherers to sedentary farmers at the Mesolithic–Neolithic transition. In Europe, this so-called “Neolithisation” started more than 8000 years ago and had a big impact on the environment and the biosphere, e.g. through the introduction, propagation, reduction or extirpation of species as well as through increased erosion, fire, and eutrophication. Disentangling the ecological legacy of prehistoric land use from the natural climate-driven trajectories is important for correct assessments of future European ecosystem dynamics.

Holocene vegetation history of most of Europe's vegetation types has been studied for decades. However, there is little information available of Holocene vegetation changes related to climate and human impact in Eastern Europe, and even less concerning the Pontic steppe region. As a matter of fact, the complete lack of high-resolution studies and the usually poorly constrained chronologies so far prevented assigning vegetation shifts to specific climatic events detected in independent reconstructions or to archaeological findings.

Here, we present a novel palaeoecological record (pollen and charcoal), from the Kardashinski swamp in southern Ukraine, including two high-resolution sections (contiguous sampling), to contribute to filling the knowledge gaps in the vegetation history of this region. Our results show that throughout the past 8200 years, the steppe was always the dominant vegetation. However, pollen data also suggest the presence of broad-leaved tree stands in the floodplain of the Dnieper from c. 6050 cal BC until c. 4150 cal BC, when they declined massively. Earliest palynological evidence

of agricultural activities was already found during the Neolithic at c. 5950 cal BC, which considering the dating uncertainties is in agreement with the earliest pottery evidence from southern Ukraine. Land use then intensified during the Bronze Age and the past centuries.

## F. BURIED IN THE GROUND? LOOKING FOR ENVIRONMENTAL CHANGES FOR SERBIAN BANAT LATE BRONZE AGE SETTLEMENTS ABANDONMENT

**Abstract author(s):** Estanqueiro, Marta (University College Dublin; CEAACP-Universidade de Coimbra) - Lewis, Helen (University College Dublin) - Penezić, Kristina (Biosense institute, University of Novi Sad) - Molloy, Barry (University College Dublin) - Salamon, Aleksandar (Narodni muzej Zrenjanin)

**Abstract format:** Poster

The abandonment of LBA Serbian Banat settlements between 1250 and 1150 BC raises important questions regarding the factors that may have contributed to that process.

New LBA settlements continue to be discovered through satellite images and surveys, which seem to indicate that they were connected in a dense network.

These settlements emerged around 1500 BC, in a period that coincides with the abandonment of MBA tells. Varying in size and layout, some of them achieved considerable size, with several being surrounded by ditches and ramparts. Yet, something changed around 1200 BC, leading to the settlements' abandonment for more than 200 years. Were the environmental conditions, that allowed these communities to settle and prosper in this area, no longer favourable?

Following what seems to be a similar path to the Terramare culture of the Southern Po Valley (Italy), with the flourishing and decline occurring at similar periods, we look for evidence of environmental changes through sediment deposition analyses that can shed some light into this question.

---

## 231 BIOANTHROPOLOGY IN WESTERN ASIA: MOVING FORWARD (A SESSION IN HONOUR OF PROF HOLGER SCHUTKOWSKI)

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Kharobi, Arwa (University of Bordeaux; Bournemouth University) - Maaranen, Nina (Bournemouth University)

**Format:** Regular session

Recent years have witnessed many important contributions to the investigation of past populations in Western Asia. The number of projects integrating bioarchaeology has increased, leading to a better understanding of the diachronic interplay between ecological, socio-cultural and politico-economic changes in the region. This development, however, has often occurred within highly challenging contexts and surroundings, concerning not only limited accessibility and preservation but also the lack of efficient communication within and beyond the academic community. Such demanding contexts require us to work side-by-side with local communities and develop broader research questions to promote better collaborative tools.

In addition to presenting bioanthropological research projects, this session aims to spotlight the great efforts done by the scientific community today to promote diversity, accessibility, and inclusion. Therefore, we welcome submissions of quality and originality from all bioanthropological perspectives regarding Western Asia that offer examples of:

- Bioanthropological studies investigating ancient populations and their environments in both individual, site and regional scales from all time periods
- Challenges and solutions for working in the field and laboratory
- Bioanthropological Initiatives (open-access database, websites)

This session is held in honour of our mentor Holger Schutkowski who lost his fight to MND in 2020. Schutkowski was a Professor of Bioarchaeology at Bournemouth University who carried out bioarchaeological research across multiple sites in Western Asia. His work was always marked by the importance of a holistic approach to the study of the past, integrating osteoarchaeology with interpretive archaeology.

## 1 DENTAL PATHOLOGIES AT THE DAWN OF NEOLITHIZATION IN THE NEAR-EAST: NEW METHODS APPLIED TO ANCIENT COLLECTIONS

**Abstract author(s):** chamel, Berenice (Archéorient Laboratory, Lyon, CNRS)

**Abstract format:** Oral

The Neolithization of the Near-East is considered as one of the key period in the history of mankind, a change of economic model, moving from a predatory economy - based on hunting, fishing and gathering - to a production economy, where we rely more and more on agriculture and animal husbandry. This long process, which lasted almost 6,000 years, can be seen in numerous sites in Syria, Jordan, Israel, Lebanon, Iraq and in the island of Cyprus. However, due to the antiquity of some of the excavations, as well as the tense political situation, the archaeological and anthropological collections of these sites are frequently hardly accessible, or have been dispersed, lost or destroyed.

The aim of this study is to return to ancient collections of human remains from several sites and studying them with the new methods of biological anthropology, to see if the upheavals experienced by neolithic populations can be observed in the oral health status. Dental pathologies (dental caries, abscesses, ante-mortem tooth loss and periodontal disease) are indeed linked to diet and reflect the changes in the subsistence economy. Human remains from 7 Syrian sites, covering the entire Neolithic period from 9820 to 6000 cal BC (from the PPNA to the Pottery Neolithic), were studied in a diachronic perspective, with 312 individuals grouped into 4 major periods.

Results reveal that changes in oral health are far from linear, and that pathologies do not all progress at the same rate. Agriculture plays a very important role in the peak of severity of dental lesions observed in the Middle and Late PPNB, but the new way of preparing food in the Pottery Neolithic also contributes to a significant increase in the frequency of pathologies during this last period of the Neolithization process.

## 2 SOCIAL VIOLENCE AT NEOLITHIC ÇATALHÖYÜK

**Abstract author(s):** Knusel, Christopher (Université de Bordeaux) - Milella, Marco (University of Bern)

**Abstract format:** Oral

In the 1960s Lawrence Angel identified traumatic injuries at Neolithic Çatalhöyük that were interpreted to be the result of low frequency accidental injuries, and thus as inconsequential evidence for inter-personal violence. As a result, the large Neolithic village/town at Çatalhöyük was considered to represent a peaceful early farming community. This interpretation remained dominant in the absence of further study of human remains for evidence of violence-related trauma from the site. Renewed excavation and further consideration of the context of human remains provide the opportunity to re-visit this interpretation.

More recent excavation has also revealed further evidence for ritual elaboration in addition to that unearthed in James Mellaart's 1960s excavations. This ritualistic behaviour is considered to have provided a release to dissipate the increased social tensions generated in this large, densely populated community. Another insight into the nature of these social control mechanisms comes in the form of individuals excluded from the more commonly found platform burials within structures. As attested by the location of a young male bearing peri-mortem facial injuries on a floor surface, these mechanisms extended to social penalties that included denial of more commonplace funerary treatment as well as violent assault.

This contribution presents intriguing insights into possible mechanisms of social control in this Neolithic society. This evidence suggests new facets of Çatalhöyük communal living, and prompts research questions about the link between population density, social complexity, and social control in past societies.

## 3 CONTINUITY DURING TIMES OF CHANGE – EVIDENCE FROM MIDDLE BRONZE AGE SIDON (LEBANON)

**Abstract author(s):** Maaranen, Nina (Bournemouth University) - Stantis, Chris (Bournemouth University; National Museum of Natural History) - Kharobi, Arwa (University of Bordeaux; Bournemouth University) - Serhal, Claude (Sidon Excavation)

**Abstract format:** Oral

The Middle Bronze Age (MBA, circa 2000-1500 BCE) in the Levant has been called the 'dawn of internationalism'; it was a time of expanding trade networks and technological developments, urbanisation, and social stratification. Numerous excavations across the region have provided a wealth of information about this time period, and along them publications of skeletal assemblages have also increased steadily. Available data from Lebanon, however, has remained limited, particularly from larger skeletal assemblages, and more information is required to understand how the development of MBA harbour towns shaped populations at the time.

The ancient town of Sidon, Lebanon, was formed at a natural harbour circa 40 kilometres south of Beirut. Excavations at the heart of the city, at the Sidon College site, have uncovered one of the largest coastal cemeteries. This site offers

a unique opportunity to explore population changes during a time of burgeoning network growth and associated social changes by engaging with both skeletal human remains and the rich archaeological record. The investigation combined isotopes, biological distance and palaeopathological analyses. Despite the changes taking place, Sidon shows a remarkable level of continuity, providing new insight of the impact of inter-site relations to local populations.

#### 4 BETWEEN THE MOUNTAINS AND THE DESERT: ISOTOPIC EVIDENCE OF ALLUVIAL FAN SUBSISTENCE AT TEPE CHALOW IN NE IRAN

**Abstract author(s):** Soltysiak, Arkadiusz - Fetner, Rafal (Department of Bioarchaeology, Faculty of Archaeology University of Warsaw) - Vahdati, Ali A. (Northern Khorasan branch of Iranian Cultural Heritage, Handicrafts, and Tourism Organization, Bojnord) - Biscione, Raffaele (Institute for Technologies Applied to Cultural Heritage, Consiglio Nazionale delle Ricerche, Rome)

**Abstract format:** Oral

Changes in land use patterns accompanying the formation of the Bactria-Margiana Archaeological Complex (BMAC) are poorly understood. To fill this gap, this study aims to look at carbon and nitrogen isotopic values ( $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ ) in collagen extracted from human and animal bones excavated at Tepe Chalow, an archaeological site in NE Iran. Bone samples taken from human skeletal remains represent two phases of occupation of the site: Late Chalcolithic and Early Bronze Age (proto-urban, LC/EBA, c. 3400–2400 BCE) and BMAC (urban, c. 2300–1700 BCE). Animal bone samples were available only for the BMAC period. Bone collagen was extracted using a modified Longin protocol and isotopic values were obtained with standard isotopic ratio mass spectrometer. In most human and animal samples, average  $\delta^{15}\text{N}$  values are very high (15.8‰ LC/EBA humans, 14.7‰ BMAC humans, 12.7‰ BMAC ovicaprids, outliers excluded), higher than the values of a local wild carnivore, the golden jackal (11.0‰).  $\delta^{13}\text{C}$  values differ significantly between LC/EBA and BMAC (both human and animal) subsets. High  $\delta^{15}\text{N}$  values are likely the result of combined aridity and intensive manuring in the relatively small area of land suitable for irrigation agriculture. The shift in  $\delta^{13}\text{C}$  between proto-urban and urban phases may be related to the transition from household animal husbandry to wider exploitation of saline steppes. Isotopic data supports the model of a regional shift from small-scale farming (Late Chalcolithic) through various forms of agropastoralism (Bronze Age) to nomadic or transhumant pastoralism (Iron Age).

#### 5 NEW GENOMIC EVIDENCE OF A BRONZE AGE LEVANTINE-EGYPTIAN NEXUS

**Abstract author(s):** Saupe, Tina (Estonian Biocentre, Institute of Genomics, University of Tartu) - Stantis, Chris (Faculty of Science and Technology, Department of Archaeology and Anthropology, Bournemouth University; Department of Anthropology, National Museum of Natural History, Washington) - Pagani, Luca (Estonian Biocentre, Institute of Genomics, University of Tartu; Department of Biology, University of Padua) - Guellil, Meriam (Estonian Biocentre, Institute of Genomics, University of Tartu) - Scheib, Christiana (Estonian Biocentre, Institute of Genomics, University of Tartu; St John's College, Cambridge)

**Abstract format:** Oral

West Asia, especially the Eastern Mediterranean coast (also known as the Levant), has played its role in the migration history of humans as the bridge between Europe, Asia, and Africa. During the Bronze Age (~3500-1150 BCE), groups from the Levant started to move towards Northern Africa and with the beginning of the 2nd Intermediate Period (~1640-1530 BCE), one particular group, known as the Hyksos, ruled the northeastern region of the Nile Delta sharing their cultural artefacts such as ceramics and burial practices with locals in Ancient Egypt and leaving their marks on the Egyptian culture. While previous studies have pointed to a "Levantine" origin of the Hyksos, the actual geographical and genetic origin remains debated.

To investigate the presence of the "Levantine" ancestral component and the connectedness between genetic data and shared burial practices, we extracted DNA of human skeletal elements at the dedicated ancient DNA laboratory at the Institute of Genomics, Tartu (Estonia) of ancient individuals dated to the Late Middle Bronze Age from six archaeological sites geographically located in the Levant ((Pella (Jordan), Jericho (Palestine), Tell Mozan and Umm el-Marra (Syria)) and Egypt (Tell el-Dabca). We generated genome-wide data of 16 ancient individuals from the Levant with an average genomic coverage between 0.004x and 0.048x (more than 6,000 single nucleotide polymorphisms (SNPs)) and were able to obtain partial and fully covered mitogenomes of 25 ancient individuals using mitochondrial DNA target enrichment via hybridisation capture.

We compared the first preliminary genetic results of the newly generated dataset with published available data and found a genetic overlap in the Levant with present-day individuals indicating a stable ancestral composition. We further plan to investigate the genetic impact of the "Levantine" component in the ancient and present-day individuals from Egypt and find a presence of the legacy of the Hyksos.



## 6 IDENTITY AND DISABILITY IN EGYPTIAN BIOARCHAEOLOGY

**Abstract author(s):** Zakrzewski, Sonia (University of Southampton)

**Abstract format:** Oral

What is disability and how do we identify it in a bioarchaeological context? Within paleopathology, disability has often been viewed from a modern medicalist model standpoint, but the field of bioarchaeology is intrinsically social in nature. People experience physical impairments, but are not necessarily disabled by those impairments. In ancient Egyptian contexts, the medical papyri provide a view of the emic understanding and treatment of bodily difference in the Egyptian past, but this concept of difference does not map directly on to etic modern understandings of physical bodily difference, and may not map to skeletal impairment identifiable from bioarchaeology. Even when considering disAbility as enabling a focus on the ability to undertake actions, there is still a fluid boundary between disabled and able-bodied, with shading and gradations along the continuum of disAbility depending on the actions and activities of the individuals involved. Using case study examples of disease and disability from the Nile Valley, this paper aims to add nuance to understanding of the interaction between identity and disAbility so that changes in disAbility may be viewed through the lens of the lifecycle.

## 7 REPURPOSING OPEN ACCESS ISOTOPIC DATA IN ANCIENT EGYPT AND WESTERN ASIA

**Abstract author(s):** Stantis, Christina (Bournemouth University; Department of Anthropology, National Museum of Natural History) - Huffer, Damien (Department of History, Carleton University; School of Social Sciences, University of Queensland) - Cheung, Christina (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Maritime Cultures Research Institute, Department of Art Sciences & Archaeology, Vrije Universiteit Brussel) - Salesse, Kévin (Department of Anthropology, Faculty of Science, Masaryk University)

**Abstract format:** Oral

Isotopic analyses of human remains and other materials from archaeological contexts provide opportunities to investigate broad themes of diet, migration, and climate. When combined with other archaeological information, stable isotope data can provide further insights into a wide array of anthropological and environmental issues such as weaning practices, disease processes and physiological stress, social stratification, animal husbandry practices, and climatic conditions. There are, however, current limitations of this method in the broad study region of Egypt and the Near East, most especially limitations surrounding a dearth of comparative and baseline data.

By utilizing the IsoArch database (<https://isoarch.eu/>; Salesse et al. 2018), part of an initiative to advocate data sharing for bioarchaeological isotope researchers, we investigate the current isotope data available within the online repository. In addition, this compilation effort will benefit the entire archaeological community working in Ancient Egypt and the Near East by making isotopic data easily accessible online, available to anyone free of charge and available for re-use without restriction, except that attribution be given to the source.

With 83 previous research outputs (totaling 2880 human samples and 1485 animal and plant samples) we find a wide range of isotopic data, from 6000 BCE to modern baseline samples. Although the long durée and broad region smooths out local information and creates interpretation issues regarding differences in physical and social environments, we show where past research has focused and highlight data gaps that can be addressed by future research.

## 8 WHAT TO DO WITH ALL THIS DATA: NEW INITIATIVES FOR LARGE-SCALE BIOARCHAEOLOGICAL RESEARCH IN THE MEDITERRANEAN AND MIDDLE-EAST

**Abstract author(s):** Mardini, Mahmoud (The Cyprus Institute)

**Abstract format:** Oral

Bioarchaeological data can provide long-term perspectives on humans' complex biosocial nature and interactions with their environment; this includes, among others, issues of animal exploitation, landscape transformation, and human responses to socio-political and environmental change. Despite the progress in the last decade across disciplines in bioarchaeology, to date, less emphasis has been placed on large-scale comparative studies and meta-analyses. To facilitate bioarchaeological studies and promote large-scale meta-analyses, a team of bioarchaeologists at the Science and Technology in Archaeology and Culture Research Centre of the Cyprus Institute is currently developing multiple open-access databases for bioarchaeological studies. These include open-access bibliographic databases for human bioarchaeology and zooarchaeology in the Eastern Mediterranean and Middle East (EMME) (Bi(bli)oArch - <https://www.biblioarch.com/>; Zoobi(bli)oArch - in progress), as well as an interactive database of published strontium isotopes values across the Mediterranean (SrIsoMed - in progress). Bi(bli)oArch is an open-access database containing titles and abstracts of human bioarchaeological studies from the EMME region, including over 3,521 titles. SrIsoMed will be an open-access database that contains over 11,000 87Sr/86Sr measurements from organic and inorganic remains originating from countries across the Mediterranean basin. Zoobi(bli)oArch will serve the same purpose as Bi(bli)oArch but for zooarchaeological studies. These projects will be highlighted in this presentation to encourage wide-ranging data syntheses and promote the development of other databases for archaeological research.

## FOLLOWING THE TRACES OF PARTHIANS AT THE VASTMIN ARCHAEOLOGICAL SITE IN IRAN

**Abstract author(s):** Amjadi, Motahareh (Eötvös Loránd University, ELTE, Doctoral School of Biology, Department of Genetics) - Ramezani, Maryam (University of Tehran, Department of Archeology) - Szécsényi-Nagy, Anna - G. Mende, Balázs (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Loránd Research Centre) - Egyed, Balázs (Department of Genetics, ELTE Eötvös Loránd University) - Tavallaie, Mahmood (Noor Human Genetic Research Center, Tehran) - Sharifi, Abdol Motaleb (Center of Research, Office of Cultural Heritage, Handicrafts and Tourism Organization of Mazandaran, Sari) - Forouzanfar, Farzad (Iranian Cultural Heritage, Handicraft and Tourism Organization, Tehran)

**Abstract format:** Oral

The Parthian Empire, also known as the Arsacid Empire, was a significant political and cultural power in ancient Iran from 247 BC to 224 AD. The Parthians maintained one of the great imperial states in ancient world history. They stretched from the northern reaches of the Euphrates, in what is now central-eastern Turkey, to eastern Iran.

Parthian wealth obtained through lucrative trade networks resulted in substantial patronage of the arts, particularly relief sculpture, statuary (large and small scale), architectural sculpture, metalwork, jewelry, and ceramics. Various burial customs prevailed because of the empire's long-endurance, vast extent and exceptional cultural diversity.

Vastmin archaeological site, located in Mazandaran Province on the Caspian Sea littoral with crypt graves, is known as one of the most important Parthian cemeteries in Iran. In this crypt type of burials, the belongings of the dead were put in the chamber, and then the hole used for burying was blocked by mud and stone. Furthermore, the chambers were subsequently reused for other burials.

During the third season of excavation in Vastmin in total 30 graves were identified, among them three with horse burials accompanied. Thirteen graves with better preservation conditions were examined from anthropological aspects.

From the 31 individuals distinguished, 12 were females, 9 males, 8 children, 1 fetal baby and one ambiguous sex was identified. The average age of death was 24 years old, and some osteological pathological observations could be made.

This Vastmin site was selected as the first archaeogenetic study of a larger research project to shed light on the genomic diversity of the Iranian plateau in the era of the first Silk Roads.

In this paper, we present preliminary analyses on an interdisciplinary collaboration, where the population of the Parthian Kingdom is analyzed from archaeological, anthropological and archaeogenetic aspects.

## 10 INTEGRATION, COMMUNITIES AND EXCLUSION IN BYZANTINE TIMES THROUGH BURIALS FROM HIERAPOLIS OF PHRYGIA (TURKEY)

**Abstract author(s):** Laforest, Caroline (Royal Belgian Institute of National Sciences) - Selsvold, Irene (University of Gothenburg; University of Leicester)

**Abstract format:** Oral

During the last decade, several research programs have shed light on the funerary spaces from the Byzantine city of Hierapolis, located in the ancient province of Phrygia, southwest Turkey. The diversity of the investigated burials has been studied using interdisciplinary approaches, including bioarchaeology. This recent research has enabled us to compensate for the incomplete data from former excavations and address new issues. Topography, architectural types, reconstruction of perishable arrangements, grave management, and the biological identity of the deceased have been jointly analyzed to identify three kinds of burial spaces in use during the Middle-Byzantine period. Our hypothesis suggests that each of these spaces could have been reserved for a specific social category: an enclosed cemetery surrounding a small church is interpreted as the burial place of the general Christian population in Hierapolis, while very prestigious sites, such as the urban Cathedral and the St. Philip sanctuary, probably accommodated tombs of clergy and privileged inhabitants. In contrast to these individual – albeit reused in some cases – graves, some individuals were interred in reopened collective Roman chamber tombs situated not far from the aforementioned St. Philip sanctuary. Finally, people looked to be excluded from the community in Hierapolis in death in the cases of tombs situated outside the cemetery walls, as well as three inhumations discovered in a waste and dumping ground. Together, our findings outline a Byzantine funerary landscape much more diversified than usually described and demonstrate community, social stratification, and separation of social groups within a Medieval city.

## UNTANGLING WESTERN ASIAN BIOARCHAEOLOGY: DATA MANAGEMENT AND RESEARCH OF COMMINGLED SAMPLES

**Abstract author(s):** Perry, Megan (East Carolina University)

**Abstract format:** Oral

Human skeletal samples from ancient Western Asian mortuary contexts often present a major impediment to bioarchaeological study: their commingled, fragmented disposition. The difficulty in working with such assemblages is likely one reason why archaeological skeletal remains have been understudied in this geographic region. Occasionally the intermixing of skeletal elements results from tomb looting, but more frequently, the commingling results from purposive mortuary behavior. This paper briefly outlines theoretical approaches to the meaning of purposive commingling in Western Asian contexts. The second half focuses on potential approaches for integrating multiple bioanthropological techniques in commingled and fragmented assemblages to understand ancient populations, and new areas for exploration, using the skeletal remains from the Petra North Ridge tombs as examples. Here the integration of paleopathology, isotope studies, proteomics, and cementochronology can provide a wealth of individual-level information even in commingled assemblages. In addition, population-level data provide key information on diverse experiences within the community. The successful study of commingled samples necessitates the multifaceted and interdisciplinary approach demonstrated by Holger Schutkowski during his illustrious career in bioarchaeology.

## DRESSING EUROPE: MAPPING AND DISSEMINATING EUROPEAN TEXTILE HERITAGE THROUGH DIGITAL RESOURCES

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Costeira, Catarina (UNIARQ - Centre for Archaeology of the University of Lisbon; School of Arts and Humanities of the University of Lisbon) - Iancu, Alina (National Institute of Heritage of Romania) - Gomes, Francisco (UNIARQ - Centre for Archaeology of the University of Lisbon; School of Arts and Humanities of the University of Lisbon)

**Format:** Regular session

Textile Heritage is a major component of the European Cultural Heritage, consisting of both archaeological remains and historical and ethnographic textiles. It includes both material heritage - from fabrics, utilitarian textiles and garments to tools and even workshops specialised in textile production - and immaterial heritage, namely traditional textile crafts.

In the last decades, textile research developed into a major field of research within the heritage sector. This impulse, coupled with the development of Digital Humanities as a new horizon for research and dissemination, has generated a strong necessity to create digital databases of textile heritage that might contribute to achieve new insights into European History and to foster an inclusive European identity based on a shared heritage. Exploring the shared experience of textiles at the European level could indeed foster a sense of belonging and social cohesion.

In this session, promoted by COST Action EuroWeb - Europe through Textiles (CA19131), we aim to gather together students, scholars and other stakeholders from academia, museums, the conservation sector and cultural institutions, as well as creative industries which would like to share data and experiences on:

- the online storage of textile resources in heritage databases, online catalogues and galleries that feature textiles;
- strategies of textile mapping, including the process of data selection and organisation, as well as the storage, processing, interpretation, and presentation of records;
- good practices on textile recording and textile data sharing in an online, accessible format;
- establishing a dialogue between researchers, practitioners and a broader audience of textile enthusiasts to deepen the current knowledge and to popularise textiles across Europe.

We strongly invite participants to include in their presentations case studies such as national databases, sites, galleries, forums, libraries and pages dedicated to textiles and textile resources.

### ABSTRACTS

## 1 LEARNING ABOUT TEXTILES. THE IMPORTANCE OF THE EUROWEB DIGITAL ATLAS OF EUROPEAN TEXTILE HERITAGE

**Abstract author(s):** Iancu, Alina (National Institute of Heritage of Romania) - Costeira, Catarina (UNIARQ - Centro de Arqueologia da Universidade de Lisboa; Faculdade de Letras de Lisboa. Universidade de Lisboa)

**Abstract format:** Oral

The Digital Atlas of European Textile Heritage is one of the most important deliverables in the COST CA 19131 action entitled 'EuroWeb. Europe Through Textiles: Network for an integrated and interdisciplinary Humanities. This presentation aims to highlight the role of The Digital Atlas of European Textiles and Dress, discussing the need of textile resourc-

es digitization and dissemination in Europe in the context of the recent progress in the field of archaeological textiles in particular and historical textiles in general.

Through this contribution we will outline the general features of the Atlas (aim, structure, content and addressing groups) and we will present the inherent challenges and the opportunities that such a major project brings for the European Textile Heritage. The following aspects will be discussed: the free redistribution of information, access to data, collaboration between institutions and project members, opportunities for dissemination of the European textile heritage. We will equally highlight the weak points that are inevitable in such a major project: the copyright problems, the difficulties in the comparison and interrelation of data from different regions and countries in Europe, the challenge of finding collaborators and volunteers to develop the Digital Atlas and the ability to keep this digital tool up to date after the end of the project.

## 2 INFORMATION AND POSSIBILITIES LOST BETWEEN THE DBMS AND THE PRESENTATION LAYER: DO WE KNOW WHAT WE ASK THE DATABASE FOR?

**Abstract author(s):** Pallin, Karolina (TexArk – The society for textile archaeology and culture studies; Textile studies, Uppsala University)

**Abstract format:** Oral

This paper's primary focus is to address the problem of extracting and consolidating detailed information between a database backend and a filtered view in a presentation layer. It will also give insight into how we worked with a purpose-built relational database for the textile collection at the Vasa Museum in Sweden.

The focus for the database development at the Vasa Museum has been designing it for researchers who need full primary data. However, while a query gives a defined dataset, most researchers only have access to and knowledge about filtered views, such as the most common search functions for collections online.

```
SELECT
    find.find_id,
    type.*,
    array_to_string(array_agg(DISTINCT beam.beam), ', '::text) AS
    beams,
    technique1_primary.primary_technique_eng,
    technique2_type.technique_type_eng
FROM find
    JOIN type ON type.find_id = find.find_id
    JOIN jointable_find__beam ON find.find_id =
    jointable_find__beam.find_id
    JOIN beam ON jointable_find__beam.beam_id = beam.beam_id
    JOIN technique1_primary ON type.technique1_primary_id =
    technique1_primary.technique_primary_id
    LEFT JOIN technique2_type ON type.technique2_type_id =
    technique2_type.technique_type_id
GROUP BY
    type.type_id,
    find.find_id,
    technique2_type.technique_type_eng,
    technique1_primary.primary_technique_eng;
```

A simple query like this above will with slight changes, none of them erroneous per se, show very different results. A more significant query used to service a filtered view in a presentation layer, works under the same principles. Principles who are not known to the researcher using the filtered view's search functions to find research data.

We can not ask researchers to know how to write SQL queries. Also, we can not ask from instances sharing their collection database to give everyone access to a SQL query tool. With more and more digitized collections, this put the scientific value of future research at risk and therefore, it needs to be explained, highlighted and discussed. Do we as researchers actually know what we ask the database for?

## 3 MAPPING AND DISSEMINATING THE USE AND RE-USE OF TECHNICAL TEXTILES IN SEALING PRACTICES IN BRONZE AGE GREECE

**Abstract author(s):** Ulanowska, Agata (Faculty of Archaeology, University of Warsaw)

**Abstract format:** Oral

Impressions of technical textiles: threads, cords and woven fabrics, as well as leather thongs, mats and basketry, preserved on the undersides of clay sealings from Bronze Age Greece comprise an important, yet so far largely

untapped, source of textile knowledge. A large number of such impressions, documented in plasticine and silicone casts of the undersides of clay sealings by the Corpus der minoischen und mykenischen Siegel (CMS) team and stored in the CMS Archive now in Heidelberg, has been examined within the 'Textiles and Seals' research project and published in an open access 'Textiles and Seals' database (<https://textileseals.uw.edu.pl/database/>).

In this contribution, I would like to demonstrate new research possibilities related to the evidence recorded thus far, focusing on how this data can answer questions about individuals involved in sealing practices and their potential preferences for securing the sealed objects in a certain manner. Recognising technical textiles that might have been repeatedly used in the sealing practices at a specific site is another challenge to be discussed in this paper. Finally, I would also like to comment on possible dissemination strategies in relation to research and evidence that seems to be highly specialist and, at first glance, not attractive to a general audience.

#### **4 DRESSING DIGITALLY THE IBERIAN PENINSULA: CURRENT STAGE, CASE STUDIES AND NEW POSSIBILITIES**

**Abstract author(s): Morgado-Roncal, Leyre (University of Granada)**

**Abstract format: Oral**

The studies of archaeological textiles and textile production in the Iberian Peninsula (Spain) have experimented a positive revitalization in the last decades. We are currently in a time of methodological consolidation and dissemination. However, it is still difficult to access digitally the results of over a century of research. The publications tended to be punctual, isolated and the databases inexistent or inaccessible. The digital perspective is at an early stage, hence the difficulty we have encountered to share internationally our investigations.

In this paper we will be examining our limited online textile resources, mainly museum catalogues and academic papers. We will be proposing new possibilities of data storage such as 3D models, online websites, and open databases, as well as reflecting on previous initiatives. In doing so, we hope to showcase the necessity and benefit of crafting a digital dimension. Finally, this discussion will enable us to integrate the Iberian Peninsula in this process of conforming a digital network of European Textile studies.

#### **5 THE CHALLENGES OF MAPPING ARCHAEOLOGICAL TEXTILE TOOLS: THE CASE OF THE PRE- AND PROTOHISTORIC TEXTILE TOOLS FROM SOUTHERN PORTUGAL**

**Abstract author(s): Costeira, Catarina (UNIARQ - Center for Archaeology in the University of Lisbon) - Gomes, Francisco (UNIARQ - Centre for Archaeology of the University of Lisbon; School of Arts and Humanities of the University of Lisbon)**

**Abstract format: Oral**

In the past couple of decades, the increase in the number of archaeological works in Southern Portugal has led to the identification of a growing number of archaeological sites dating both to the Late Neolithic and Chalcolithic and to the Bronze and Iron Ages. Many of these sites have yielded various types of archaeological remains relating to textile production.

This presentation is meant as a reflection on the importance of mapping textile tools, particularly loom components/loom weights and spindle whorls, as a means to analyze their distribution and the geographic patterns of textile activities, while also highlighting their economic expression and their development over time.

Establishing a cartography for these materials does however pose significant issues, which will also be discussed. Simply mapping the presence of textile tools in each site may result in a misleading picture, establishing a false equivalence between single finds or small assemblages and large, representative, and highly significant groupings. This limits interpretations of the organization of textile production and of the subtleties of the economic relations underlying that organization.

We will therefore argue that this cartography needs to be built upon a previous assessment of the context, scale and, when possible, organization of textile activities in each site, based on well-established quantification protocols and a comparative analysis of their original context. Such an assessment can then be reflected in the adoption of specific conventions to express and graphically differentiate at least some standard, trans-cultural levels of textile production (e.g., household production, household industry, attached specialist production, workshop production...). In this regard, digital supports offer great potential for the production of a multi-scalar, interpretive cartography which goes beyond mere illustration and moves towards the realm of interpretation and storytelling.

## 6 THE VALORIZATION OF A ROMANIAN HERITAGE DATABASE CONTAINING TEXTILE RESOURCES THROUGH THE EUROWEB DIGITAL ATLAS

**Abstract author(s):** Iancu, Alina - Stan, Ania (National Institute of Heritage of Romania)

**Abstract format:** Oral

This contribution aims to present a case of study on the digitization of the Romanian textile resources through the valorization of the Romanian database Mobile Cultural Objects Listed in the National Cultural Heritage by the Romanian heritage specialists that are members in the EuroWeb COST Action, with the support of volunteers from the University of Bucharest.

The database Mobile Cultural Objects Listed in the National Cultural Heritage is developed by the National Institute of Heritage of Romania and contains around 80.000 heritage resources from all Romanian Museums and Collections. An important part of this database features objects related with textile crafts, including textile tools unearthed on many Romanian archaeological sites, archaeological and historical textiles, ethnographic garments that are part of the Romanian folk costume and textiles for domestic use (utilitarian textiles as carpets, coverlets and others). All this data is currently processed in order to be integrated into the Digital Atlas of European Textile Heritage, one of the most important deliverables of the EuroWeb.

We aim to present all the steps of data processing, including selection, cleaning, English translation and the import of data into the Digital Atlas of European Textile Heritage. This contribution will highlight the importance of the national online databases as repositories of textile cultural resources. Valorized through the EuroWeb Digital Atlas, these types of databases will offer important information about the Romanian textile heritage in a much more friendly and easy-to-access platform. Consequently, our paper will constitute an example of good practices in the field of digitization of textile cultural resources.

## 7 FINDING TEXTILE RESOURCES IN THE CHRONICLE OF ARCHAEOLOGICAL RESEARCH IN ROMANIA

**Abstract author(s):** Dinu, Georgiana (National Institute of Heritage of Romania) - Iorganda, Tatiana (Faculty of History, University of Bucharest)

**Abstract format:** Oral

The Chronicle of Archaeological Research in Romania is an annual publication edited by the National Institute of Heritage of Romania, which encompasses all the field studies carried throughout the year, in the form of individual technical reports. The publication is currently accompanied by an open database updated by specialists from the Institute.

The database has been one of the main resources for finding information regarding the textile-related discoveries in archaeological surveys used by the Romanian contributors in the EuroWeb COST Action while putting together the Digital Atlas of European Textile Heritage. Even if the reports are not fully comprehensive regarding the excavations, they may offer important details about the objects discovered and their archaeological contexts, prior to their official publication in academic papers. Among them are textile tools, such as spindle whorls, loom weights and sewing needles.

This presentation will cover the process of selecting and importing the data into the Digital Atlas of European Textile Heritage, while emphasizing the potential of the national databases available online and how they can represent a very useful resource for documenting the textile tools in archaeological research.

## 8 TEXTILE LANDSCAPES – CASE STUDY IRON AGE AND EARLY MEDIEVAL IN CENTRAL EUROPE

**Abstract author(s):** Groemer, Karina (Natural History Museum Vienna)

**Abstract format:** Oral

The motivation of modern archaeological textile research is to improve understanding of the role of textile production and textile products in the history of humankind. Embedding finds and their context information into socio-economical and cultural discourse contributes to a cultural anthropology of textile use. For pre- and protohistory in the region of Central Europe, it is a challenge that textiles are among those organic materials that are rarely preserved under the prevailing climatic conditions.

Data mining still continues to serve basic research needs in textile archaeology in terms of describing and analysing archaeological textiles, although superior research questions and theoretical aspects are more and more applied to the material. The author contributes to this with the aim of building as broad a database as possible on archaeological textile finds from the Neolithic to the Middle Ages, with the emphasis on a view of continental Europe.

In this contribution, strategies of data mining as carried out at the Natural History Museum Vienna are presented with some case studies concerning the Iron Age, as well as the Early Medieval Era.

## 9 **MAPPING THE INTERNATIONAL TRADE OF MEDIEVAL AND EARLY MODERN EUROPEAN TEXTILES**

**Abstract author(s):** Mordovin, Maxim (Eötvös Loránd University, Budapest)

**Abstract format:** Oral

The cloth seals have become quite well-known and familiar finds in the last couple of decades. Dozens of publications present a wide range of different types of such seals produced in hundreds of textile-production centres. After having excellent publications, and descriptive catalogues of some more extensive collections, it is time to take one step forward and observe this topic on a broader international level. The best solution to visualise the information provided by these finds is to put them on maps, connecting the origin and the findspots of particular types. The best available platform for this is the Digital Atlas of European Textile Heritage. This platform also helps in disseminating scientific results.

In this paper, I am to present the process of such mapping and its first preliminary outcomes. As a first step, I have started to get through all the data from the Carpathian Basin (mostly from present-day Hungary and Slovakia, including parts of Austria, Romania, Serbia and Ukraine). The mapped data enables the presentation of two types of evaluation. The first one displays a distribution pattern of several different cloth fabrics in a separate region; the second shows the spread of a particular cloth type across the investigated territory. As case studies, I have also examined two specific types of cloth seals, namely those from Gdańsk and Görlitz. Additionally, I have prepared a detailed analyse of cloth consumption of a medieval Western-Hungarian town of Pápa.

## 10 **"WWW.ARCHEO-TKANINY.PL" DIGITAL CATALOG OF TEXTILE GRAVE EQUIPMENT, SUMMARY OF THE PROJECT (POLAND)**

**Abstract author(s):** Majorek, Magdalena (University of Lodz; Institute of Archaeology)

**Abstract format:** Oral

During the presentation, I will discuss the goals and effects / results of the project, which I implemented under the name: "Digital catalog of post medieval funeral textiles from archaeological research in Biata Rawska" (the scholarship of the Minister of Culture and National Heritage, Poland, 2020).

The aim of the project was to digitize, research and disseminate information about the collection of textiles discovered during archaeological research in the church of st. Adalbert in Biata Rawska (central Poland) and popularization of knowledge about methods of protection, conservation and reconstruction of archaeological textile artifacts, production techniques and fashion of the 18th and 19th centuries.

I have set myself the following detailed aims:

- scientific research of textile archaeological artifacts from Biata Rawska;
- education on two levels: 1) of the scholarship holder: expanding knowledge, developing the ability to use documentation techniques and research activities at the textile object; 2) recipients: expanding knowledge, developing behaviors aimed at encouraging special protection to be given to exceptional relics of the past, such as old garments;
- informing the society about the state of preservation of textile objects from archaeological research and the importance of former garments as a determinant of national identity.

As part of the project, I conducted a literature search on the history of fashion, methods of protection and conservation of textiles; I visited selected museums (including virtual collections); I prepared a scientific study taking into account modern documentation techniques, technological analyzes, tailoring patterns; I performed an analysis of form, function, content and comparative analyzes; in addition, I created a website <www.archeo-tkaniny.pl> with a digital database (catalog) and 10 educational posters.

## A. **CHALLENGES OF SCOPE AND COLLABORATION: BUILDING A COMPREHENSIVE TEXTILE TERMINOLOGY LIST FOR THE DIGITAL ATLAS**

**Abstract author(s):** Korten, Meghan (University of Iceland)

**Abstract format:** Poster

This poster will present the collaborative efforts of the Textile Terminology Working Group from COST Action Euroweb in creating a terminology list for the Digital Atlas to use for the online database of a European textile heritage map. We were able to work collaboratively, in a series of online workshops, as a group of researchers representing 17 countries and a variety of research disciplines, each adding our own input from our own textile knowledge and expertise. The main challenge of this task was determining the scope of the terminology list: how to include the broad range of research interests, technology, and time periods of the various textile to be submitted to the database with the need for a concise list of terms so as to not overwhelm the developers or the researcher inputting data, while still meeting the needs of the anticipated data. The result was six lists of terms, three representing textile materials, techniques, and functions and three representing textile tool types, shapes, and materials. We believe that this list of terms meets the Digital Atlas' needs for disseminating European textile heritage, with the scope balancing inclusivity and exclusivity

for the expected range of textile artifacts to be submitted. The poster will display aspects of the 6 terminology lists and discuss the challenges that this project faced and was able to overcome. It will also discuss several interesting trends noted during the collaboration, including some differences in representation of the anticipated textile types across the spectrum of textile production techniques, by time period, and by specialization of the group members.

## 233 ISLANDS, MONASTERIES AND WATER MANAGEMENT

**Theme: 5. Climate Change and Socioenvironmental Perspectives**

**Organisers: Hueglin, Sophie (University of Tuebingen) - Germanidou, Sophia (Newcastle University)**

**Format: Regular session**

In recent decades, excavations and other research have greatly enriched our knowledge about island monasteries – may they be situated in the sea, in lakes or rivers. For some regions overviews and syntheses have been presented (e.g., Meier 2009; Gutscher 2000) and we are starting to see monastic islands as a pan-European phenomenon at the beginning of the medieval period (Signori 2019, Bully/Jurković/Sapin 2013).

Continuing but also complementing this Europe- and Christianity-centered approach, the session intends to widen the geographic, chronological and religious frame. At the same time, the topic will be narrowed by adopting a 'fluid focus' or 'liquid lens': presenters are asked to look for everything related to water and the technologies to manage it as a material and spiritual resource.

In the past, islands have attracted monastic communities across cultures. Water creates their isolation and interconnectedness at the same time. The session would like to explore these contradicting properties as well as varying perspectives and different methodologies for investigating island economics, monastic sites and hydraulic technology. The topic could be tackled from angles such as:

- water management on islands and the role of monastic communities,
- the application of water technologies in island monasteries,
- monasteries on marine islands as opposed to islands in lakes and rivers,
- island monasteries as part of 'water heritage' (e.g., Willems/Schaik 2015).

References:

- Bully/Jurković/Sapin 2013 <https://www.brepolonline.net/toc/ham/2013/19>
- Gutscher, D. 2000. Die St. Petersinsel im Bielersee – zum Bedeutungswandel der Schweizer Inseln. In: Inseln in der Archäologie pp. 195-204, München : Bayerische Gesellschaft für Unterwasserarchäologie.
- Meier 2009 [https://www.academia.edu/27183345/Das\\_Kloster\\_im\\_See\\_Überlegungen\\_zu\\_einem\\_mittelalterlichen\\_Lagetyt\\_In\\_Siedlungsforschung\\_Archäologie\\_Geschichte\\_Geographie\\_27\\_2009\\_113\\_161](https://www.academia.edu/27183345/Das_Kloster_im_See_Überlegungen_zu_einem_mittelalterlichen_Lagetyt_In_Siedlungsforschung_Archäologie_Geschichte_Geographie_27_2009_113_161)
- Signori 2019 <https://www.degruyter.com/document/doi/10.1515/9783110646726/html?lang=de>
- Willems/Schaik 2015 <https://www.sidestone.com/openaccess/9789088902789.pdf>

## ABSTRACTS

### 1 ISLAND MONASTERIES IN A GLOBAL PERSPECTIVE

**Abstract author(s): Hueglin, Sophie (University of Tuebingen)**

**Abstract format: Oral**

When we think of island monasteries, we think of Mont Saint Michel in the North of France, the Skelligs in Ireland, and Lindisfarne in the North of England. We should not forget the sweet water sites on lakes and in rivers like the Reichenau in the South of Germany or St Peter's Island in Switzerland. Also, the Mediterranean has several famous monastic sites on islands e.g., the Île Saint-Honorat (Lérins) or Mount Athos. They are part of much larger medieval sea- and water-scapes that we would like to make visible again.

Looking at Europe, Ireland is the region with not only many islands but also a multitude of monastic sites on them; Kehnel (in Signori 2019) lists over a hundred. Other regions with a high density of island monasteries are the Balears, the Dalmatian Islands, and the Cyclades. Their roles, relations and rivalries should be compared on a landscape level, possibly contrasting them with inland monastic landscapes (Sánchez-Pardo/Marron/Crîngaci Țiplic 2020).

Beyond Europe and Christianity, there are landscapes full of insular monastic sites. In South Asia, the island of Sri Lanka is full of early Buddhist monastic sites. Across the sea, Bali forms another focus of holy sites and monastic lifestyle in the Indonesian archipelago. The mighty rivers of India – especially the Brahmaputra in the Northeast and the Kaveri in the South – have a long tradition of island satras – the Hindu equivalent of a monastery. Japan would be another chapter of a book on monastic islands, for which this session will be but a starting point.

References:

- Gabriela Signori (Ed.) 2019. Inselklöster – Klosterinseln. Topographie und Toponymie einer monastischen Formation. Vandenhoeck & Ruprecht: Göttingen.



- Sánchez-Pardo, José C., Marron, Emmet H. & Maria Crîngaci Țiplic (Eds) 2020. Ecclesiastical Landscapes in Medieval Europe: An archaeological perspective. Archaeopress: Oxford.

## 2 RENDERED BY WATER: THE HYDRAULICS OF CRAFT, DEVOTION, AND DWELLING ON CONNEMARA'S ISLAND MONASTERIES

**Abstract author(s):** Lash, Ryan (University College Dublin) - Kuijt, Ian - Chesson, Meredith (University of Notre Dame)

**Abstract format:** Oral

Archaeologists have grown increasingly attentive to the role of other-than-human forces in shaping patterns of human experience. Environmental phenomena do not only influence subsistence and economic practices, they can also afford evocative, sensory experiences vital to devotional practices within a variety of religious contexts. Building upon more than a decade of fieldwork along the coast of Connemara in western Ireland, this paper explores the practical and theological dimensions of monastic engagements with marine environments animated by the force of water.

Since 2008, the Cultural Landscapes of the Irish Coast (CLIC) project has conducted excavation, pedestrian and drone-aided survey, and pXRF lithic source analysis on Inishark and surrounding islands in Connemara. Early medieval people expertly engaged and explicitly referenced hydraulic forces in their building strategies, subsistence technologies, craft-productions, and devotional practices. Evidence for water mills indicates understanding of the properties and management of water as well as corporate investment in large-scale grain processing. A variety of stone objects associated with devotional practice (including carved crosses, thousands of quartz beach pebbles, and other eccentric 'natural' stones) demonstrate the intentional procurement and transport of materials conspicuously rendered by hydraulic forces. Drawing from early medieval writings, we suggest that monks perceived the properties and agency of water as manifestations of divinely governed Creation. As such, engagements with the power of water – in the form of rain, wave-action, tide-cycles, water-mills, or water-worn stone – offered evocations of the divine that monks pursued according to their theological, ideological, and institutional interests.

## 3 CONENTU TIOKKAKARLENSIS - A FRANCISCAN CONVENT ON KÖKAR ISLAND (ÅLAND, FINLAND) IN THE MIDDLE AGES AND TODAY

**Abstract author(s):** Seppanen, Liisa (Turku University; Helsinki University)

**Abstract format:** Oral

In medieval Scandinavia, circa 200 monasteries and convents were established, some of them on islands. The easternmost island convent was founded by Franciscans between Stockholm and Turku on a small and remote island called Hamnö which was (and is) part of the Kökar Islands in Åland archipelago belonging to Finland (Eastland of Sweden from the Middle Ages until 1809). Although situated on Hämnö, the convent was named and is still known as the Franciscan convent of Kökar. It was the only convent in Åland and one of the six convents of Finland all located by the sea.

In the Middle Ages, the archipelago of Åland and Finland provided an important waterway with sheltered harbours and loading bays and waters rich in fish. Hamnö became an important harbour providing a chapel for seafarers and it is very likely that Franciscans and other mendicant orders were active in this region from the 14th century at the latest. The written sources about the Franciscan convent, Conuentu Tiokkakarlenensis, are few, but the site has been excavated since the 1860s and it has been a target of several studies until the 1990s.

In this paper, I am discussing the role of the convent on Hamnö island and in the Åland archipelago in the Middle Ages from the point of view of its strategic location and its livelihood based on shipping and fishing. Furthermore, I am addressing the questions about the medieval significance of the site and commemoration of the convent after the Reformation and the cultural values entwined with the site and how they are recognized as part of the medieval maritime heritage of the Finnish archipelago today.

## 4 RIVER ISLANDS, MONASTERIES AND INNOVATIONS - THE CASE OF POHANSKO

**Abstract author(s):** Dresler, Petr (Masaryk University)

**Abstract format:** Oral

The early medieval center in Pohansko is a complex locality studied for more than sixty years. The three-part complex with a total area of 60 ha is located in the middle of the valley of the river Dyje. The centre was fortified by a massive almost 2 km long rampart. The Dyje river was used for transport and fishing; at the same time it served as a part of the fortification system and it was probably regulated. The most important structure inside the fortified centre is the so-called noble court, which was excavated between 1959 and 1965 and published by B. Dostál. Analogies to this structure were sought in Carolingian Pfalz. Nevertheless, archaeological movable finds from the area inside the palisades do not indicate the intense presence of any elite. Other inventory inside the complex is represented by ceramics, animal bones and common items of daily use, or home-made and common crafts. However, there is an

alternative interpretive model. According to this model, we are dealing with a monastery, or a monastery yard. Other similar localities with the presence of church buildings and theoretically also monastic districts are connected to the Morava River, to the main communication axis. These localities are very often located on the so-called river islands or very close to the river. The presence of monastic structures and their know-how would thus explain the technological innovations that are beginning to appear at Pohansko and in the wider area of the so-called Great Moravia during the 9th century. These are, for example, bridges, wells, riverbeds, fortifications, etc. The idea of monastic communities in the context of Great Moravia is not yet widely accepted, but it can explain the rapid development of the area.

## 5 MONASTERIES IN TRANSYLVANIA WITH THEIR NEARBY RIVERS AND THE SURROUNDING LAKES

**Abstract author(s):** Cringaci Tiplic, Maria Emilia - Cioltei-Hopartean, Corina (Institute of Social Sciences and Humanities Sibiu, Romanian Academy) - Tiplic, Ioan-Marian ("Lucian Blaga" University of Sibiu)

**Abstract format:** Oral

In the Middle Ages, monastic establishments, be they rural-based abbeys or convents located within the urban milieu were seen by communities nearby or surrounding them as isles of faith, of religiosity and hope. However, their own functioning had much to do also with pragmatic, day to day activities, beyond the religious spectrum, namely creating ways to sustain themselves, therefore turning also into economic isles, dependent on resources and privileges or donations. One of the most important resources within the economy of religious orders, namely their estates, was water, water supply and thus water management.

The Transylvanian Plateau is a hilly region with a network of valleys and its peripheral areas are characterized by a series of depressions cut across by a dense hydrographic network; all these are almost surrounded by branches of the Carpathian Mountains. It is for this reason, that religious orders did not develop isle-based establishments per se, but rather ones placed near rivers, in swampy areas or in some cases surrounded by lakes. This presentation aims to discuss the case of the Cistercian abbey in rural southern Transylvania, where the monks placed their monastery in a swampy area and made use of the river Olt in order to develop a water management system, whereas the urban pattern established in the German town of Sibiu, also in southern Transylvania, depicts the case of both Dominican and Franciscan convents located at first outside the fortified town walls, close to the river, where the friars could have drained the surrounding swamps in order to make use of water supply by turning them into ponds and lakes. Their usage becomes even more interesting when compared to other locations within the same area, namely other towns, such as Braşov, Orăştie, Vinţu de Jos, Bistriţa etc.

## A. WALKING OVER WATER, ON AN ARID ISLET IN SOUTHERN GREECE

**Abstract author(s):** Germanidou, Sophia (Newcastle University)

**Abstract format:** Poster

Tiny in size and almost entirely fortified, the islet of Meropi, in Messinia, southern Greece, is of great archaeological interest. An important monument on the islet is Virgin Mary's Dormition monastery, formerly dedicated to Saint Nicholas. The monk cells survive in ruins and the main standing structure is a small church, which was restored in the 18th century. Building material from a possibly ancient sanctuary and sculpted fragments from a probably Byzantine chapel were found immured within its masonry.

Right in front of the western entrance to the church, abutting to the wall façade, there is a barrel-vaulted cistern. Cisterns built below, above, or next to churches are uncommon but do exist. The case of a water storage construction directly in the front of the main entrance of a church is not only unique but also a rather peculiar arrangement: the incomers would have to step over the roof of the cistern to enter the holy space.

The association of water and religious buildings, usually a cistern and a monastery church, is typically interpreted based on the 'cleansing' (practically and metaphysically) properties of water: as a 'purifying' agent of the faithful's spiritual impurities and 'ablution' of their sins.

---

## 237 PROTECTING THE PAST IS THE KEY TO THE FUTURE: RIGHTS OF ARCHAEOLOGICAL HERITAGE STAKEHOLDERS AND SOCIAL JUSTICE

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Kairiss, Andris (Riga Technical University) - Mödlinger, Marianne (University of Genoa) - Olevska, Irina (Maastricht University)

**Format:** Regular session

Intentional damage and destruction of archaeological sites, looting and illicit trade of antiquities is a crucial point of concern of different interested parties. The aftermath of these criminal activities affect local communities, visitors, scientists, businesses, public institutions, governments, amongst others, in addition to broader society (hereinafter – the stakeholders).

As well as scientific and other non-material losses suffered by these and other groups of cultural heritage stakeholders, there are interests of purely economic nature that are directly affected by archaeological damage. Thus, damaged sites may cause attendance slippage, loss of jobs, market loss for site-related goods (e.g., souvenirs) and services. As a consequence, a decreasing quality of life and touristic attractiveness of an area occurs alongside the need for substantial resources for restoration.

Due to a lack of experience, established practice and social awareness, different groups of stakeholders are afforded little to no attention in criminal proceedings and do not get structurally accounted for in subsequent restoration or development projects. Thus, for example, the principle that everyone has the right to the protection of the moral and material interests linked to the works that result from one's cultural activity (Fribourg Declaration of Cultural Rights, Art.5(b)) is becoming purely declarative.

We aim to discuss theoretical and practical issues concerning the application of this principle in the context of the protection and development of archaeological heritage sites, as well as to share ideas on different opportunities that respect the interests of all stakeholders to the highest extent possible.

Papers for this session may include but are not limited to:

- Impact of archaeological research on the economic and touristic development of an area;
- Heritage-based socio-economic development;
- Rights and obligations of heritage stakeholders;
- Offences against archaeological heritage sites and damage assessment;
- Role of NGOs and other organizations in the protection and development of archaeological sites.

## ABSTRACTS

### 1 OFFENCE AGAINST ARCHAEOLOGICAL HERITAGE – IS EACH OF US A VICTIM?

**Abstract author(s):** Kairiss, Andris (Riga Technical University) - Olevska, Irina (Maastricht University)

**Abstract format:** Oral

Heritage offences affect socio-economic interests of various stakeholders - their owners, local communities, researchers, visitors, businesses, media, heritage institutions, etc., as well as society as a whole.

Damaging of archaeological sites and illegal acquisition of antiquities therefrom is more frequent offence in Latvia. The Latvian State is usually recognized as the only victim in these crimes, but the question arises as to whether the interests of other stakeholders are not significant enough to be identified and accounted?

While different countries approach these issues differently, international community recognizes that offences against cultural heritage can impact victims (also legal persons) directly and indirectly. Moreover, the impact of such offence may transcend the socio-geographical space it occupies, leading to a global impact that is identifiable in criminal proceedings (ICC, Policy on Cultural Heritage). As everyone has the right to enjoy culture and to participate in cultural life, it can be assumed that offences against archaeological heritage are detrimental to everyone, as everyone is deprived of the potential to enjoy or explore relevant cultural objects. Thus, assessing the damage to the interests and appropriate form of compensation of the stakeholders ensures both social justice and promotes crime prevention (e.g., by emphasizing the social impact of illegal activities, making perpetrator compensate relevant losses, etc.).

The presentation, analyzing Latvian situation and making international comparisons, uses the integration of socio-economic and legal approaches to the impact of heritage offences, providing theoretical and practical insights into:

- identifying the stakeholders whose interests are mostly affected (also for criminal proceedings),
- determining the type and amount of damage caused,
- identifying opportunities to protect stakeholders' interests,
- identifying possible regulatory improvements,
- promoting awareness among stakeholders of the harm caused to and advocacy of their interests.

The presentation is based on a study conducted by the authors in 2021-2022.

### 2 STEALING HISTORY: ILLICIT TRADE OF ARCHEOLOGICAL ARTEFACTS IN LATVIA

**Abstract author(s):** Kalnins, Marcis (National Heritage Board of Latvia; Faculty of History and Philosophy of University of Latvia)

**Abstract format:** Oral

In last 4 years more than 7,200 illegally traded or stored archaeological artefacts have been seized in Latvia, with estimated value of more than 115,000 EUR. Although the value of artefacts has been determined, the actual damage to the cultural heritage is immeasurable as illicit trade of archeological artefacts entails destruction of archaeological context and a loss of archaeological provenance.

According to data from Commission for the Evaluation of Archaeological Objects (Artefacts) of National Heritage Board of Latvia majority of archeological artifacts that has been seized from 2018 till 2021 are Medieval and Early Modern period (13th-17th c.) coins. The second largest group is small sized Late Iron Age (9th-12th c.) and Medieval (13th-16th c.) bronze jewelry. The analysis of data reveals that only less than 2% of all seized artefacts are foreigner origin, therefore Latvia at the moment should be considered mainly as the country-of-origin not as transit, as previously assumed. Such a large share of local archaeological artefacts in the illegal market is closely related to the growing treasure hunter community in last two decades. Although Latvian law stipulates that artefact (dated until 17th century included) found in archaeological site shall belong to the State and finder must notify the National Heritage Board within five days, annually only a small number of reports about found archaeological artefacts is received. At the same time, the information in various websites and social media groups, dedicated to the treasure hunting, reveals that the number of archaeological artefacts found by treasure hunters is significantly higher. This imbalance is likely to be explained by the actions of different stakeholders involved, as well as unawareness of archaeological artefacts as non-renewable cultural resource and historical perception of the concept of private and State property.

### 3 **PROTECTING A BROKEN WINDOW: VANDALISM AND SECURITY AT RURAL ROCK ART SITES**

**Abstract author(s):** Berzina, Diana (Maastricht University)

**Abstract format:** Oral

The majority of the ancient rock art sites of the U.S. Southwest are located in rural locations that are difficult to monitor or police. These sites seem to exert a pull on humans, an attraction that not only provokes curiosity and wonder but also what can be classed as destructive responses or vandalism. Many practical guidelines to protect rock art or similar rural targets, stem from urban-based criminological models for understanding vandalism. However, many of crime control methods are not feasible in remote rock art sites, and in some situations, they are even detrimental. By focusing the discussion on rural rock art sites, this presentation hopes to show the complexity of security and policing of these sites and how counterintuitive patterns of crime in these areas might seem. The ability of rock art to draw people to rural locations and to seemingly inspire them to commit crimes is both fascinating and understudied. Yet a more thorough understanding of the relationships between rock art and the people who interact with it could have major implications for policing and protecting sites that exist beyond the limits of existing urban-focused models of crime.

### 4 **KNOWLEDGE GRAPH POTENTIAL IN MONITORING THE TRANSNATIONAL TRADE IN ARCHAEOLOGICAL OBJECTS.**

**Abstract author(s):** Giovanelli, Riccardo (Ca' Foscari University of Venice; Center for Cultural Heritage Technology - CCHT, Istituto Italiano di Tecnologia - IIT, Venezia) - Traviglia, Arianna (Center for Cultural Heritage Technology - CCHT, Istituto Italiano di Tecnologia - IIT, Venezia)

**Abstract format:** Oral

Graph theory has been introduced in the 18th century by Euler and can be described as the study of mathematical structures modelling the relationships between entities. Since then, the concept has largely evolved and it represents the foundation of modern network science. With a high number of applications in different fields of science, it has been largely adopted in Social Sciences only from 1970 but it is still underrepresented in the field of Humanities. Archaeology, notwithstanding the centrality of the relationship between entities in the study and the comprehension of the archaeological record, has started only very recently to adopt hard methodologies based on a network perspective (Brughmans, Collar, and Coward 2016) and this branch of study is still young but presents great potentiality, as well as challenges to be solved.

The illicit trafficking of archaeological objects, due to the "trade" own discrete structure (where an entity A sells an entity B to an entity C), can be properly described and modelled as a social network, as originally suggested by Tsirogiannis and Tsirogiannis (2016) that represented persons as entities.

This paper will develop further on these concepts and will go beyond them by modelling data collected from a recent transnational investigation that disclosed the trafficking history of 180 archaeological objects from 11 different countries as a knowledge graph (a network of real-world entities, including objects, events, situations and concepts). By experimenting with different existing and tailored algorithms on the knowledge graph database, the paper will discuss the potential of the network approach, as well as its underlying challenges and the possible bias in understanding, representing, monitoring and finally preventing the illicit trafficking of cultural properties.

## 5 FROM THE SPACE DOWN TO EARTH: METHODOLOGIES TO DETECT AND PREVENT ARCHAEOLOGICAL LOOTING

**Abstract author(s):** De Bernardin, Michela - Traviglia, Arianna (Center for Cultural Heritage Technology - CCHT, Istituto Italiano di Tecnologia - IIT, Venezia) - Giovanelli, Riccardo (Ca' Foscari University of Venice; Center for Cultural Heritage Technology - CCHT, Istituto Italiano di Tecnologia - IIT, Venezia)

**Abstract format:** Oral

The adoption of Earth Observation in monitoring looting activities has developed at a rapid pace, evolving from the simple observation of aerial imagery to the deployment of robust methodologies exploiting both satellite imageries (multispectral, SAR, and optical VHR data) and processing technologies.

This paper will present an overview of the evolution of space applications for detecting illicit activities on archaeological sites. It will then focus on the most advanced techniques under development at the Center of Cultural Heritage Technologies, in collaboration with SatCen (European Union Satellite Center) and the ESA Copernicus programme.

Despite a long-lasting history of looting, Italian archaeological sites have rarely been objects of up-to-date research in terms of the detection of criminal excavations. Among the case studies here considered, the paper will present preliminary results of satellite analysis designed to assess the impact of looting activities on the archaeological areas of two Italian sites of notable significance that have been selected according to:

- the archaeological richness of their subsoil;
- the presence of scientific archaeological excavations (past and ongoing);
- their different topography and vegetation values;
- their substantial difference from the commonly researched archaeological sites in the MENA region;
- the different looting behaviour observed in the past documentation;
- the different looting-pits patterns;
- the accessibility of satellite imagery.

By building on this first set of data, the paper intends to lay the foundations of an effective methodology for detecting looting activities, which can be further implemented and customised based on different topographic features of the affected areas.

Altogether, this paper aims to highlight the relevance and impact of such a methodology in monitoring and contrasting illicit activities in broad archaeological areas, especially in remote or inaccessible locations or in conflict zones.

## 6 MORAL PANIC AND MEDIA RESPONSIBILITY IN THE DISCOURSE OF ILLICIT ANTIQUITIES AND ARCHAEOLOGICAL LOOTING

**Abstract author(s):** Loges, Luise (University of Glasgow)

**Abstract format:** Oral

In discussions of the destruction of archaeological context and cultural heritage, one stakeholder that is sometimes overlooked is the media. Yet especially in cases of destruction caused by the looting and trafficking of archaeological objects during armed conflicts, this problem attracts significant media attention. The shock value of heritage destruction is often used as a means to connect international audiences to conflicts in remote parts of the world. In some situations, media reporting on the loss of what is perceived as "world heritage" can even inspire public outrage.

Using news framing analysis, my talk will show how the portrayal of the global antiquities trade has changed in German-language newspapers between 2011 and 2016, following shocking reports of conflict-related looting in Syria, especially by the terrorist group "Islamic State".

These reports have roused public concern and led to reactions by authorities, including Germany's 2016 Cultural Heritage Protection Law. On the other hand, the antiquities market has reacted defensively to this portrayal, taking advantage of some obvious flaws in reporting.

I will demonstrate that this escalation of public discourse is consistent with a moral panic as defined by sociologist Stanley Cohen in 1972. I will also discuss the antiquities market's backlash on this change in representation, and what it can tell us about the self-conception of these stakeholders.

I conclude with a discussion about the role and responsibility of news media in the protection of cultural heritage from antiquities trafficking and other threats worldwide.

## IN THE SHADOW OF FRANCISCAN MONASTERY. RESCUE EXCAVATION OF CHURCHYARD AT RADZIEJÓW IN KUIAVIA (POLAND)

**Abstract author(s):** Mosiejczyk, Jakub (Archeo-Adventure) - Angeli, Effimia (Department of History & Ethnology, Democritus University of Thrace) - Majorek, Magdalena (Institute of Archaeology, University of Lodz)

**Abstract format:** Oral

The Franciscan monastery at Radziejów (Kuiavia, Poland), the Church of the Discovery of the Holy Cross and the churchyard were subjected to archaeological prospection for the first time in 2021. The impulse of the archaeological research was the conservation works aiming to secure the northern wall of the church along with the drainage. The earthworks revealed the relics of the former cemetery, where archaeological rescue excavation was carried out. As a result of the research, 19 burials from the Middle Ages and the modern era were explored and subjected to anthropological research. An analysis of ceramics was also conducted, providing new data about the everyday life of monks using the monastery territory. The documentation of foundation parts of the church illustrates the architectural changes from the time of its erection as a votive offering after the Battle of Płowce (1331) to modern times. The research is a successful example of cooperation between church authorities and private entities providing conservation services and archaeological research.

## A. THE ARCHAEOLOGICAL RESEARCH ON THE CONSERVATION PROJECT OF A GOTHIC CHURCH AT BLANKI IN WARMIA (POLAND)

**Abstract author(s):** Mosiejczyk, Jakub (Archeo-Adventure) - Angeli, Effimia (Department of History & Ethnology, Democritus University of Thrace)

**Abstract format:** Poster

St Michael the Archangel Church at Blanki (Warmia, Poland) has been undergoing conservation work since 2000 to restore its Gothic form. The church is unknown in the bibliography despite its unique medieval paintings. Archaeological research inside the church was carried out for the first time in 2021 as a part of the flooring renovation project. The results shed new light on the building history of the sacral architecture in the region. A test trench was established in the southern wall to determine the cause of the cracks. In addition, the preserved brick floors were recorded during the supervision of the floor replacement. The stratigraphy illustrating the history of successive modernization of the facility has also been defined. The presentation of the analysis results will occur for the first time. The research contributes significantly to the determination of the original form of the church and the tower location - known from historical descriptions - as the construction techniques and mortars used. Furthermore, this study comprises a characteristic example of the archaeological contribution in conservation projects and the need for cooperation with church administrators and private entities for the protection of medieval religious architecture.

---

## 239 A LOOK BENEATH THE SURFACE: MICRO-ARCHAEOLOGICAL AND GEOARCHAEOLOGICAL APPROACHES TO THE STUDY OF OCCUPATION SURFACES

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** George, Nebu (Bangor University) - Santiago Marrero, Carlos (Universitat Pompeu Fabra) - Schumacher, Mara (Newcastle University) - Tomé, Laura (University of La Laguna)

**Format:** Regular session

Occupation areas, surfaces, and floors are archaeological features able to provide behavioural and cultural information on past activities, human practices, and technological choices. Similar information has been conventionally gathered from artefacts in such locations until recently. Regardless of time periods, their identification and characterisation are at the base for subsequent study and interpretation of the related archaeological context and spaces.

The variety of surfaces and floors types, and the complexity of traces embedded in their sediment constituents, require analytical approaches that can change the scale of observation beyond the visible record. Invisible traces of (and on) surfaces can significantly contribute to questions regarding past human activities, use of space, construction techniques and raw materials, as well as maintenance and cleaning practices that may be linked to broader socio-economic and cultural developments. Therefore, micro-archaeological and geoarchaeological approaches are necessary to understand the formation, use, degradation, and post-depositional alteration of surfaces and associated deposits. The understanding of the spatial distribution of artefacts in revealing similar information in such contexts can offer a much important complementarity when it comes to the interpretations of such floors and surfaces. Moreover, as surfaces and floors are the products of intentional choices and human behaviour, the results of these analyses can contribute to the debate on materiality and material culture in archaeological contexts.

We invite papers on the study of occupation surfaces using geoarchaeological and/or micro-archaeological methods, including but not limited to soil micromorphology, geochemistry, micro-botanical analysis and spatial distribution analyses. The aim is to bring together scholars working on occupation surfaces ranging from the Palaeolithic to Medieval period stimulating discussion on the study of surfaces combining interdisciplinary methodologies and how

inferences about their archaeological significance can be made. In this way, leading to a discourse of re-integration of multidisciplinary approaches to the study of occupation surfaces.

## ABSTRACTS

### 1 WHAT LIES UNDER THE SURFACE AND CAN WE EXCAVATE IT PROPERLY?

**Abstract author(s):** Mallol, Carolina (Universidad de La Laguna)

**Abstract format:** Oral

In archaeological contexts, human occupation surfaces are traditionally located through the excavation of objects, which leaves behind an often illusionary "floor" on which we grossly assume that human activity took place. A growing body of high-resolution geoarchaeological and archaeostratigraphic data obtained from the sedimentary deposits representing hypothetical floors has shown a much more complex reality with numerous scenarios, including short-term and long-term palimpsests and micro-palimpsests, and syn- and post-depositional transformations of different nature (chemical or physical) resulting from a range of anthropogenic, biogenic and geogenic processes. These data are contributing invaluable, detailed information, not only to help assess the degree of integrity of archaeological contexts but also to directly interpret different aspects of past human behavior. Meanwhile, in the field, excavation methods do not usually accommodate the complexity that we now know of. First, excavation of the "occupation floors" typically occurs prior to obtention of the associated geoarchaeological data. Second, it is not clear how to make viable connections between our high-resolution, microstratigraphic information and the excavation strategy. Here, I draw on examples from my own experience facing this problem to reflect upon possible solutions.

### 2 WHAT TIED THE ROOM TOGETHER: A MULTIDISCIPLINARY PERSPECTIVE ON THE FLOORS OF NEOLITHIC GÖBEKLI TEPE

**Abstract author(s):** Ögüt, Birgül (Deutsches Archäologisches Institut, Orient Abteilung) - Kinzel, Moritz (Deutsches Archäologisches Institut, Abteilung Istanbul) - Sobott, Robert (Friedrich-Alexander-Universität Erlangen-Nürnberg, Geozentrum Nordbayern, Erlangen) - Schönicke, Julia (Institut für Vorderasiatische Archäologie, Freie Universität Berlin) - Huber, Barbara (Max Planck Institute for the Science of Human History, Department of Archaeology, Jena) - Clare, Lee (Deutsches Archäologisches Institut, Abteilung Istanbul)

**Abstract format:** Oral

Pre-pottery Neolithic Göbekli Tepe in south-eastern Turkey is prominently known for its monumental round-oval buildings with monolithic T-pillars which provided the ground for speculations about ancient life in this site. The former interpretations of these buildings were based on the artefacts but not on the surrounding floors.

In this paper, however, we re-evaluated the function of spaces within the buildings where these objects were used or found by comprehensively studying floor surfaces, plasters, deposits and sediments. We applied a multidisciplinary framework of methods, including geochemical sediment and lipid analyses in combination with phytolith analyses to shed light on hidden traces of use and spatial arrangements. Mineralogical analyses of the Neolithic plaster floors provided information on how floors have been constructed. Based on the scientific analyses from different floor contexts, the paper also includes architectural and archaeological considerations to approach so far rarely discussed domestic structures and spaces.

The results of this multidisciplinary work, linked via the floors, show that only through the combination of microarchaeological investigations in relation to artefacts, the archaeological context and the architecture it is possible to gain a comprehensive and small-scale insight into the lives of the inhabitants. These demonstrate that Göbekli Tepe was not a rigid place, created, inhabited and abandoned according to particular prescriptions (some of which are tied to contemporary Western notions of a sacred place), but a dynamically changing, living place that contained multiple facets of habitats.

### 3 LIFE THROUGH THE GEOCHEMICAL LENS: A STUDY OF THE USE OF SPACE IN A MIDDLE-IRON AGE HOUSE IN NORTHWEST WALES

**Abstract author(s):** George, Nebu (Bangor University)

**Abstract format:** Oral

Excavations at the Late Bronze Age- Middle Iron Age bivallate enclosed site at Meillionydd, Rhiw, Northwest Wales revealed a stone roundhouse that was built into the outer bank and faced the adjacent entrance passage of the site. The floor of this roundhouse was analysed for fourteen chemical elements using a Total X-ray Fluorescence Spectrometer to identify the use of various areas within the house and thus, get ideas of the organisation of space within. The analysis revealed a central-peripheral and a front-back division of space within the house, suggesting certain areas were designated for specific functions. This study also identified partitions, potential limits of various areas, and gave a better idea of specific daily functions that happened. In this way, established the utility of geochemical anal-

yses of roundhouse floors at a site that lacked any significant number of artefacts. Furthermore, this study also helped in checking the compatibility of this roundhouse with the models for the use of space within roundhouses suggested previously in British prehistoric studies.

#### 4 **PORTABLE X-RAY FLUORESCENCE (PXRF) ANALYSIS ON THE EARLY MEDIEVAL MOUNTAIN HUT AT BUSA DELLE VETTE, BELLUNO, ITALIAN ALPS**

**Abstract author(s):** Armigliato, Alessandro - Carrer, Francesco (Newcastle University) - Cavulli, Fabio (University of Naples Federico II)

**Abstract format:** Oral

Recent studies have proved portable X-Ray fluorescence (pXRF) analysis to be a powerful tool to detect invisible anthropogenic traces in archaeological soils. Still not widely applied on sediments, this technique, combined with elemental heat visualisation, has the potential to increase our understanding of past human activities. This paper presents the first results of the intra-site pXRF analysis of a high-altitude archaeological context. The principal objective of this research is to investigate the potential elemental spatial variation across the excavated area and assess whether this variation supported hypotheses about the existence and spatial patterning of specific activity areas. Archaeological soil samples were collected from all the stratigraphic units during the 2018 archaeological excavation of the Early Medieval mountain hut at Busa delle Vette, Belluno, Italian Alps (1850 m asl). Selected samples were analysed following the established ex-situ analytical protocol recently developed (Williams et al. 2020). Data were then processed and, based on their occurrence and concentrations, visualized using elemental heat maps. Machine learning methods (like Principal Component Analysis) and spatial statistics were combined to explore the spatial organisation of the outcomes. The main elemental concentrations were assessed and interpreted according to the associated archaeological contexts. The findings successfully contributed to a better understanding of the activities carried out at the site, showing how the integration of geochemical analysis with spatial and statistical analysis is an appropriate analytical approach to explore and assist archaeological interpretations of space.

#### 5 **COMPARING SOIL GEOCHEMISTRY AND ANTHROPOGENIC PATTERNS OF BUILDINGS OF DIFFERENT FUNCTIONS AND SOCIAL ROLES ON THE ÅLAND ISLANDS, FINLAND**

**Abstract author(s):** Ilves, Kristin - Holmqvist, Elisabeth (University of Helsinki)

**Abstract format:** Oral

In our presentation, we report on results of a pilot study in which archaeological soils were sampled during small-scale field school excavations of two separate Northern European Late Iron Age (550–1050 CE) buildings on the Åland Islands, Finland. Systematic and targeted feature sampling strategies were applied to collect 190 samples, analysed via energy dispersive X-ray fluorescence spectrometry (ED-XRF). We aimed to i) contribute to and supplement the archaeological identification of floor/activity levels based on vertical and horizontal geochemical anomalies; ii) compare the anthropogenic activity signals between the buildings, and discuss the implications for the overall interpretation; and iii) test the feasibility of a rapid and cost-efficient ex-situ analytical strategy for geochemical characterization of archaeological soils. The results, which correlate with and expand upon the archaeological findings, reveal multiple floor and event layers and pinpoint activity-areas. The anthropogenic signals detected from the two houses were markedly different; one was associated with intense domestic use, while the other was probably used more sporadically, perhaps during ceremonial activities.

#### 6 **MODELLING MERCURY BEHAVIOUR IN POST-ROMAN INHUMATIONS AND OCCUPATIONAL SURFACES.**

**Abstract author(s):** Álvarez Fernández, Noemi - Martínez Cortizas, Antonio (CRETUS-EcoPast GI-1553, Facultade de Bioloxía, Universidade de Santiago de Compostela) - López Costas, Olalla (EcoPast GI-1553-CRETUS, Arqueoloxía, Facultade de Xeografía e Historia, Universidade de Santiago de Compostela; Archaeological Research Laboratory, Stockholm University; Laboratorio de Antropología Física, Facultad de Medicina, Universidad de Granada)

**Abstract format:** Oral

It is well known that occupation soils are usually enriched in chemical elements (e.g., phosphorous), depending on the activities developed on them. Among occupational surfaces, necropolises and other sites with funerary function have been scarcely approached. However, funerary deposits can be enriched with specific elements with an important impact due to their potential toxicity, as mercury and lead. Human activities, such as mining and metallurgy, released metals to the environment which were incorporated into human bodies by different routes (inhalation, intake, etc.). After inhumation, when bodies decompose, the metals are released to the soil. Although the necropolis area may change in function over time, element accumulation may persist. To test this hypothesis, we sampled two post-Roman (AD 5th-6th centuries; n= 46) burials from A Lanzada site (NW Spain), together with a pedo-sedimentary sequence (n= 34) from the occupational area. All samples were analysed by XRF (23 elements) and using a mercury analyser. We aimed to understand if burial soils could be mercury enriched, if this enrichment was higher than in the



occupational soil, and how the accumulation happened inside and outside the burials. Samples located inside the burials were 10-fold enriched compared to the occupational soil. In both areas, mercury was found to concentrate in the fine fractions (silt+clay). PLS-Regression modelling allowed to identify three drivers controlling mercury distribution: i) inside/outside burials; ii) differences between the buried individuals; and iii) micro-scale variability – somewhat related to proximity to the individuals' thoracic area. According to our results, soil/sediments inside burials can be significantly enriched in mercury compared to nearby occupational soils at the same necropolis. This fact should be taken into account when former funerary areas underwent new later uses, especially if it was/is agrarian.

## 7 PXRf AND GEOSTATISTICS APPLIED TO OCCUPATION SURFACES TO EXPAND THE ARCHAEOLOGICAL RECORD AT SOUTHERN AFRICAN 'STONE WALLED SITES' (14TH-19TH CE)

**Abstract author(s):** Biagetti, Stefano (CaSEs Research Group, Department of Humanities, Universitat Pompeu Fabra; School of Geography, Archaeology and Environmental Studies - GAES, University of the Witwatersrand) - Alcaina-Mateos, Jonas - Ruiz-Giralt, Abel (CaSEs Research Group, Department of Humanities, Universitat Pompeu Fabra) - Lancelotti, Carla (CaSEs Research Group, Department of Humanities, Universitat Pompeu Fabra; ICREA) - Groenewald, Patricia (Department of Archaeology, University of Cape Town) - Ibañez-Insa, Jordi (Geosciences Barcelona - GEO3BCN, CSIC) - Gur-Arieh, Shira (Ludwig-Maximilians-Universität München) - Morton, Fred (Department of History, University of Botswana) - Merlo, Stefania (McDonald Institute for Archaeological Research, University of Cambridge)

**Abstract format:** Oral

'Stone Walled Sites' (SWS) are one of the most recognizable feature in southern African Late Iron Age landscapes. Showing considerable variability in size and form, these settlements are named after the dry-stone wall structures that characterize them. SWS were occupied by various Bantu-speaking agro-pastoral communities between the 14th and 19th century CE. Nowadays, numerous SWS are attested in the whole of southern Africa between the Orange and the Zambezi rivers. In this paper, we present the results of the use of portable X-ray fluorescence analysis (pXRF) to perform multi-element, chemical analysis to anthropogenic sediments from occupation surfaces, coupled with multivariate, exploratory statistics and geostatistical modelling at Seoke, a southern African SWS of historical age (18th century CE). Our research demonstrates the potential of pXRF combined with geostatistics to understand the use of space beyond the visible archaeological evidence, shedding light on the possible functions of domestic and livestock areas. Although much prospecting remains, the results herein presented can be used to design surveys and excavations in other archaeological surfaces or sites.

## 8 ARCHAEOLOGICAL CONTEXT AND REMOTE SENSING IN THE SOUTH OF IBERIAN PENINSULA: CORRELATIONS AND FIRST RESULTS

**Abstract author(s):** Villalón-Torres, David (Instituto Andaluz del Patrimonio Histórico) - Montorio-Llovería, Raquel (Universidad de Zaragoza) - Cuenca-García, Carmen (NTNU University Museum) - García-Viñas, Esteban - Gómez-Morón, Auxiliadora (Instituto Andaluz del Patrimonio Histórico) - Martín-Valero, M<sup>a</sup> Jesús - Villar-Navarro, Mercedes (Universidad de Sevilla) - González-Campos, Yolanda - Bernáldez-Sánchez, Eloísa (Instituto Andaluz del Patrimonio Histórico)

**Abstract format:** Oral

In this paper we present preliminary results about the correlation between anthropogenic chemical elements and remote sensing from two archaeological sites of Iberian south: Tejada la Vieja (Escacena del Campo) and Turóbriga/arucci (Aroche).

During our research we took a series of field samples of both the archaeological and surrounding non-archaeological soil to analyze its composition by various methods of edaphological chemical analysis. On the other hand, we carry out measurements with a field spectroradiometer to compare the spectral signatures and look for correlations with hyperspectral satellite images of the area on the same date, from PRISMA satellite platform. The objective is to identify the presence of these elements of anthropogenic origin in archaeological contexts and create a catalog of spectral signatures based on the soil characteristics of the area in which the deposits are located.

The measurements performed using hyperspectral imaging were contrasted with indexes obtained at several different stages of natural vegetation cover development and applied in a supervised classification experiment. A machine learning algorithm was developed to classify pixels based on P presence variants. In this sense we present whether it is feasible to analyze the occupation surfaces and the use of space in archaeological contexts through the correlations between the biochemical constituents of the vegetation cover and the presence of anthropogenic elements on the surface.

Our aim is to explore the possibilities of remote sensing technics with hyperspectral images to identify chemical elements on the surface that can be related to an anthropogenic origin in archaeological contexts. One of the elements that we are especially interested in is phosphorus, but we are also exploring the possibilities of other elements whose presence may also be linked to human activity, such as potassium, rubidium, thorium, cesium or strontium.

## BUILDING IN THE DETAIL: MICRO-STRATIGRAPHIC APPROACHES TO UNDERSTANDING NEOLITHIC STRUCTURES AT THE NESS OF BRODGAR, ORKNEY

**Abstract author(s):** McKenzie, Jo (Archaeological Sciences, University of Bradford) - Card, Nick (Archaeology Institute, University of the Highlands and Islands; The Ness of Brodgar Trust)

**Abstract format:** Oral

Since 2004, excavations at the Ness of Brodgar, within the 'Heart of Neolithic Orkney' World Heritage Site, have revealed a large complex of monumental Neolithic structures spanning over a millennium of activity. These show evidence for complex biographies potentially reflecting both ritual and domestic activity. Excellent preservation of in-situ deposit sequences comprising floor surfaces and occupation deposits are complemented by rich artefact assemblages, unique artwork, and well-preserved environmental materials. An extensive programme of micromorphological sampling has complemented the excavation and environmental sampling strategy within individual structures, with the aim of addressing questions of building function and significance, settlement organisation, the use of interior space, and patterns of resource utilisation.

This paper discusses the results of an interim, targeted micromorphological analysis undertaken for the project's first publication phase. Thin section sequences from key areas and features within four of the core structures (Structures 1, 8, 12 and 14) illustrate the extensive and wide-ranging dataset obtainable through micromorphology at this richly preserved site: detail on fuel types and patterning in conjunction with hearth placements within the buildings, the textural makeup of internal 'floor' surfaces and their comparability between structures, the composition and anthropogenic content of (often very fine) deposits within areas of special interest or unusual construction.

Invaluable in its own right as a uniquely powerful method of high-resolution data collection, the presence of a strongly multi-disciplinary team at Ness has also enabled micromorphological data to contribute to integrated studies into wider questions of how the Ness complex was built, used and what it represented. This presentation concludes with an introduction to interdisciplinary avenues of investigation such as preservation and distribution of botanical materials and environmental resources at different scales, complementary foci for micromorphological and other geochemical techniques, and researching the significance of geological typologies to the people of the Ness.

## THE MICROMORPHOLOGY AND GEOCHEMISTRY OF EARTHEN HOUSE FLOORS AT OLYNTHOS, GREECE

**Abstract author(s):** Schumacher, Mara (Newcastle University)

**Abstract format:** Oral

This research focuses on the geoarchaeological investigation of floors from a domestic context at the classical site of Olynthos, Greece. Over 100 residential buildings and associated find assemblages were uncovered which is why Olynthos has become one of the most important sites for the investigation of household organization in classical Greece. The domestic buildings revealed different floor types ranging from simple beaten earth floors to elaborate mosaic floors that convey varying functional or representative purposes. While the elaborately made floors are usually easy to recognize, the identification of earthen floors has found to be problematic. This is primarily due to the burial under a shallow fill which has led to partial disturbance of floors by bioturbation. Another reason is the textural and compositional similarity to overlying fills of decomposed mudbricks walls.

Only by differentiating floors from other earthen deposits, reliable statements about their construction technique and the use and organization of space can be made. A geoarchaeological approach was used to identify house floors at Olynthos. The combination of soil micromorphology and multi-elemental geochemistry allowed a high-resolution characterization of floors and made it possible to distinguish them from other earthen anthropogenic deposits. The results show that earthen floors at Olynthos are primarily associated with general living and working areas while lime plaster floors were commonly encountered in bathing contexts.

The case study is the first to investigate floors from a domestic context in classical Greece using a geoarchaeological approach. The research demonstrates that geoarchaeological techniques can contribute to the identification of earthen floors that would have not been recognized through excavation alone. By locating different floor types within the house, insights into technological and behavioural practices in the domestic sphere can be gained that may carry wider economic and socio-cultural inferences.

## SITE FORMATION PROCESSES OF THE MIDDLE PALAEOLITHIC CAVE SITE OF ARARAT-1, ARMENIAN HIGHLANDS: A GEOARCHAEOLOGICAL APPROACH

**Abstract author(s):** Sherriff, Jenni (Department of Geography, King's College London) - Rogall, Dominik (The Institute of Archaeology, The Hebrew University of Jerusalem) - Lauer, Tobias (Max Planck Institute for Evolutionary Anthropology – Department of Human Evolution, Leipzig; Terrestrial Sedimentology Research Group, Eberhard Karls University of Tübingen) - Fewlass, Helen (The Francis Crick Institute, London) - Vettefe, Delphine (Histoire Naturelle de l'Homme Préhistorique - HNHP, UMR 7194, Muséum national d'Histoire naturelle - MNHN, Homme et Environnement, Equipe Nomade, CNRS, Institut de Paléontologie Humaine, Sorbonne Universités; Dipartimento degli Studi Umanistici, Sezione di Scienze Preistoriche e Antropologiche, Università degli Studi di Ferrara; Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas, Universidad de Cantabria) - Glauberman, Phil (Institute of Archaeology and Ethnography, National Academy of Sciences of the Republic of Armenia; Department of Early Prehistory and Quaternary Ecology, University of Tübingen) - Knul, Monika (Department of Archaeology, Anthropology and Geography, University of Winchester) - Karambaglidis, Teo (The Institute of Archaeology, The Hebrew University of Jerusalem; Department of Geological and Mining Engineering, University of Castilla-La Mancha) - Gasparyan, Boris (Institute of Archaeology and Ethnography, National Academy of Sciences of the Republic of Armenia) - Malinsky-Buller, Ariel (The Institute of Archaeology, The Hebrew University of Jerusalem)

**Abstract format:** Oral

The Middle Palaeolithic (MP) archaeological assemblage recently recovered from Ararat-1 cave, north-eastern Armenian Highlands is central to improving our understanding of Middle to Upper Palaeolithic cultural shifts and environmental change in SW Asia during Marine Oxygen Isotope Stage 3. This is due to the fact an occupation horizon containing a rich stone tool assemblage was found in close association with a diverse faunal assemblage and excellent preservation of palaeobotanical remains. However, as with many cave sequences, Ararat-1 has been subject to syn- and post-depositional modification by both chemical and physical agents.

Here, we present the first results of combined sedimentological, micromorphological and chronological (IRSL and <sup>14</sup>C) study of the Ararat-1 sequence. Through this work, we have identified the cave deposits to be principally clastic in origin, derived from both exogenic (aeolian) and endogenic (entrance talus and cave wall/roof collapse) sources. We demonstrate that the primary phase of sedimentation in the cave took place between 52–32 ka with the main MP occupation horizon currently constrained to 42–35 ka. During, and following, this interval were several phases of syn- and post-depositional modification of the strata through physical (resuspension of aeolian material and bioturbation), chemical (carbonate precipitation and phosphate mineralisation) and anthropogenic processes. Through discussion of the micromorphological and sedimentological evidence for post-depositional modification of the Ararat-1 strata, we highlight what these processes can tell us about environmental conditions at the Ararat-1 locale during and after primary sedimentation, and evaluate the impacts of these processes on the stratigraphic integrity of the MP occupation horizon. Our work at Ararat-1 demonstrates some of the challenges and opportunities in the reconstruction of Palaeolithic occupation surfaces and site formation processes in cave environments.

## OCCUPATION SURFACES AND USE OF SPACE AT NEOLITHIC SVINJARIČKA ČUKA: A PILOT STUDY USING SOIL MICROMORPHOLOGY

**Abstract author(s):** Webster, Lyndelle - Horejs, Barbara (Austrian Archaeological Institute, Austrian Academy of Sciences) - Cereda, Susanna (University of Innsbruck)

**Abstract format:** Oral

Soil micromorphology was recently introduced at the site of Svinjarička Čuka in southern Serbia to facilitate understanding of its early to middle Neolithic occupation horizons at a micro-scale. The excavation forms part of the FWF-funded NEOTECH ("Neolithic technological trajectories in the Balkans") project carried out by the Austrian and Serbian Archaeological Institutes and seeks to understand the Neolithisation process during the 6th millennium BC along the Axios-Vardar-Morava river system – one of the main communication routes between the Aegean and the Danube.

Using soil micromorphology, we hope to shed light on the construction, function and use of the early built environments that characterise the Starčevo horizon and the beginnings of the Neolithic with sedentary life ways on the central Balkans. This paper will present the results of our initial pilot study focusing on surfaces that directly underlie accumulations of pottery, finds, and burnt daub identified as the remains of a 'Starčevo hut'.

### THE MICRO-STRATIGRAPHY OF CHALCOLITHIC TELLS FROM SOUTHEASTERN ROMANIA. CONSTRUCTION TECHNIQUES, RAW MATERIALS AND OCCUPATION SURFACES

**Abstract author(s):** Haita, Constantin (National Museum of Romania History)

**Abstract format:** Oral

The Chalcolithic tell type settlements from south-eastern Romania, specific to Kodjadermen - Gumelnița - Karanovo VI cultural complex, are characterized by a well-defined surface (marked often by delimitation structures), circular or elongated shape (up to 200 m diameter), succession of many layers of construction, destruction and rebuilding (up to 12 meters of anthropic deposits at Hârșova tell) and well-structured area of occupation (built spaces, passage areas, waste zones). These monumental settlements are located in the river valleys – on erosion remnants, alluvial bars or small islands, at the border of the valleys – on edges or prominences of Pleistocene terraces, Lower Holocene terraces, and on the banks of lakes.

The micromorphological analysis, consisting in thin section interpretation, at the microscopic scale, of sediments and soils in undisturbed state, performed on the same principles as the micro-stratigraphic study, allowed the interpretation of the identified sedimentary facies, in terms of mode of formation and anthropic activities.

Our examined situations reflect a variety of specific cases, correlating either with the geomorphological background of the site, the type of archaeological structure or the kind of occupation surface.

The micro-stratigraphy of tell sites from the Lower Danube, located in the Romanian Plain and Dobrogea, bring significant information about the human habitation in Prehistory.

### DOMESTIC LIFE AT THE MICRO-SCALE: A GEOARCHAEOLOGICAL MICROCONTEXTUAL APPROACH TO CERRO DE SAN VICENTE IRON AGE VILLAGE (SALAMANCA, SPAIN)

**Abstract author(s):** Tomé, Laura (Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, Instituto Universitario de Bio-Orgánica “Antonio González”, Universidad de La Laguna; Departamento de Geografía e Historia, UDI Prehistoria, Arqueología e Historia Antigua, Facultad de Geografía e Historia, Universidad de La Laguna) - Iriarte, Eneko (Departamento de Historia, Geografía y Comunicación, Área de Paleontología, Facultad de Humanidades y Comunicación, Universidad de Burgos) - Jambrina-Enríquez, Margarita (Departamento de Biología Animal, Edafología y Geología, Facultad de Ciencias, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, Instituto Universitario de Bio-Orgánica “Antonio González”, Universidad de La Laguna) - Égüez, Natalia (Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, Instituto Universitario de Bio-Orgánica “Antonio González”, Universidad de La Laguna; Departamento de Geografía e Historia, UDI Prehistoria, Arqueología e Historia Antigua, Facultad de Geografía e Historia, Universidad de La Laguna) - Herrera-Herrera, Antonio V. (Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, Instituto Universitario de Bio-Orgánica “Antonio González”, Universidad de La Laguna) - Blanco-González, Antonio (Departamento de Prehistoria, Historia Antigua y Arqueología, Área de Prehistoria, Facultad de Geografía e Historia, Universidad de Salamanca) - Mallol, Carolina (Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, Instituto Universitario de Bio-Orgánica “Antonio González”, Universidad de La Laguna; Departamento de Geografía e Historia, UDI Prehistoria, Arqueología e Historia Antigua, Facultad de Geografía e Historia, Universidad de La Laguna; Interdisciplinary Center for Archaeology and the Evolution of Human Behaviour - ICArEHB, Universidade do Algarve, Campus de Gambelas)

**Abstract format:** Oral

Cerro de San Vicente is an Early Iron Age village (ca. 600 BCE) located in the Northern Plateau of Iberia (Salamanca, Spain). Previous excavations at the site have unearthed the remains of a complex village layout, which include an array of domestic earthen structures: dwellings and other ancillary architectural features of unknown functionality. The aim of this study is to characterize the floors of two of these domestic structures through the combined use of archaeological soil micromorphology, sedimentary lipid biomarker analysis and compound-specific stable isotope analysis of fatty acids as high-resolution geoarchaeological tools for the study of past occupation surfaces. Our preliminary microcontextual results have allowed us to distinguish between floor preparation and earthen floor deposits and to gain sight into each of them. The lipid biomarkers preserved within the floor deposits indicate recurrent input of plant oil of unknown origin. We have also gathered relevant information linked to fuel and residue management in the village. Further research will enhance our knowledge and understanding of domestic space construction and use at the site. This study contributes to the scarce high-resolution, microcontextual dataset of Iron Age contexts in Iberia, and shows the potential of the approach towards its future consolidation.

15

## SPACE ORGANISATION AND ZONE OF ACTIVITIES ON THE EARLY MEDIEVAL HOMESTEAD AT POHANSKO (CZECHIA)

**Abstract author(s):** Prištáková, Michaela (Department of Archaeology and Museology, Faculty of Arts, Masaryk University) - Adameková, Katarína - Peřík, Jan (Department of Geological Sciences, Faculty of Sciences, Masaryk University) - Prokeš, Lubomír (Department of Physics, Chemistry and Vocational Education, Faculty of Education, Masaryk University)

**Abstract format:** Oral

The Early Medieval stronghold Pohansko is archaeologically excavated for more than 60. years, with excavations still ongoing. The central area of the stronghold consists of several homesteads, roads, burial grounds, church and more. So far, a total of seven rectangular or slightly longitudinal homesteads have been excavated and another 12 were recognised by geophysical prospection. The inner structure of the homesteads consists of several archaeological features located mostly along the edge of the homestead, with open space in the middle of the homestead. The homesteads themselves and their internal organisation have not yet been explored in detail.

By geoarchaeological prospection techniques we attempted to identify archaeological structures and thus define the internal spatial organisation of the selected unexcavated homestead and to identify the zones of activities and interpret it in the terms of function. By combining magnetometry, magnetic susceptibility, spatial distribution of the microartefacts and multivariate statistical analysis, we outlined various manifestations of anthropogenic activity. We defined open space in with no detected activity in the middle of the homestead, the potential presence of non-sunken features, waste management at the homestead and non-ferrous metal production and possibly metalworking at or/and close to the homestead.

16

## INVESTIGATING OCCUPATIONAL SURFACES AND ARCHAEOLOGICAL RECORD FORMATION USING GROUND-PENETRATING RADAR AT A MEDIEVAL ANGKORIAN SITE, KOH KER, IN NORTHERN CAMBODIA

**Abstract author(s):** Afforre, Tiago (Flinders University) - Klassen, Sarah (Leiden University)

**Abstract format:** Oral

Cambodia is home to the vast archaeological record of the Khmer Empire, whose capital stood for over 600 years at Angkor. Despite Angkor's dominance, Koh Ker became the center of the empire for a brief period, beginning in 928 AD, during the reign of Jayavarman IV. Besides being the fleeting Capital of the Empire, not much is known about the city, especially its long-term occupation history. This paper reports the ongoing investigations of the Koh Ker Archaeological Project, including the results from several ground-penetrating radar surveys around the main temple complex. In this paper, we highlight some of the challenges posed by a complex palimpsest, in which massive displacements of dirt, moved to manage the water flow of the region, may have covered a whole occupational surface. The ground penetrating radar results led us to revisit some of the features in the site that can be seen at the surface, as registered by a previous lidar survey, triggering new hypotheses for some of the monuments found in the area.

17

## DECIPHERING NEANDERTHAL BEHAVIOURS: AN ARCHAEOSTRATIGRAPHIC AND SPATIAL INTERDISCIPLINARY APPROACH TO A HEARTH-RELATED ASSEMBLAGE FROM ABRIC DEL PASTOR (EASTERN IBERIA)

**Abstract author(s):** Sossa-Ríos, Santiago (Àrea de Prehistòria; Departament de Prehistòria, Arqueologia i Història Antiga; Facultat de Geografia i Història, Universitat de València) - Mayor, Alejandro (Àrea de Prehistòria; Departament de Prehistòria, Arqueologia, Història Antiga, Filologia Llatina i Filologia Grega; Facultat de Filosofia i Lletres, Universitat d'Alacant) - Bencomo, Mariel - Pérez, Leopoldo (Àrea de Prehistòria; Departament de Prehistòria, Arqueologia i Història Antiga; Facultat de Geografia i Història, Universitat de València) - Galván, Bertila (Àrea de Prehistòria; Departamento de Geografía e Historia; Facultad de Humanidades, Universidad de La Laguna) - Mallol, Carolina - Hernández, Cristo (Àrea de Prehistòria; Departamento de Geografía e Historia; Facultad de Humanidades, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers Laboratory; Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna) - Vaquero, Manuel (Àrea de Prehistòria; Departament d'Història i Història de l'Art; Facultat de Lletres, Universitat Rovira i Virgili; Institut Català de Paleoecologia Humana i Evolució Social - IPHES)

**Abstract format:** Oral

Obtaining detailed pictures of Neanderthal occupation dynamics and spatial behaviors is highly dependent on the analytical timescale. In recent years, there has been a shift in Palaeolithic Archaeology from a traditional use of the stratigraphic unit analytical framework to the interdisciplinary application of different techniques to tackle the palimpsest effect and narrow down the timescale (e.g. integrated archaeostratigraphy, spatial analysis, soil micromorphology, lithic and bone refitting). However, cases in which the resulting time resolution enables us to approach Neanderthal behavior at an ethnographic timescale are still scarce. Here, we present archaeostratigraphic data that allowed us to identify a hearth-related assemblage within Abric del Pastor lithostratigraphic unit IVf (Alcoi, Alacant, eastern Iberia). This data was coupled with spatial, petroarchaeological, technological, use-wear and ar-

chaeozoological data to characterize the Neanderthal occupation surface and associated activities. Our results display a low-density accumulation of remains from flintknapping, tool-use and animal processing around a hearth. This work conveys the high potential of interdisciplinary approaches to zoom in time, thus contributing high-resolution analytical frameworks and shedding light on past hunter-gatherer behaviors.

## 241 ARCHAEOLOGY AS STUDY OF THE FUTURE

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Meier, Thomas (Kaete Hamburger Center for Apocalyptic and Post-Apocalyptic Studies, Heidelberg University; Institute for Pre- and Protohistory, Heidelberg University) - Holtorf, Cornelius (Heritage Futures | Archaeology, School of Cultural Sciences, Linnaeus University Kalmar) - Högberg, Anders (School of Cultural Sciences | Archaeology, Faculty of Arts and Humanities, Linnaeus University Kalmar)

**Format:** Session with keynote presentation and discussion

Whereas archaeology's subject matter is the past, postmodern and critical approaches have claimed that all archaeology reflects on the present. However, little attention has been paid to archaeology's potential to explore the future.

Futurology has unlaced the opaque package of "the future" to some degree. Most expectations of the future are based on the assumption that the current system simply continues to run and can be optimized. This assumption satisfies our longing for certainty and forms the basis for technological visions such as geoengineering, but also for cultural heritage. To a certain extent, such developments can be analysed with probabilistic approaches that extend patterns of the past into the future. However, indications that systems could become unstable, chaotic and thus unpredictable in the medium and long term cannot be ignored. For that reason, resilience is required to cope with ruptures and non-linear developments. In the long term, the future may look so completely different from today that we cannot even imagine it. This future is not accessible scientifically and therefore considered the domain of art. But is it?

Archaeologists, who survey the entire human past, see stranger things than almost any other discipline. We are experts in difference as much as in similarity, and it is in our hands to narrate "history": to imagine past lifeworlds from the perspective of today, whether surprisingly different or disappointingly similar. Is archaeology therefore not best placed to think around the unthinkable? To imagine unimagined futures? And to analyse and evaluate the risks, side effects and potentials of such unimaginable futures as our potential futures?

We invite contributions on how archaeology can or already contributes to analytical knowledge or reflexive design of any of these three futures: the optimized, the unpredictable, or the unimagined future.

## ABSTRACTS

### 1 ARCHAEOLOGY IS ABOUT THE FUTURE!

**Abstract author(s):** Meier, Thomas (University of Heidelberg, Kaete Hamburger Center for Apocalyptic and Post-Apocalyptic Studies)

**Abstract format:** Oral

In recent debates the (western) linearity of time is questioned and time starts to collapse in the present: History is made of narratives in and of the present, and the future is fabricated in the present through desires and practices. Epistemologically the pro-gnosis of the future and the post-gnosis of the past converge. Utopian or dystopian futures are conceptualised along imaginations of arcadian or hellish pasts. The apocalyptic tone of post-modernity claims that a post-apocalyptic future will be radically different – while art, popular culture and scientific scenarios draft visions of remarkable continuity and similarity to the present.

When pasts and futures meet in the present and emerge along lines of power, hopes and fears, archaeology must not cling to the illusion of speaking solely about times more or less gone by, but must envisage the contributions it has to make to futurities worth living. Such contributions may differ according to the futures under discussion: The near future is characterised by a high degree of continuity, and we may assume that the opportunities and threats of our uses of the past can be prolonged and evaluated in their future results. The mid future we try to get hold on mainly by probabilistic approaches, which are often based on rather short time series and whose fuzziness and systematic bias is often overlooked. Finally the far future is considered "radically different" and therefore beyond any possible imagination. But is it? The humanities' subject is the human imagination, and archaeology – among other disciplines – is concerned with realisations of such imaginings. Is there a discipline that has seen stranger things than archaeology? Are there things more radically different than the past? Isn't the far future the realm of archaeology where it can best apply its capacities?

## 2 ARCHAEOLOGY IS ALL ABOUT THE FUTURE

**Abstract author(s): Criado-Boado, Felipe (INCIPIT-CSIC)**

**Abstract format: Oral**

Perhaps this is a bit naïve. But there are some of us that share the intimate conviction that Archaeology is magic and we archaeologists are magicians. Archaeology has got a superpower, we are the only ones able to explain how the future (in the long term) comes into existence. We know, for instance, what will happen if a social-oriented solution is not found for climate change (technology alone is not the solution, it is a false solution). Others can guess. But only we can speak about the future from an empirically informed and theoretically bounded perspective. I will emphasize in this contribution that Archaeology should be aware of our capacities to reconstruct and predict the future pasts or, indeed, the past futures. This special expertise could and should be mobilized by archaeologists to play a stronger role in present day social and political arenas, something that Archaeology lacks in spite of the strong capabilities we hold, between all the other Human and Social Sciences, to speak directly to society about our current (and future!) problems. Moreover, this ability to put mind in the future, also gives us a special sort of retroactive prospective sight that, however, we usually do not use. It seems like a word game, but archaeological intelligence gives us the capacity to inform and take tomorrow decisions looking at what will happen the day after tomorrow.

## 3 ARCHAEOLOGIES OF UNIMAGINED FUTURES

**Abstract author(s): Wollentz, Gustav (The Nordic Centre of Heritage Learning and Creativity)**

**Abstract format: Oral**

This paper will explore two ways that archaeology can expand the horizon of possible, plausible, probable, and desirable futures, including futures previously unimagined. The paper will also elaborate on why archaeology would benefit by increasing Futures Literacy, that is, increasing its capabilities to understand how futures affect the present and how to act consciously today to shape a future different than the present. Most of the paper will present insights from ongoing projects where the results are still being gathered and analyzed, and it will therefore be explorative in character. The paper will investigate two different - but interrelated - ways of engaging with the future: 1). Strategic foresight as an exercise to be better prepared at facing unexpected futures for archaeology, and 2). Tools and methods to expand the horizon of futures already present today, influencing the potential for archaeology to make change. Regarding Strategic foresight, I will build upon my own experiences from carrying out Strategic foresight for ICCROM and discuss both promising possibilities and possible pitfalls in applying foresight in archaeology. Regarding expanding the horizon of futures present today, I will draw upon my fieldwork in Former Yugoslavia as well as in Sweden. Here, I will discuss how archaeologists can become better adapt at co-creating futures together with communities, and the possible implications of such work.

## 4 ARCHAEOLOGY AND CULTURE HERITAGE AS FUTURE-MAKING PRACTICES IN THE CONTEXT OF CLIMATE CHANGE (1)

**Abstract author(s): Högberg, Anders (Linnaeus University; Palaeo-Research Institute, University of Johannesburg) - Holtorf, Cornelius (Linnaeus University)**

**Abstract format: Oral**

Archaeology produces cultural heritage which evokes deep-seated collective identities, emotions and values affecting the very fabric of modern societies. How such values play out varies and may in practice result in both desirable and undesirable outcomes. For example, in the context of climate change, archaeology's work with cultural heritage may have two different consequences:

- perceived changes and threats to cultural heritage can trigger people to support actions to mitigate climate change, or
- the impact of climate change can affect perceptions and uses of cultural heritage which may encourage prejudice and discrimination and fuel conflicts between groups over power and the right to citizenship or territory – threatening human rights as well as socio-cultural cohesion and resilience.

The most important question is to what extent the historical legacy which we construct and leave behind as cultural heritage will come to benefit future generations. This is the realm of 'heritage futures', which we introduce in this paper. Heritage futures is concerned with the roles of heritage in managing the relations between present and future societies.

## 5 ARCHAEOLOGY AND CULTURE HERITAGE AS FUTURE-MAKING PRACTICES IN THE CONTEXT OF CLIMATE CHANGE (2)

**Abstract author(s):** Holtorf, Cornelius - Högberg, Anders (Linnaeus University)

**Abstract format:** Oral

This paper applies the concept of heritage futures practically. In the context of climate change, asking how cultural heritage will come to benefit future generations means we need to become aware of our anticipatory assumptions about the future while also developing alternative scenarios of the future. We will present some ideas of how cultural heritage may contribute to a resilient society, social sustainability, and social cohesion.

Normally, the cultural heritage sector assumes that the cultural heritage we presently value will be valued in the future too, and therefore it must be preserved from threats such as rising sea levels. Alternative ways of imagining futures and future values of cultural heritage will suggest different heritage policies and priorities. What happens in relation to cultural heritage and the stories archaeologists tell people about their pasts (a) when we anticipate a world that thrives not on concepts rooted in Romantic Nationalism but on global solidarity between people, worldwide collaboration, and trust both within and between societies? (b) when their social and cultural resilience is built no longer on curating timeless continuities but on learning to adapt and transform to new conditions? In this paper, we will push the envelope a little and give a glimpse of various options for archaeology and cultural heritage management concerning the wellbeing of future societies that deserve to be explored in more detail today.

## 6 ARCHAEOLOGY AND ARTIFICIAL INTELLIGENCE. RELATIONS AND DEPENDENCES

**Abstract author(s):** Dzbynski, Aleksander (University of Warsaw; Zurich University)

**Abstract format:** Oral

One of the unimagined and unpredictable developments in the modern world is the issue of the thinking tools or thinking machines i.e. the issue of Artificial Intelligence. Some would even say that this is the central problem of our civilization. It needs to be stressed that thinking tools, machines and cyborgs are deeply interwoven with archaeology. Firstly, when looking at prehistory we find numerous examples of them in the European Bronze Age mythology exposed by Homer. Secondly, when looking at archaeological theory we find in the core of the middle range theory of Lewis Binford an approach according to which the irrational human factor could be replaced by an universal algorithm in the future. It was the processual approach too that elevated archaeologists quite specifically up to a certain stage from which they could look both at the past and at the future in one universal perspective. It seems therefore that archaeology is well equipped to discuss the future although per definitionem it's about the past. There is one thing, however, that sets limits for archaeology to predict the future. It is the issue of Artificial Intelligence itself. If Artificial Intelligence indistinguishable from human thought is possible it could not only replace archaeologists but it will overturn the course of human history. In the presentation I would like to address questions about possibilities of replacement the archaeologists by Artificial Intelligence and what does it mean for the archaeology at all?

## 7 ARCHAEOLOGISTS AS TIME TRAVELERS – CREATING UNIMAGINED FUTURES IN THE AGE OF THE ANTHROPOCENE

**Abstract author(s):** Schönicke, Julia (Institut für Vorderasiatische Archäologie, Freie Universität Berlin)

**Abstract format:** Oral

"I am a time traveler – I point and laugh at archaeologists!" said Doctor Who when meeting a group of space archaeologists on an extraterrestrial planet. For us it is not that easy (yet). Every archaeologist has surely asked themselves at some point how future researchers will excavate and perceive modern remains.

Since the Neolithization, humans have relentlessly reshaped earth to suit their needs, a process that culminated in the industrialization in the 19th century and the test detonation of the first nuclear weapon in 1945. Human impact on the planet became so severe that the (not undisputed) term "Anthropocene" has been introduced.

Future archaeologists will have to deal with relics of unknown dimensions. Repositories to store transuranic radioactive waste must be equipped with warning systems for future generations. The example of the Waste Isolation Pilot Plant (WIPP) in New Mexico demonstrates how a working group of anthropologists, archaeologists, linguists, futurologists, science fiction writers and material scientists is developing a warning system, both architecturally and symbolically, that must last for at least 10.000 years. Just recently, archaeology has left the terrestrial sphere with the International Space Station Archaeological Project (ISSAP), that studies the crew of the ISS as a "microsociety in a miniworld" which aims to have a positive impact on future space missions. Decisions about which ruins to preserve or to demolish shape the image that future people will have of today's societies. Increasing tourism will multiply the amount of (micro-) plastic waste and excavation infrastructure has irreversible effects on ancient stratigraphy adding an anthropocenic horizon to the biography of a site.

The talk aims to unveil the potential of archaeological methods for the exploration of futures but also critically reflects our present impact on sites and how they are being transformed by our actions.



## 8 FUTURE SEASCAPES: SOME REFLECTIONS ON MARITIME HERITAGE

**Abstract author(s):** Albero Santacreu, Daniel - Domínguez García, Ariana (University of the Balearic Islands)

**Abstract format:** Oral

Maritime heritage is often related to a romantic and idealized past loaded with a strong sense of nostalgia. As it can be seen in many maritime museums, there is usually a significant disconnection between the reinvented past that is represented in these heritage spaces and the problems that characterize 21st century society.

In this presentation, we seek to promote some reflection in order to overcome this biased and disconnected viewpoint regarding our relationship with maritime spaces. To this aim, we will focus on certain phenomena widely recorded in many regions of the Western Mediterranean and we will explore the benefits of their potential patrimonialization. In addition, we will reflect on how autoarchaeoethnography and the concept of "New Maritimity" can be two key tools from which to conduct the analysis of some significant phenomena present in our current and (presumably) future seascapes: mass tourism, development of privatopias, coastal gentrification, loss of identity and destruction of the maritime-coastal landscape.

Imagining the maritime heritage of the future can allow us to reveal some problems that have great social significance -such as those related to the phenomena mentioned before- and to reflect on them. These phenomena are inherent to our present, but also go beyond it and mark the path that will lead us to our future. In our opinion, reflecting on these "maritime present futures" is crucial, as it can help us to generate alternative unexplored ways. Furthermore, addressing the maritime heritage of the future can help us to solve most of the problems of maritime museums in the present, such as the disconnection between the museographic discourses and people's actual problems and experiences.

## 9 ARCHAEOLOGY AS AN IMPETUS FOR ARCHITECTURAL DESIGN

**Abstract author(s):** Lengyel, Dominik - Toulouse, Catherine (BTU Brandenburg University of Technology Cottbus-Senftenberg)

**Abstract format:** Oral

Archaeology is the basis for the future, but not only in archaeology, but in a very special way for a discipline that usually operates exclusively in the future: architecture, and in particular architectural design. We explicitly do not mean building history or historical building research, but expressly architectural design directed towards the future. For even if one regards design as a purely creative process, it is nonetheless based on experience. Design creates expectations, but it also needs assumptions about the needs of the future that go beyond optimising the here and now. In this respect, even this design of the future cannot offer certainty, just as archaeology cannot offer certainty about the past. It is precisely at this point that the two disciplines come together. And just as architectural design is able to translate uncertain knowledge in archaeology into visual design scientifically adequately, i.e. with as little speculation as possible, designers see strange things in it, specifically potential for future design. The tension between difference and similarity can be directly transposed to architectural compositions. Thus archaeology is the basis for a reflexive design in architecture, made visible by our method of Visualisation of Uncertainty.

The presentation aims to demonstrate and illustrate this method by several projects developed by the authors in cooperation with archaeological research institutions:

- Cologne Cathedral and its Predecessors (by order of and exhibited in Cologne Cathedral),
- Bern Minster – its first century (by order of and published by Bern Minster Foundation)
- The Metropolis of Pergamon (within the German Research Fund Excellence Cluster TOPOI),
- The Palatine Palaces in Rome (by order of the German Archaeological Institute, both latter exhibited in the Pergamon Museum Berlin),
- The Ideal Church of Julius Echter (by order of the Martin von Wagner Museum in the Würzburg Residence).

## 10 DOES THIS FIND TRANSFORM THE FUTURE? TAKING CARE FOR WHAT WE ENCOUNTER AT THE EDGE OF THE TROWEL

**Abstract author(s):** Waldhart, Elisabeth (Department of Archaeologies, University of Innsbruck)

**Abstract format:** Oral

The encounter of the previously unknown can be seen as an everyday practice at excavation sites, and a key-experience in archaeology. When working on site this encounter often sparks interest, resulting in engagement with the past. This sparks speculative thinking about potential pasts and futures. What can we learn from these affections about thinking of and dealing with unpredictable futures?

The "afterlife" of the discovery of a 17th century burial in a rural area is taken as a case study to examine encounters between archaeological finds, archaeologists, past humans, and a local community. The unusual place and selection of grave goods raised questions on their interpretation. But the unexpected discovery and its materiality also led to further decisions: How to care well for fragile findings, human remains and the biography of this person?

And who is caring about these lively things? With ongoing investigations, the site becomes a place of concern. It demands practices of care – documentation, conservation, narrating – that are important to remain responsible for the becoming of the burial. Various interests of the local community led to the narrative and presentation about this person getting out of control.

Taking seriously the encounters with unpredictable actors in the field (being troubled by them and troubling them) and the affections involved in caring about them and their futures, might be a way to explore how archaeology can contribute to discourses of unstable futures. As a material action, care might offer a specific approach to possible futures and their challenges. By slow and often repetitive tasks, archaeological work is providing different visions of futures where the maintenance of human-thing relationships is central. Taking the notion of care as an ethically and politically charged act, it can be explored as a future-making practice in archaeology.

---

243

## COMING BACK TO LIFE: REUSE OF MEDIEVAL BUILDINGS

**Theme:** 2. [Re]integration

**Organisers:** Berryman, Duncan (Centre for Community Archaeology, Queen's University Belfast) - Bouwmeester, Jeroen (Cultural Heritage Agency, Netherlands) - Patrick-Dawson, Laura (School of Natural and Built Environment, Queen's University Belfast) - Huggon, Martin (Bishop Grosseteste University) - Kerr, Sarah (School of Culture and Society, Aarhus University)

**Format:** Regular session

Legal protection and conservation have allowed many medieval buildings to survive to the present day, but many more have survived by accident through their continued use within urban and rural settings. Even in the Middle Ages we know of buildings being repurposed, moved, or recycled. The lifespan of a building was greatly increased when it was repurposed. Rural halls may have decayed and been converted to barns or animal houses, while sturdy timbers were recycled into new constructions or extensions to existing buildings. Today, large stone barns are often converted into holiday accommodation. Clearly the reuse and reintegration of old buildings is important in today's world, with new build making a massive contribution to climate change. Thus the study of medieval recycling and the modern reuse of buildings has a lot to contribute to our efforts to reduce greenhouse gas emissions and pollution.

This session seeks to explore the reuse of medieval buildings across Europe through two main strands - reuse in the medieval period and reuse in the modern period. Some of the topics we would like to cover include:

- medieval adaptation of buildings
- medieval recycling of building materials
- modern conversions of medieval buildings
- modern applications of medieval building techniques
- issues around the conservation of medieval buildings.

## ABSTRACTS

### 1 PROFANE INTERLUDES – EARLY AND LATE MODERN REUSE OF MEDIEVAL CHURCHES IN WESTERN SWEDEN

**Abstract author(s):** Gullbrandsson, Robin (Västergötland's Museum, Skara; Department of Conservation, University of Gothenburg)

**Abstract format:** Oral

The extent of medieval stone buildings in Western Sweden is apart from the churches very limited, since wood was historically the preferred building material. In general all preserved medieval stone churches in Sweden are still in use for their original purpose and have a strong protection by law. But some of these were under a part of their post Reformation existence used for other purposes, ranging from schools and hospitals to grain storage and museums. True, the church buildings had as the common property of the parish historically been used simultaneously for profane purposes such as storage in towers and attics. The reorganisation of the parish structure, first after the Reformation in the 16th century, but mainly in the 19th century, resulted in many medieval churches in Western Sweden becoming either superfluous or regarded as too small, too unmodern and "papist", too uncomfortable, leading to their demolition in favour of new churches. But some medieval churches were spared, since they got a new use by nobility, parishioners or associations. The reuses, its reasons, effects, actors and motives were diverse, in many cases leaving the historical substance more untouched than in those medieval churches that stayed in use as sacral buildings. In the 20th century most of them got reinstated as places of worship after careful restorations, reflecting the growing interest in conservation and the establishment of the medieval parish churches as central elements in the building of a Swedish national heritage. This paper will reflect over these "interludes" with examples from Western Sweden.

## 2 AWAY FROM GOD, BACK TO LIFE: A NEW CHANCE FOR MEDIEVAL CHURCHES

**Abstract author(s):** Cechura, Marín (Museum of West Bohemia, Pilsen)

**Abstract format:** Oral

Churches belonged to the most important parts of social life and cultural landscape during the Middle Ages and the modern era. Some churches have been demolished, others have survived in the form of more or less preserved ruins. Many churches have been rebuilt and transformed for various profane purposes. The transformations took place in the Middle Ages, in the modern period and during the 20th century as well. Almost 700 churches have disappeared in Bohemia, which represents about 20% of the original number.

Surprisingly, only a few churches disappeared during the Middle Ages, e.g. during war events (Hussite Wars, Thirty Years' War). A great intensity of transformation of churches occurred at the end of the 18th century, in connection with the state and church reforms of Emperor Joseph II. Redundant churches were sold at auctions for building materials or for irreversible rebuilding. Another period of transformation of churches occurred after 1948, when the predominant reasons were mainly political and ideological.

The presentation describes the most important circumstances in which churches were destroyed and transformed, and uses examples from the Czech Republic to present typical examples of the new functions of medieval buildings - dwellings, factories, hunting lodges, warehouses, etc. The current state of conservation and protection of these buildings is also presented.

## 3 MEDIEVAL IRISH ROUND TOWERS: EXPLORING LIFESPAN, MAINTENANCE AND ADAPTATION THROUGH RADIOCARBON DATING OF LIME MORTARS

**Abstract author(s):** Barrett, Gerard - Allen, Kerry - Reimer, Paula (Queen's University Belfast)

**Abstract format:** Oral

Round towers are iconic monastic structures from the medieval period in Ireland. Freestanding, cylindrical, and often standing in excess of 20m in height, their purpose, period of construction, and duration of use are poorly understood. Recent efforts to radiocarbon date the lime mortar from several towers suggest they were built from the 9th to the 13th centuries AD, extending the range previously considered likely based on annalistic records alone. In parallel with this long period of fabrication, dating evidence also supports the idea that individual towers were used and maintained across several centuries. This is manifested in reworking, for example repointing or plastering, that shows up through variation in radiocarbon dates from mortar originating in different parts of a tower. It is also evidenced in modernizing efforts, for example the adoption of Romanesque style doorways or cornices into earlier structures, again demonstrated by radiocarbon dates that pre-date stylistically dated architectural features that may have been added later.

Dating work has also revealed the extensive adaptation and reuse of one of these structures as a windmill in the late medieval period to the extent that knowledge of its original use as a round tower had been lost and could only be confirmed through scientific analysis. The quality of construction and technological understanding of their builders is apparent in the survival of approximately seventy examples of these towers. It is hypothesized that on account of their robustness, many more are likely to have survived into later periods and, like the windmill, have been adapted for alternative use so extensively that their original purpose has been forgotten.

## 4 REUSE AS RESILIENCE: THE CASE OF THE FOUR MANOR HOUSES

**Abstract author(s):** Kerr, Sarah (Aarhus University)

**Abstract format:** Oral

This paper examines the evidence for the reuse of select materials in late medieval and early modern Denmark. It explores the case studies of Nørre Vosborg, a site comprising a number of late medieval manor houses, describing the architecture and archaeological remains from surveys and excavations. It is argued that Nørre Vosborg 1, which remains only as a series of parallel sand banks, was moved at the end of the medieval period. It appears that the bulk of the material was reused and re-established as Nørre Vosborg 3 some 900m inland from its original setting. Similarly, Nørre Vosborg 2, a late medieval manor house owned by a secondary faction of the same family, also was moved. It appears to have been re-built to the south of Nørre Vosborg 3 as is reflected in its name: Sønder Vosborg.

The evidence for moving the manor houses is discussed in the context of climatic anomalies which occurred at that time including a series of storm surges in the sixteenth century, and a particularly violent event in c.1593. It appears that Nørre Vosborg 1 took the full impact of the storm and was all but destroyed whereas 2 was impacted to a lesser degree. The survival of the newer iterations, plus excavations at the original manors, allows examination of what was reused and what was not.

It is suggested that those materials not selected for reuse were not abandoned due to a lack of will to reuse them. Rather it appears that the materials in the lowest floors of Nørre Vosborg 2 were left behind as they remained flooded

when the site was abandoned. This allows contemplation of the pace at which the materials were removed and reused; that is, before the flood waters had fully retreated.

## 5 THE MEDIEVAL AFTERLIFE OF A LONDON OPEN-HALL HOUSE

**Abstract author(s):** French, Katherine (University of Michigan-Dept. of History)

**Abstract format:** Oral

In 1339, John Shorditch, a knight and diplomat in the courts of Edward II and III, and his wife Ellen endowed a chantry in Westminster Abbey with land that they owned in London. The property was located on Wood Street, a few doors north of the parish church of St. Peter's Westcheap. On it was not only an open-hall house, but a wardrobe, a brewhouse, and some shops with solar, probably built against the more substantial walls of the other buildings. John had owned the house since at least 1321, the same year he was sworn onto Edward II's council. In 1345, four of John Shorditch's servants smothered him as he slept, and Westminster Abbey took control of the house and tenement. Using two-hundred years of financial information from Westminster Abbey, this paper looks at the medieval afterlife of the buildings on this property. I argue that the decisions the Abbey made in renovation and altering this property reflected their understanding of London's changing housing market and the business opportunities available in London.

## 6 TO REBUILD OR TO REPAIR: EXTENDING THE LIFE OF AGRICULTURAL BUILDINGS IN MEDIEVAL ENGLAND

**Abstract author(s):** Berryman, Duncan (Centre for Community Archaeology, Queen's University Belfast)

**Abstract format:** Oral

Medieval agricultural buildings have generally been viewed as insubstantial structures that were often replaced. Today, barns are the most common medieval agricultural building to survive and most of those are stone structures. Excavations are believed to show us the ephemeral nature of timber structures, with little more than postholes being visible. However, an analysis of manorial accounts and other estate documents from England indicate that buildings were not regularly replaced. Instead, they were repaired to ensure they continued to stand. Some buildings could have stood for over a century with regular maintenance; in fact, there are many medieval timber-framed houses still standing today. Furthermore, buildings were often recycled, either a standing building was converted to a new function or they were dismantled and used as timber for other structures. This paper will explore the repair and reuse of medieval agricultural buildings and consider why new buildings were constructed. This will show that medieval estate management was often more concerned with preserving the existing building stock and ensuring that it continued to function rather than investing raw materials in new constructions. Therefore, medieval attitudes to buildings can provide inspiration for the recycling and reuse of existing buildings to reduce our environmental impact.

## 7 ADAPT, CONVERT, REUSE, RECYCLE – CASE STUDY MEDIEVAL MARIBOR

**Abstract author(s):** Jancar, Mojca (Terarhis)

**Abstract format:** Oral

Medieval buildings can be found everywhere in Slovenia. Some have succumbed to time and are known to us only from records, while others are still noticeable in the landscape as ruins. Despite the fact that fire and military conflicts often did not spare medieval buildings, quite a few have survived. Although they have changed their appearance over time, as they have often been renovated and adapted to the fashion of the period or the taste of their owner, many of them have changed their purpose. In the recent past, museums, hotels, restaurants, psychiatric institutions settled in castles, monasteries were transformed into military barracks, churches into warehouses or art galleries.

The city of Maribor, the second-largest city in Slovenia, located in its northeastern part, was built under the eponymous castle in the 12th century. In this research, I will try to show, what has happened to the most important buildings in the city in the last 800 years, how they have changed their image and purpose, and I will pay special attention to Upper Maribor Castle, which was repaired several times and after abandonment purposely dismantled and used as a building material.

## 8 THE OLD COURT PALACE: FROM A MEDIEVAL STRONGHOLD TO A MODERN OPEN-AIR MUSEUM IN THE BUCHAREST CENTRE

**Abstract author(s):** Ignat, Theodor Aurelian - Cleşiu, Sorin - Opreş, Vasile (Bucharest Municipality Museum) - Simion, Corina (Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering) - Pîrvulescu, Dan - Majuru, Adrian (Bucharest Municipality Museum)

**Abstract format:** Oral

The Medieval Old Court Palace in Bucharest sits right in the center of the Romanian capital. The site has an evolution of more than 700 years, demonstrated both by archaeological observations and new radiocarbon data. The rulers of

Wallachia have used this place first as a stronghold and a place that controlled the commercial routes of the area. As the Palace grew in importance, it was adopted as Capital of Wallachia in 1659. Its walls have been repeatedly damaged in sieges, earthquakes and fires. Such major events were followed by reconstructions. Older walls were constantly integrated into the newer buildings.

The place was abandoned and put up for sale in 1799. This is the moment when the former centre of power changes its functionality. During the 19th century the stone and brick walls have been integrated into new buildings. The cellars built at the middle of the 16th century have been plastered, partitioned and new concrete floors have been laid. In the newly erected buildings, various shops were opened for business. By the 1970's small scale archaeological excavations had pin-pointed the long-forgotten Old Court Palace. The decision was made to demolish the business buildings, excavate the ruins and transform the place into an open-air museum.

Today, the medieval palace is in a new stage of consolidation and restoration. The archaeological researches conducted here in the last two years re-evaluated the evolution in time and space of the Old Court. The archaeological discoveries, corroborated to radiocarbon data on lime mortars, stratigraphic observation and archive documentation bring new interpretations of the adaptation, conversions and integration of the oldest building in Bucharest, from the medieval times up to the near future.

## 248 NEW APPROACHES TO LITHIC RAW MATERIAL STUDIES: INFERRING PAST HUMAN MOBILITY [PAM]

**Theme: 6. A Decade after the 'Third Science Revolution in Archaeology'**

**Organisers:** Sanchez de la Torre, Marta (SERP-IAUB, Universitat de Barcelona) - Eramo, Giacomo - Fioretti, Giovanna (Earth and Geoenvironmental Sciences Department, University of Bari Aldo Moro) - Abrunhosa, Ana (ICArEHB, University of Algarve) - Pereira, Telmo (Universidade Autónoma de Lisboa)

**Format:** Regular session

Since the beginning of the human history, rocks have been used for benefiting human activities. They are also one of the best preserved materials in archaeological sites, being their study essential to increase our knowledge about past societies. The study of lithic procurement has historically focused on the analysis of lithic artefacts and potential sources using visual and petrographic methods. Nevertheless, in the last decades, new analytical strategies have been applied to the characterization of lithic raw materials, in order to explore their chemical, mineralogical and petrographic features. The use of statistical methods for data exploration and lithic sample comparison completes these investigation approaches. In this session we will focus on these new approaches that, added to the classic characterizations of lithic artefacts, give valuable data to deep into past human mobility and procurement strategies. Proposals from all chronologies and lithic rocks using one or diverse analytical methods are welcomed.

## ABSTRACTS

### 1 FLINT PROCUREMENT IN THE WESTERN COAST OF IBERIA: INFERRING NEANDERTHAL MOBILITY AT GRUTA NOVA DA COLUMBEIRA

**Abstract author(s):** Pereira, Telmo (Universidade Autónoma de Lisboa; Instituto Politécnico de Tomar; Centro de Geociências da Universidade de Coimbra; UNIARQ, Centro de Arqueologia da Universidade de Lisboa) - Abrunhosa, Ana (CENIEH -Centro Nacional de Investigación sobre la Evolución Humana; ICArEHB - FCHS, University of Algarve) - Carvalho, Milena (Department of Anthropology, University of New Mexico; ICArEHB - FCHS, University of Algarve) - Haws, Jonathan (Department of Anthropology, University of Louisville; ICArEHB - FCHS, University of Algarve) - Benedetti, Michael (Department of Earth and Ocean Sciences, University of North Carolina Wilmington; ICArEHB - FCHS, University of Algarve)

**Abstract format:** Oral

Gruta Nova da Columbeira is one of the key Mousterian sites from the western coast of Portugal. This cave has a 7-meter-thick sequence of layers with abundant lithics and fauna in two main sectors. The sector closer to the mouth encompasses a Mousterian sequence between ca. 101 to 36 ka sealed by a thick stalagmitic cap. The sector at the back of the cave, despite the Upper Paleolithic absolute dates (ca. 29 to 15 ka), also shows typically Mousterian industry.

The lithic assemblages are composed of chert, quartzite and quartz, probably collected in gravels. Quartzite and quartz are widespread in the Cretaceous levels of the Lusitanian Basin region. Though the Cretaceous overlies (stratigraphically) the Columbeira Jurassic limestone, it is eroded in that area, outcropping not too far west. Thus, rounded gravels and larger cobbles would be easy to access. So far, chert was not identified locally in the Columbeira Jurassic limestones hence its sourcing is still unclear. This could be due to: a) The exploitation of gravels from areas located further away; b) Current coverage of the gravels by the thick Holocene dunes; or c) The obliteration of the gravels by the LGM-post-LGM and/or the Pleistocene-Holocene transition.

Here we present the lithic assemblage, particularly the chert characterization through macroscopic, PIXE and pXRF analysis. Results suggest as possible provenance regions the nearby coastal bluffs and stream deposits draining across the Jurassic bedrock toward the Óbidos valley. Little is still known about the chert sources from Portugal and how they fit into the archaeological sites. With Columbeira being a reference to the Portuguese Mousterian, this study allows us to deepen the study of human population dynamics and the relationship with regional resources and landscape in the Late Pleistocene.

## 2 QUARTZITE CHARACTERIZATION AND PROVENANCE ANALYSIS PROTOCOL: A CASE STUDY OF LITHIC RAW MATERIALS AVAILABLE IN THE CÔA VALLEY (NORTHEAST PORTUGAL)

**Abstract author(s):** Abrunhosa, Ana (CENIEH - Centro Nacional de Investigación sobre la Evolución Humana; ICARE-HB - Interdisciplinary Center for Archaeology and Evolution of Human Behaviour. FCHS - Universidade do Algarve. Campus de Gambelas) - Dimuccio, Luca (University of Coimbra, Centre of Studies in Geography and Spatial Planning - CEGOT, Department of Geography and Tourism; UNIARQ - Centro de Arqueologia Universidade de Lisboa, Faculdade de Letras, Alameda da Universidade) - Aubry, Thierry (Côa Parque, Fundação para a Salvaguarda e Valorização do Vale do Côa; UNIARQ - Centro de Arqueologia Universidade de Lisboa, Faculdade de Letras, Alameda da Universidade) - Ribeiro, Maria (Department of Geosciences, Environment and Spatial Planning, Faculty of Sciences, University of Porto; ICT - Institute of Earth Sciences –Porto pole)

**Abstract format:** Oral

Characterization and provenance determination of lithic raw material allows us to infer multiple aspects about mobility and land use by hunter-gatherers. It also allows us to understand their technological adaptation to lithic resource availability. Prehistoric knapped lithic assemblages in the Iberian Peninsula are mainly composed of three main categories of siliceous rocks: fine-grained sedimentary rock composed of microcrystalline or cryptocrystalline quartz (e.g., chert, flint, silcrete), quartzite and quartz veins. Studies and methodological approaches for the characterization of fine-grained siliceous rocks, using macroscopic/mesoscopic observations, petrography, and geochemical analysis, have been developed during the last 30 years. However, data regarding quartzite and quartz veins are scarce and detailed characterization and provenance studies remain underdeveloped. In the framework of research at El Sotillo (project CEN154P20) and CLIMATE@COA (project COA/CAC/0031/2019), we propose a protocol to identify and characterize the quartzites that are available in the lower Côa river valley (northeast Portugal), with potential for exploitation by human groups (Neanderthal and Homo sapiens) during the Late Pleistocene. In the study areas, Ordovician quartzites are present as resistant reliefs in the landscape and as pebbles and cobbles (secondary sedimentary position) in the Plio-Quaternary siliciclastic covers. Geological samples were described considering macroscopic, petrographic, and geochemical parameters. Petrographic-mineralogical characterization of the samples and geochemical analyses were performed with destructive and non-destructive methods - whereas in archaeology preference is usually given to non-destructive methods. The data collected will result in a robust database with comparable results. These "identity cards" of regional siliceous rocks with potential for exploitation during prehistoric times will be the basis for future comparisons with archaeological lithic assemblages of the Côa Valley and other sites in the surrounding.

## 3 THE USE OF SCHIST OUTCROPS FOR SYMBOLIC PURPOSES: THE EXAMPLE OF OCREZA

**Abstract author(s):** Danelatos, Dionysios - Garcês, Sara (Instituto Politécnico de Tomar; Centro de Geociências da Universidade de Coimbra; Instituto Terra e Memória) - Pereira, Telmo (Universidade Autónoma de Lisboa; Instituto Politécnico de Tomar; Centro de Geociências da Universidade de Coimbra; UNIARQ, Centro de Arqueologia da Universidade de Lisboa)

**Abstract format:** Oral

In 2021, a new palaeolithic panel with rock art engravings on a schist outcrop was unearthed in Ocreza river. At the vertical surface of the panel appear the outlines of at least three zoomorphic figures. The use of metamorphic rocks as surfaces for artistic representations is a common phenomenon at open air sites situated near rivers in Portugal. Considering whether this fact is a cultural tendency or a random behaviour, evidence suggest that there is an adaptation on the geological context of Western Iberia. While the exploitation of schist for lithic tools is a rare phenomenon, rivers can be seen as areas adequate for hunting and highways for human mobility. Taking as a starting point the case of Ocreza and testing relevant sites of similar dating situated on schist surfaces, there will be an attempt to understand further the relationship of hunter-gatherers' mobility and schist procurement during Upper Palaeolithic times in Western Iberia.

#### 4 **A COMBINED PETROARCHAEOLOGICAL AND TECHNOLOGICAL APPROACH TO A NEANDERTHAL FLINT ASSEMBLAGE FROM STRATIGRAPHIC UNIT VIII OF EL SALT (EASTERN IBERIA)**

**Abstract author(s):** Mayor, Alejandro (Àrea de Prehistòria; Departament de Prehistòria, Arqueologia, Història Antiga, Filologia Llatina i Filologia Grega; Facultat de Filosofia i Lletres, Universitat d'Alacant) - Sossa-Ríos, Santiago (Àrea de Prehistòria; Departament de Prehistòria, Arqueologia i Història Antiga; Facultat de Geografia i Història, Universitat de València) - Galván, Bertila (Àrea de Prehistòria; Departamento de Geografía e Historia; Facultad de Humanidades, Universidad de La Laguna) - Mallol, Carolina (Àrea de Prehistòria; Departamento de Geografía e Historia; Facultad de Humanidades, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers Laboratory; Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna) - Hernández, Cristo (Àrea de Prehistòria; Departamento de Geografía e Historia; Facultad de Humanidades, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers Laboratory; Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna)

**Abstract format:** Oral

Neanderthal technological variability is a complex reality involving many possible factors. One of these factors is the lithic raw material. The possible mutual influence between raw material selection and technological schemes can speak about, for instance, provisioning strategies, mobility dynamics, resource management, diachronic know-how, or technical adaptability. In this framework, the flint remains from stratigraphic unit VIII of El Salt (Alcoi, Alacant, eastern Iberia) could represent a landmark in Neanderthal productive behaviours in the surrounding territory. It is because this stratigraphic unit might signify a critical juncture regarding both environmental and populating trends, since we can observe relevant climatic changes and a harsh decrease of human material impact in the site. Using unit VIII assemblage as a case study, we aim to collate these two proxies (i.e. technological and petroarchaeological data) in order to contribute to the relation between raw material provisioning and technological application. Preliminary results point to the existence of different technical strategies depending on the distance to the potential provisioning areas and the original nodule traits. Blank exploitation, tool manufacture and cortex proportions, amongst other variables, change from one flint type to another. Correlating technological and petroarchaeological proxies has allowed us to approach the territorial management performed by the Neanderthal groups who occupied El Salt throughout the formation of stratigraphic unit VIII, a time of critical climatic and demographic change in this region.

#### 5 **NEW DATA ON CHERT CATCHMENT ANALYSIS IN INLAND IBERIA DURING THE LATE PLEISTOCENE: RESULTS ON GEO-ARCHAEOLOGICAL SURVEYS AND PETROGRAPHIC CHARACTERISATIONS**

**Abstract author(s):** Sanchez de la Torre, Marta - Mangado Llach, Xavier (SERP-IAUB. Universitat de Barcelona) - Castillo Jiménez, Samuel - Alcolea González, José Javier - Alcaraz Castaño, Manuel (Àrea de Prehistòria. Universidad de Alcalá)

**Abstract format:** Oral

In this communication we will present the first results obtained after new fieldworks and characterisation studies on chert procurement analysis in the interior regions of the Iberian Peninsula. Research has been developed in the framework of the ERC project MULTIPALEOIBERIA: Population dynamics and cultural adaptations of the last Neanderthals and first Modern Humans in inland Iberia: a multi-proxy investigation. This research project aims to know the relations between cultural developments and environmental change among hunter-gatherers during the last glaciation. It focuses on inland Iberia, a key area due to its geographic position and ecological variability, and traditionally depicted as a marginal and few populated macro-region due to its harsh ecological conditions compared to the coastal areas of the Iberian Peninsula during the stadial phases of the last glacial.

The Peña Capón and Peña Cabra rock shelters host two of the most relevant archaeological sites that are currently under study in the framework of this project. They are placed in the southeastern foothills of the Central System range (Guadalajara province, Spain) and have shown a sequence of human occupations from the Middle and Upper Palaeolithic. In order to further our knowledge on mobility and lithic procurement strategies of past groups inhabiting these regions of inland Iberia, we have developed lithic raw materials studies. They have included two fieldwork campaigns aimed at determining chert outcrops and collecting geological samples for comparison with the archaeological lithic assemblages. Then, both archaeological artefacts and geological samples have been analysed under the same methodological conditions to determine their textural, micropalaeontological, mineralogical and chemical composition. As a result, we are now able to infer potential mobility patterns and catchment strategies of Neanderthal and modern human hunter-gatherers inhabiting inland Iberia during the Middle and Upper Palaeolithic.

## PATTERNS ON LITHIC PROCUREMENT STRATEGIES IN THE PRE-PYRENEAN MAGDALENIAN SEQUENCE OF COVA DEL PARCO (ALÒS DE BALAGUER, SPAIN)

**Abstract author(s):** Jiménez Ruiz, Luis (Primeros Pobladores y Patrimonio Arqueológico-IPH. Universidad de Zaragoza) - Sánchez de la Torre, Marta (SERP-IAUB. Universitat de Barcelona) - Langlais, Mathieu (UMR 5199 PACEA CNRS Université de Bordeaux; SERP-IAUB. Universitat de Barcelona) - Fullola, Josep - Mangado, Xavier (SERP-IAUB. Universitat de Barcelona)

**Abstract format:** Oral

Archaeological works developed in the last decades have demonstrated that the Pre-Pyrenees, a mountain range placed in north-east Iberia, were regularly frequented by several human groups during the Late Pleistocene. Cova del Parco archaeological site is an example of this large and regular human frequentation. The site was discovered and first excavated during the seventies, and since the eighties a team from the University of Barcelona has been developing archaeological works. We have documented that the site was frequented from, at least, the Middle Magdalenian, to historical times. In this communication we will present results obtained after the archaeopetrological and techno-typological studies from the Middle and the Upper Magdalenian sequence.

The textural, micropalaeontological and geochemical analysis of the lithic artefacts has allowed us to identify several chert types from local, regional and long-distance sources. Some of these cherts had their origin in the northern slopes of the Pyrenean chain, suggesting that this mountain chain was regularly crossed by Magdalenian groups. In this sense, we have developed GIS analyses to determine the paths and connections that could have linked the archaeological site with the different chert outcrops, as well as the more suitable routes to cross the Pyrenean mountains.

The techno-typological approach has shown an intentional discrimination on the use of the different chert types in regards of different productive and industrial aims. The local and regional cherts were mostly used for knapping processes and were destined to the fabrication of tools and weapons, while the long-distance cherts have just been documented in the form of finished retouched tools or bladelet cores.

As a result of this study, we have obtained a new vision on the mobility and complex economical interactions from two moments of the Magdalenian through groups that settled Cova del Parco at the end of the Late Pleistocene.

## CIRCULATION OF STONE ARTIFACTS IN THE SOUTH OF THE IBERIAN PENINSULA DURING THE CHALCOLITHIC PERIOD (IV-III MILLENNIA BC)

**Abstract author(s):** Lagarde, Bruno (Institute of Archaeology - University College London)

**Abstract format:** Oral

In order to analyse the circulation of stone artifacts in the south of the Iberian Peninsula during the IV-III millennia BC, a geochemical characterisation of the raw material will be made, with the aim of identifying which sources were used and how they circulated if they did.

In order to characterise the raw material of an archaeological artefact, it is not always enough by simple observation, and in most cases they present high cultural value and are usually on display in museums, making difficult to obtain the permits to carry out destructive analysis techniques. So, the main method of analysis will be by use of a portable X-rays fluorescence machine (pXRF). The objective is to chemically characterize the artifacts for later comparison through a database.

The objective is to look for patterns of chemical composition, with the intention of establishing recognisable groups that allow for the distinction and characterisation of pieces in order to make comparisons. Thus, in the case of artifacts made of foreign raw material, they should be clearly distinguished from the local context and, eventually, be able to be compared with artifacts found elsewhere. A goal to achieve is identifying the possible source of raw material and compare the field data of the site's surroundings with the archaeological artifact.

The artifacts to be analysed are those of worked stone with socio-cultural relevance for Late Neolithic societies, such as polished axes, bracelets and necklace beads, among others. In the present work I will analyse mostly objects from the site of Los Castillejos (Granada), together with some pieces from Los Millares (Almería) and El Malagón (Granada). The raw materials expected are generally metamorphic rocks from the Baetic System, specifically those potentially accessible in the catchment area of the site, expecting some of them coming from elsewhere due to circulation.



## 8 THE UNIQUE LAUREL-LEAF POINTS OF VOLGU DOCUMENT LONG-DISTANCE TRANSPORT OF RAW MATERIALS IN THE SOLUTREAN

**Abstract author(s):** Koch, Tabea (Department of Early Prehistory and Quaternary Ecology, Eberhard Karls University of Tübingen; Université Côte d'Azur, CNRS, CEPAM; University of York, Department of Archaeology) - Schmidt, Patrick (Department of Early Prehistory and Quaternary Ecology, Eberhard Karls University of Tübingen; Applied Mineralogy, Department of Geosciences, Eberhard Karls University of Tübingen)

**Abstract format:** Oral

The Upper Palaeolithic Solutrean culture that coincided with the Last Glacial Maximum has become famous for documenting an increasing investment of time and effort in the production of tools. However, Solutrean lithic assemblages predominantly document local procurement of flint and only in rare cases, stones were transported over distances above 100 km. The perhaps most remarkable Solutrean artefacts are the large bifacial laurel-leaf points of Volgu. Some studies on the points suggested long distance transport, proposing multiple raw material locations in the >170 km distant Paris Basin. These findings were based on evaluations of macro- and microscopically visible features at the surface of the flint. In this study, we aim to verify previously made propositions on the Volgu points' origin with an archaeometric technique. For this, we apply reflectance infrared spectroscopy, a method that relies on identifying differences in the crystallographic properties of flint. We compare eight of the Volgu laurel-leaf points with five regions of Upper Cretaceous flint deposits in France and Belgium. Our findings provide a reproducible line of evidence for the long-distance procurement of flint to produce exceptional artefacts in the Solutrean. Our study is the first application of this method to flint sourcing in a European context. It has therefore also implications for future provenance studies on other archaeological sites in France.

## 9 INTEGRATING TRACEOLOGY IN THE RECONSTRUCTION OF LITHIC RAW MATERIALS MANAGEMENT STRATEGIES: CASE STUDIES FROM THE NORTH-EASTERN ITALIAN PALAEO-MESOLITHIC

**Abstract author(s):** Visentin, Davide (Institución Milá y Fontanals, IMF-CSIC, Barcelona; Dipartimento di Studi Umanistici, Università degli Studi di Ferrara) - Bertola, Stefano - Cecchetti, Marzio (Dipartimento di Studi Umanistici, Università degli Studi di Ferrara) - Clemente Conte, Ignacio (Institución Milá y Fontanals, IMF-CSIC, Barcelona) - Fontana, Federica (Dipartimento di Studi Umanistici, Università degli Studi di Ferrara)

**Abstract format:** Oral

The potential of lithic raw materials to inform about mobility is generally linked to the possibility of identifying the outcropping areas of specific lithotypes through petrographic and geochemical analyses. To complement such data technological analyses of flaked assemblages have been used to infer the modality in which raw materials were transported (e.g., raw blocks, cores, flakes) and whether they were entirely or only partially exploited at the site. Such information is mainly obtained by comparing the presence/absence and frequency of specific categories of artefacts (e.g., cortical flakes, wastes). Nonetheless, this approach is limited because studied materials are generally a sample of the original assemblage and could be biased by spatial and selective phenomena. On the other hand, traceological analysis can provide direct evidence of artefacts transportation by identifying specific wear patterns and can thus be considered an interesting complementary technique to reconstruct raw materials management strategies.

This paper provides the example of two sites located in the Dolomites (North-Eastern Italy): Casera Staulanza and Mondeval de Sora. The first one is located at 1681 m a.s.l. and presents Final Palaeolithic (Late Epigravettian) and Early Mesolithic (Sauveterrian) occupations. The latter is a Late Mesolithic (Castelnovian) burial context identified at 2130 m a.s.l. under an erratic boulder.

## 10 LOCAL AND ALLOCHTHONOUS CHERT SUPPLIES IN EARLY AND MIDDLE NEOLITHIC TRASANELLO VILLAGE (BASILICATA, SOUTHERN ITALY)

**Abstract author(s):** Muntoni, Italo (Soprintendenza ABAP BAT-FG, Ministry of Culture) - Eramo, Giacomo (Dipartimento di Scienze della Terra e Geoambientali, Università degli Studi di Bari "Aldo Moro") - Allegretta, Ignazio (Dipartimento di Scienze del Suolo, della Pianta e degli Alimenti, Università degli Studi di Bari "Aldo Moro") - Dell'Università, Emanuela (Dipartimento di Scienze della Terra e Geoambientali, Università degli Studi di Bari "Aldo Moro") - Conforti, Jacopo (Università di Pisa) - Terzano, Roberto (Dipartimento di Scienze del Suolo, della Pianta e degli Alimenti, Università degli Studi di Bari "Aldo Moro")

**Abstract format:** Oral

The settlement of Trasanello (Matera, Basilicata) is one of the ditched villages typical of the Early and Middle Neolithic of the Southern Italy. These villages have one or more defensive ditches enclosing inhabited areas subdivided by wide empty spaces. The archaeological investigations, carried out from 2007 to 2017 by the Pisa University, allowed the definition of its frequentation. The Early Neolithic phase corresponding to the lower fill of the trench, dated to the first half of VI millennium cal BC, and ascribed to a final phase of the local development of the Impressed Pottery

Culture. The Middle Neolithic phase is dated to the second half of VI millennium cal BC and correspond to the lost of function of the trench.

A selection of 57 chert artefacts of Early and Middle Neolithic underwent nondestructive petrographic and chemical (pXRF) analyses to understand the provenance of raw materials. The availability of primary (Calcare di Altamura) and secondary (fluvial/marine terraces) chert in the area of Matera motivated the sampling and analysis of local geological chert as reference.

The analysis of the knapped chert industry shows the presence of two distinct components. The main component is produced using local secondary chert sources (radiolarite, silicified calcarenites and nodular chert) originated from the outer geological units of the Southern Apennine. Knapping was done by direct and bipolar percussion to obtain non-standardized products. The second component, much rarer, is constituted by ramp to basin cherts from Gargano promontory, introduced in the site as blades and bladelets obtained by pressure flaking or indirect percussion and, minimally, also as prepared and partially exploited cores. Direct and bipolar percussion were employed to recycle and over-exploit a part of the products and by-products.

The results of the integrated archaeometric and typo-technological analyses of the knapped chert industry will be then presented.

11

## **MICROPETROGRAPHY AND GEOCHEMISTRY OF PREHISTORIC RAW MATERIALS IN BULGARIA: CHALLENGE AND QUERY**

**Abstract author(s):** Gurova, Maria (National Institute of Archaeology with Museum, Bulgarian Academy of Sciences) - Stefanova, Elitsa - Andreeva, Polina (Geological Institute, Bulgarian Academy of Sciences) - Kecheva, Nadezhda (National Institute of Archaeology with Museum, Bulgarian Academy of Sciences)

**Abstract format:** Oral

The abundant empirical data from prehistoric chipped-stone (flint) assemblages in Bulgaria invites a re-assessment of their significance for our understanding of cultural and economic transitions in prehistory and requires a particular interest in lithics and their complete chaîne opératoire, starting with the procurement strategy and network distribution of the raw materials and ending with the exhaustive resharpening, reuse and/or discard of the artefacts. In reality, such a comprehensive study is still in the sphere of futuristic expectation.

For over a decade there have been notable advances in raw material studies, documented in a series of publications. A combination of macro and micropetrography combined with geochemical analysis of raw material samples and flint artefacts has been applied to Bulgarian flint provenance studies, beginning in 2010 when the approach was tested and subsequently expanded and developed more systematically.

Four extensive field prospections for raw material outcrops have resulted in the identification of numerous flint sources used by prehistoric people in Bulgaria. Separately, a large number of Early Neolithic artefacts have been subjected to the same analytic procedures. The combination of analytical data from geological and archaeological samples has advanced our understanding of past human mobility, raw material networks and distribution patterns. Latterly, GPS modelling has been used to reconstruct the paths between raw material sources and consumption sites.

The paper summarises the results of this complex analytical approach to investigating the problem of Balkan Neolithization.

A.

## **THE LITHOTHEQUE ROLE IN THE LITHIC RAW MATERIALS STUDIES. THE CASE OF THE ITALIAN SILIBA**

**Abstract author(s):** Fioretti, Giovanna (Earth and Geoenvironmental Sciences Department, University of Bari) - Muntoni, Italo Maria (Soprintendenza Archeologia, Belle Arti e Paesaggio per le Province di Barletta - Andria - Trani e Foggia, Ministero della Cultura) - Monno, Alessandro - Eramo, Giacomo (Earth and Geoenvironmental Sciences Department, University of Bari)

**Abstract format:** Poster

Chert artifacts represent one of the most durable product manufactured by the humans and their recovery and characterisation allow to assess new data on the technological and cultural features of prehistory civilizations. The geographic identification of procurement area of lithic raw materials is essential in the reconstruction of the social and economic behaviours of the communities.

In this view, a significant role is played by the lithotheques since they include lithic samples coming from variable spread geographic area and constitute a valuable comparison tool for provenance studies of archaeological finds.

An Italian example of lithic collection is Siliba, the lithotheque of the Earth and Geoenvironmental Sciences Department of the University of Bari Aldo Moro. It consists of about 1500 samples of geological cherts collected from outcrops, sites and mines mainly in the Apulia (Southern Italy) region and across southern Italy (Basilicata, Sicily), Croatia, Serbia, Switzerland and Iraqi Kurdistan, belonging to formations from the Cretaceous to the Quaternary Period.

The strength of the collection is its database, reporting the petrographic, colourimetric, geochemical and micropaleontological features, obtained by a dedicated non-invasive investigation protocol (NM-PCI). Such results represent a fingerprint for each samples and make the SiLiBA lithotheque an essential reference point in the identification of provenance of lithic raw materials transformed by the prehistory local humans for the producing of chert objects.

The SiLiBA database is constantly evolving and new lithic samples are collected and investigated and original data are produced and recorded in the database. This last consists of report sheets containing, together with the results of the NM-PCI investigation, other several information such as photographs, geographic coordinates, geological outcrop description. A website dedicated to the presentation of the lithotheque will soon be online, even if the complete database is already available for consultation by the scientists and archaeologists on request.

## **B. FROM LITHIC ASSEMBLAGES TO RAW MATERIAL SOURCES A NEW PROJECT OF CHARACTERIZATION OF CHERT SOURCES IN SABINA (CENTRAL ITALY)**

**Abstract author(s):** Conati Barbaro, Cecilia - Carletti, Elena (Department of Classics - Sapienza University) - Forti, Luca (Department of Earth Sciences "Ardito Desio" - University of Milan) - Ranieri, Cristiano (Archaeological Museum of Salisano) - Moscone, Daniele (Anamed Fellowship - Koç University Istanbul) - Eramo, Giacomo (Department of Earth and Geo-environmental Sciences, University of Bari Aldo Moro)

**Abstract format:** Poster

Mobility patterns can be inferred through lithic raw material characterization analyses.

Here we present a new research project aimed at the identification and georeferencing of chert outcrops in the Sabina region (northern Latium, Italy). We also aim at characterizing the lithic raw materials exploited in several archaeological sites of the area through a multi-parametric protocol (NM-PCI) that includes macroscopic and microscopic observations and chemical analysis.

In central Italy, projects that rely on a detailed geo-archaeological procedure to detect regional availability of chert and prehistoric exploitation patterns are still rare. This is the first attempt to systematically analyze the lithic sources of the area in relation to a long-term occupation, spanning from the Middle Paleolithic to the Bronze Age, attested by stratigraphic cave excavations in progress. The wide chronological range will allow a diachronic comparison of the procurement strategies. Identification of selected lithotypes and their provenance could highlight key anthropological issues such as mobility patterns, landscape familiarity, long or short distance networks, and inter-group relationships. A further goal is the creation of a reference collection (lithotheca).

This project is part of a broader research aimed at investigating the use of caves and the exploitation of the environment in the Sabina region during Pre-Protohistory, through an integrated approach which combines archaeological with paleoenvironmental data.

## **C. LITHOLOGICAL SELECTION IN POLYGENIC GRAVELS OF NOTARCHIRICO (EARLY ACHEULEAN, SOUTHERN ITALY)**

**Abstract author(s):** Eramo, Giacomo (Dipartimento di Scienze della Terra e Geoambientali, Università degli Studi di Bari "Aldo Moro") - Allegretta, Ignazio (Dipartimento di Scienze del Suolo, della Pianta e degli Alimenti, Università degli Studi di Bari "Aldo Moro") - Fioretti, Giovanna (Dipartimento di Scienze della Terra e Geoambientali, Università degli Studi di Bari "Aldo Moro") - Terzano, Roberto (Dipartimento di Scienze del Suolo, della Pianta e degli Alimenti, Università degli Studi di Bari "Aldo Moro") - Moncel, Marie-Hélène (UMR 7194 HNHP - MNHN-CNRS-UPVD, Département Homme et Environnement, Muséum National d'Histoire Naturelle, Paris)

**Abstract format:** Poster

The several human occupations attested at Notarchirico (Venosa, southern Italy) date back to 610-695 ka, among the oldest ones in Western Europe at the MIS 17/MIS 16 transition.

Open-air occupations were at the top or in proximity of polygenic pebbles/cobbles formed in fluvio-lacustrine environment, which made available various knappable material. Prevalent larger limestone lithotypes, together with smaller silicified calcarenites (flysch chert), nodular chert (carbonate platform) and radiolarite (basin) originated from the outer geological units of the Southern Apennine.

The technological study of the lithic assemblages identified pebbles with percussion marks or broken, pebble tools, Large Cutting Tools (bifaces, cleavers, unifacial tools, pick), cores, flakes, flake-tools and retouched nodules.

A selection of archaeological and geological lithic samples was studied to verify the archaeological hypothesis of the exploitation of local polygenic pebble/cobble lags to produce artefacts, as well as the hypothesis of lithological selection. Petrographic analysis of samples as such, coupled with thin section microscopy for geological samples, as well as colorimetric (spectrophotometer) and geochemical (pXRF) analyses were carried out.

The results show that the lithotypes of the pebble/cobble lags are compatible with those of the artefacts. Moreover, pre and post depositional black patina due to wetland conditions further prove local exploitation. Preferential use of limestone cobbles, with some exception, for Large Cutting Tools and silicified calcarenites to produce very

small flakes indicate adaptation to local raw materials. The relative abundance of flysch chert among artefacts, compared to the other chert varieties, is interpreted as a consequence of its abundance among chert lithotypes. The size/shape of the pebbles/cobbles was the main limiting factor in the choice of raw materials for lithic artefacts.

#### D. THE CONTRIBUTION OF ARCHAEOMETRY TO RECONSTRUCT HUMAN MOBILITY DURING THE PALAEO-LITHIC OF PORTOSELVAGGIO (NARDÒ-LE)

**Abstract author(s):** Eramo, Giacomo (Dipartimento di Scienze della Terra e Geoambientali, Università degli Studi di Bari "Aldo Moro") - Massafra, Dario (Museo della Preistoria di Nardò) - Stasolla, Vincenzo (ETHRA srl. I beni culturali al servizio del turismo e dell'ambiente; Dipartimento di Scienze della Terra e Geoambientali, Università degli Studi di Bari "Aldo Moro") - Monno, Alessandro - Tempesta, Gioacchino - Allegretta, Ignazio - Fioretti, Giovanna (Dipartimento di Scienze della Terra e Geoambientali, Università degli Studi di Bari "Aldo Moro") - Kitagawa, Keiko (Museo della Preistoria di Nardò; Institute of Prehistory, Early History and Medieval Archaeology, University of Tübingen) - Strafella, Silvia (Museo della Preistoria di Nardò) - Ranaldo, Filomena (Museo della Preistoria di Nardò; Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, Università di Siena)

**Abstract format:** Poster

Grotta Torre dell'Alto (GTA) is one of the most important caves among the numerous Pleistocene sites located in the Mesozoic limestone along the Neretina coast (Nardò-LE), excavated between 1961 and 1967.

"Museo della Preistoria di Nardò" started a project to reconstruct the evolutive dynamics of this coast and the organisation of prehistorical groups, reviewing stratigraphic series, faunal fossils and lithic tools of GTA.

A selection of 186 chert artefacts was analysed with a non-destructive multiparametric protocol (NM-PCI), based on petrographical, micropaleontological and chemical variables. The obtained data were compared to those of geological chert from Porto Selvaggio (Nardò), Bradanic through, Tavoliere plain, Murge and Gargano promontory, obtained with the same protocol.

The lithological variety observed in the three archaeological levels of GTA investigated points to different source areas. The high frequency of silicified calcarenites and calcilitites and the scarce presence of radiolarites and nodular chert among artefacts correlates with the lithologies present in the Bradano and Tavoliere plains, both fed by sediments from the outer units of the Southern Apennine belt. Two tools were made with nodular chert compatible with the lithotypes in the terraced deposits of the Gulf of Manfredonia (FG).

In summary, all the lithologies identified in the lithic industries certainly come from secondary deposits that are no less than 120 km away. Moreover, raw material data indicates a low-selective use of resources to produce tools, but suggests that Neanderthals' territory was a considerable area and points to the scale of their mobility. NM-PCI protocol proved to be an accurate and useful tool to obtain a consistent dataset on archaeological and geological chert easily expandable on a large sample population to make the reconstruction of the alternated mobility models during this phase more detailed and reliable.

#### E. MULTI PROVENANCE FROM OBSIDIAN SOURCES IN MEDITERRANEAN AREA: HIGHLIGHTS FROM WD-XRF AND SEM-EDS CHARACTERIZATION OF NEOLITHIC ARTEFACTS FROM SOUTHERN ITALY

**Abstract author(s):** Muntoni, Italo (Soprintendenza ABAP BAT-FG, Ministry of Culture) - Micheletti, Francesca - Pallara, Mauro (Dipartimento di Scienze della Terra e Geoambientali - Università degli Studi di Bari 'Aldo Moro') - Acquafredda, Pasquale (Dipartimento di Scienze della Terra e Geoambientali - Università degli Studi di Bari 'Aldo Moro'; Centro Interdipartimentale "Laboratorio di Ricerca per la Diagnostica dei Beni Culturali")

**Abstract format:** Poster

This paper summarizes the data on the provenance of obsidian from three Early - Late Neolithic sites in Southern Italy (Apulia and Basilicata) obtained at the Earth and Geoenvironmental Sciences Department of Bari University and compares two different non-destructive techniques, SEM-EDS and WD-XRF using peak intensity ratios of some trace elements, useful for geological source determination.

Provenance data (n=23) from two Early and Middle Neolithic sites (Trasanello and Grotta San Biagio) has confirmed the exclusive predominance of Lipari obsidian. Also in the Late Neolithic necropolis of Galliano (Taranto) the Lipari source have been identified for almost all of 52 samples of obsidian artefacts.

Only two samples from Galliano necropolis show a different origin area: one from Palmarola, the southernmost signalling in Puglia for this source, and one from Pantelleria (sub-source of Salto la Vecchia and Balata dei Turchi) as first signalling on the continental Italy. Both source area, Palmarola and Pantelleria, have also been safely ascertained through quantitative compositional analyses of the microphenocrysts (pyroxenes and feldspars) present in the glass of 27 and 42 obsidian samples.

In particular, the discovery of obsidian from Pantelleria in the Late Neolithic necropolis of Galliano, which can be dated back to the first centuries of the second half of the fifth millennium BC, significantly expanded its distribution area towards the east and the north, in a chronologically well-defined context.

## F. **WD-XRF/SEM-EDS AND LITHIC TECHNOLOGICAL ANALYSES TO ADDRESS THE STUDY OF OBSIDIAN PREHISTORIC NETWORKS IN THE NORTHERN IRAQ**

**Abstract author(s):** Moscone, Daniele (Research Center for Anatolian Civilizations, Koç University) - Pallara, Mauro (Department of Earth and Geo-environmental Sciences, Bari University) - Oselini, Valentina (Department of Civil, Environmental and Materials Engineering, Bologna University) - Vacca, Agnese - Peyronel, Luca (Department of Literary Studies, Philology and Linguistics, Milan University) - Acquafredda, Pasquale (Department of Earth and Geo-environmental Sciences, Bari University)

**Abstract format:** Poster

Excavations at Helawa (Erbil Plain, Kurdistan Region of Iraq) headed by the University of Milan provided evidence of a multi-period settlement of ca. 10 ha occupied between the 6th millennium BC and VII century AD with several breaks in the cultural sequence. In this paper we consider the obsidian evidence as a proxy for highlighting prehistoric supply networks and distribution patterns following a diachronic perspective, by combining lithic technological and raw material provenance analyses.

The obsidian assemblages from Helawa are characterised by hundreds of chipped artefacts, mainly consisting of blades and bladelets produced using several pressure technique modes. Although flakes are present throughout the sequence as well, very few clues support in situ cores' reduction. However, a manufacturing open space unearthed in the Late Chalcolithic 1 layers provided us evidence of a dumping area characterised by waste and technical elements connected with bladelets and micro-bladelets production, suggesting the presence of skilled knappers at the site.

Based on such results, a total of 30 samples were selected from architectural phases ranging from the late Ubaid until the Late Chalcolithic 3 periods (5th to mid-4th millennium BC) and were analysed at the Department of Earth and Geo-environmental Sciences of the Bari University using Non-destructive Wavelength Dispersive X-Ray Fluorescence (WD-XRF) using "peak intensity ratios" of some trace elements. SEM-EDS analysis for the discrimination of major and minor elements also provided us chemical data more easily comparable with other analytical methods to address the geographical provenance of the samples.

This study is significant for the Erbil Plain, and the whole eastern Tigris sector as well. First, Helawa represents the best known prehistoric sequence for crucial periods of growing social complexity, and, secondly, our supply networks' study revealed that connections strengthened over the long period with the Lake Van sources area of eastern Anatolia.

## G. **RECONSTRUCTING HUMAN MOBILITY AND SOCIAL INTERACTIONS. NEW OBSIDIAN CHARACTERISATION DATA USING SEM-EDS AND WD-XRF ANALYSES FROM NORTHERN KURDISTAN REGION (IRAQ).**

**Abstract author(s):** Conati Barbaro, Cecilia (Department of Classics - Sapienza University) - Sconzo, Paola (IANES Department - Eberhard Karls Universität Tübingen) - Moscone, Daniele (Anamed Fellowship - Koç University) - Pallara, Mauro (Dept of Earth and Geoenvironmental Sciences - University of Bari Aldo Moro of Bari Aldo Moro) - Iamoni, Marco - Simi, Francesca (Department of History and Preservation of the Cultural Heritage - University of Udine) - Coppini, Costanza (Freie Universität Berlin) - Morandi Bonacossi, Daniele (Department of History and Preservation of the Cultural Heritage - University of Udine) - Acquafredda, Pasquale (Dept of Earth and Geoenvironmental Sciences - University of Bari Aldo Moro)

**Abstract format:** Poster

Obsidian artefacts are among the most powerful evidence of human mobility during pre-protolith. This paper presents a new body of data based on a broad regional and chronological scale.

64 obsidians from PrePottery Neolithic to Middle Bronze Age sites of the Northern region of Kurdistan (Iraq) have been characterized through non-destructive SEM-EDS and WD-XRF techniques. The archaeological sites are located in the areas of the Land of Nineveh Archaeological Project (LoNAP) and of the Eastern Habur Archaeological Survey project (EHAS).

They show a homogeneous trend across the region over time. Several Anatolian sources are attested, some exploited for a long time, others only in certain periods, indicating specific choices of human communities, probably linked to different dynamics in social interactions.

Our results will be compared with other datasets stemming from other new research projects of the Kurdistan region and beyond, allowing for large-scale reconstruction of transmission routes and a better understanding of local communities' role in forming and iteration of the exchange networks.

**Theme:** 3. The Carpathian Basin: Integration, Mobility and Diversity

**Organisers:** Szenthe, Gergely (Hungarian National Museum) - Gáll, Erwin ("Vasile Pârvan" Institute of Archaeology, Bucharest) - Bugarski, Ivan (Institute of Archaeology, Belgrade)

**Format:** Regular session

Local and microregional-based social and economic structures can be found at the roots of every macroregional and global power system. In historical periods, the circumstances of human life were primarily determined by these basic structures and networks, which were created by interconnected microregional centres.

We intend to investigate microregional and regional networks emerging in the Carpathian Basin and the neighbouring territories at the time of the early medieval transformation. In these geographical frames, after the collapse of the Roman *limes* and the short intermezzo of the Hun Empire, relatively weak formations built their own regional systems, communicating and competing with each other and the surrounding powers. One and a half centuries later, the Avar invasion unified the better part of the macroregion under one system. While certain elements of the late Roman system of "central places" seem to prevail, and there are other signs of microregional-based structures, from the late seventh century a radically new system of central zones emerged.

What kinds of social and economic opportunities helped to grow local communities and/or microregional power centres? Who or what were the catalisators of such processes? What kinds of processes drive their social and economic organisation? What were the factors preventing, helping, or even demanding cooperation between them? What kind of role did microregional centres or central areas play in structuring the surrounding area? And how could regional power reflect the problem of the presence of macroregional or global structures of considerably higher complexity?

We expect both case studies and theoretical presentations from the post-Roman period to the Middle Ages to investigate the questions of regionality, power centres, and central areas. We await contributions addressing the questions of the organization of communication, subsistence, production, redistribution of specialised craft products and strategic resources like salt, iron, and non-ferrous metals.

## ABSTRACTS

### 1 INTERACTIONS. THE AVARS IN THE VICINITY OF VIENNA

**Abstract author(s):** Daim, Falko (Institute of Prehistoric and Historical Archaeology, University of Vienna; Institute of Medieval Research, Austrian Academy of Sciences) - Tobias, Bendeguz - Pohl, Walter (Institute of Medieval Research, Austrian Academy of Sciences) - Wang, Ke (Max Planck Institute for Evolutionary Anthropology Leipzig) - Hofmanová, Zuzana (Max Planck Institute for Evolutionary Anthropology Leipzig; Department of Archaeology and Museology, Masaryk University, Brno) - Berner, Margit - Pany-Kucera, Doris (Department of Anthropology, Natural History Museum Vienna) - Ingrová, Pavlína (Department of Archaeology and Museology, Masaryk University, Brno) - Eggers, Sabine (Department of Anthropology, Natural History Museum Vienna) - Krause, Johannes (Max Planck Institute for Evolutionary Anthropology Leipzig)

**Abstract format:** Oral

The Avar cemeteries in the Vienna Basin, especially those of Mödling - An der goldenen Stiege and Leobersdorf, have helped to refine the chronology of Avar find types and burial customs. They also provided the impetus to rethink the successive settlement of the Avar territory. However, the analysis of archaeological and anthropological data also enabled insights into social life, forms of communication between groups of people, aspects of identity and demarcation from others, and relations with neighbouring entities to be explored. In recent years, however, with archaeogenetics booming everywhere, new data sets have been added which can be compared with archaeological-historical results. Mostly, the focus is on the "origin" of groups of people in the Avar empire, but it is now also possible to identify families, even entire family trees for individual burial communities (cemeteries) and possible relationships with people from neighbouring or even distant settlements.

The presentation will shed light on the possibilities and limits of modern archaeology, taking archaeogenetic data into account, and draw a new picture of life on the Avar country side.

### 2 OBERLEISERBERG - FROM SUPRA-REGIONAL TO LOCAL AND BACK AGAIN

**Abstract author(s):** Richards, Nina (Austrian Academy of Sciences)

**Abstract format:** Oral

The hill of Oberleiserberg in lower Austria, north of Vienna was an important supra-regional center in the late Roman resp. Migration period. With the beginning of the Early Middle ages, it loses its importance and one can only trace

local influences regarding material culture and archaeological remains. However with the political, social and cultural developments after the fall of the Avar Khaganate until the 10th century it regains its importance as a site where different spheres of influence - the newly established Hungarian kingdom as well as the Frankish Babenberg march and the Přemyslid Moravia - meet.

For that time an Arpadian age burial ground was excavated on the plateau of the limestone hill. The finds dating until the first half of the 11th century show best parallels in the east-alpine region/Ottonian Empire as well as in the Carpathian Basin. These finds, as well as the other nearby cemeteries with "mixed" inventory, suggest close contact between both realms in this border region.

Furthermore, stray finds from the plateau label the site as a central place with regional if not supraregional importance. 51 coins were found as well as a spherical weight. The coins, mint under several Hungarian kings, suggest close contact with that entity while comparable weights are most common in the Baltic region as well as Moravia. With those finds, the site of Oberleiserberg is comparable to contemporary sites like Kostice (Czech Republic) as well as the so-called productive sites in northwestern Europe.

At the end of the 11th century, the site loses its importance again.

### 3 "SCLAVI QUI DICUNTUR QUARANTANI" - SOCIAL SYSTEMS BETWEEN AVARS AND FRANKS

**Abstract author(s): Eichert, Stefan (Natural History Museum Vienna)**

**Abstract format: Oral**

In the Eastern Alpine region, after the end of the late Roman provincial administration, the first Slavic political structure was established, which is mentioned by name in written sources - Carantania. In the 8th century Slavic princes are described, which are Christianized and pass on the rule within a dynasty for several generations. In sum, then, a picture is conveyed that suggests a hierarchical and socially structured society on a macro-regional level.

The presented paper takes a look at written tradition, regional archaeological sources as well as theoretical concepts and discusses how, from a largely sociological point of view, the described circumstances can be interpreted.

The main archaeological sources known from this period are grave finds and, from the time of Christianization, church buildings. Overall, in terms of fashion, a strong Avar and even Byzantine influence is evident, while in military matters Frankish aspects predominate.

How can regional groups be interpreted on the basis of burial grounds and church buildings, and what is the relationship between the observed conditions and those conveyed in written sources for the eastern Alpine region?

### 4 SPACE USE IN SYRMIA DURING THE MIGRATION AND AVAR PERIODS

**Abstract author(s): Bugarski, Ivan (Institute of Archaeology, Belgrade)**

**Abstract format: Oral**

Although there is no general agreement on what geographic area constitutes Central Europe, Syrmia should certainly be considered its part. Lying between the Danube and Sava rivers, this history-soaked land used to be the northern fringe of the Roman Empire and, later on, the southernmost possession of the Avars. This region had been named after one of its few cities, the Late Roman capital of Sirmium, the birth-place of several emperors and home to many martyrs. By the beginning of the fifth century, the city started to lose its importance, and at the time of Attila Sirmium lost its administrative status. After the fall of the Hunnic Empire, Syrmia was controlled by the Ostrogoths, who would gradually leave for Italy. In 510 the Romans had to accept that the whole of Syrmia was Ostrogothic, except for its southeastern corner with the city of Bassianae, but already around 512 Emperor Anastasius settled the Heruls there. The Gepids, with short interruptions, held Sirmium for almost a century, from 474 to 567, when the Avars established their rule in the Carpathian Basin. In the course of more than a century, including the time of Justinian, who was unable to restore the rule to what it was before the barbarian settlement, the way of life and space use in Syrmia underwent significant changes, and it seems that the crisis was further deepened with the arrival of the Avars. Quite paradoxically with respect to all their efforts to capture Sirmium, which they finally did in 582, the Avars seem not to have settled Syrmia on a large scale. We know fewer than ten sites that produced Early Avar finds, while in the Late Avar period this number was doubled. Some of these finds testify to supra-regional trade.

### 5 BEYOND THE STRUCTURES: THE PROBLEM OF LACK OF BURIAL SITES IN EASTERN TRANSYLVANIA, NORTHERN-MUNTENIA AND -OLTENIA (7/8–10TH CENTURIES)

**Abstract author(s): Erwin, Gáll (Institute of Archaeology) - Hőgyes, Mihály Huba (Székely National Museum)**

**Abstract format: Oral**

In the scientific debates published to date, there is a huge number of contributions addressing the archaeological spectrum of burial sites in the Transylvanian Basin, Oltenia, and Muntenia from a general and comprehensive perspective, however, without taking into account regional or microregional conditions.

This omission is mainly caused by an antagonistic presumption of uniformity, perpetuated in the theoretical approaches in archaeology from the 18-19th centuries.

This contribution proposes to debate the lack of burial sites in certain regions of the Transylvanian Basin, Oltenia and Muntenia and it explains this hiatus to a lesser extent by the current state of research and much more probably by the differences in burial customs, respectively by the differently demographical indexes between these regions. Thus, the lack of funerary sites in the aforementioned regions, can be attributed primarily to the fact that in the 8-10/11th centuries these areas were a kind of "stateless", unintegrated into the "network" of powers in the early medieval times ("Avar", "Bulgarian", or "Hungarian"). Thus, without a doubt, in these regions, the identification of the funerary behavior of the populations from the 7th-10th centuries remains one of the future challenges for the archaeologists of the early medieval period.

## 6 CENTRES ON THE PERIPHERY: A MICRO-REGIONAL APPROACH CONCERNING THE CEMETERIES IN TRANSYLVANIA BETWEEN THE 6TH AND 8TH CENTURY

**Abstract author(s): Dobos, Alpár (National Museum of Transylvanian History - Cluj-Napoca)**

**Abstract format: Oral**

The Avar conquest in 568 caused radical changes in the cultural, social and economic dynamics of the Carpathian Basin, which had a major imprint on the material culture as well. Throughout its approximately two and a half century history, the Avar Khaganate itself went through a series of significant changes in matter of lifestyle and external connections that led to the emergence of a new type of redistribution system in the second part of the Avar Age. During the Avar period, Transylvania can be considered a peripheral region whose integration into the social and economic system of the Khaganate deserves special attention. Regrettably, it is one of the most understudied areas of the Carpathian Basin, which seriously hinders a thorough analysis and calls for caution in drawing conclusions.

One of the greatest challenges of the early Avar Khaganate was the integration of the various 'non-Avar' communities with different cultural backgrounds, which led to a cultural diversity with a heterogeneous material culture. In this mosaic-like picture Transylvania has generally been treated as a distinct, but rather uniform region, usually associated with the survival of the late Gepids. However, a closer examination can reveal several micro-regional differences which point towards certain external connections and different degrees of implication in the communication networks of the period. This situation changed radically in the late Avar period, when a regional centre with a military character emerged along the middle course of the Mureş/Maros River. The presentation will attempt to outline the shifts in the settlement pattern in Transylvania between the 6th and 8th century, reflecting on the micro-regional centres and their integration into the general picture of the Avar Khaganate.

## 7 NETWORK OF THE EARLY AND MIDDLE AVAR AGE CHRONOLOGY

**Abstract author(s): Samu, Levente - Blay, Adrienn (Institute of Archaeological Sciences, Eötvös Loránd University)**

**Abstract format: Oral**

As the archaeological chronologies are based mostly upon co-occurrences of different object types, thousands of belt garnitures, jewelleries and other clothing accessories - which are the most frequent and important finds of the early and middle Avar period (6-7th c.) - were built into a database to investigate their relationship to each other, and in order to test the existing Avar age chronologies. Though the visualization of the correlations between thousands of archaeological objects in a network in itself is a big challenge, it allows us to oversee the connections and raise special questions (regarding special cultural phenomena such as distribution of male graves earrings, changing elements of the representation culture etc.) for the different groupings in the archaeological record. Furthermore it helps us to visualize old problems and draws attention to the limits of the chronological interpretations of the material. What can we see in the changing picture of an enormous archaeological material and how can we distinguish between the cultural traits and chronological phenomena? The recent study reveals insight to these questions.

## 8 MAKE ME ONE OF THESE

**Abstract author(s): Šmalcelj Novaković, Pia (Institute of Archaeology) - Rapan Papeša, Anita (Municipal museum Vinkovci)**

**Abstract format: Oral**

If we leave elite Late Avar period warrior burials aside what story can be told from female perspective? Repertory of finds from Late Avar period female graves is rather modest, therefore every little exception makes a difference. Female graves are often considered to be reflection of their male equivalents and luxurious objects are symbols of stabile economy. One of such finds are crescent shaped lunular earrings which have not been in focus since the last one dealing with those being Z. Čilinská in the last century.

Crescent shaped lunular earrings with star shaped pendant occur on several Avar period sites in Croatia, both in graves as well as surface finds. We can distinguish two types: top notch specimens made in silver or bronze and



casted bronze imitations. High quality products must have been made in a very well organized workshop; imitations could have been local products. Possible existence of a highly specialized workshop raises the question of the role of the microregion in 8th century Khaganate. This work has been developed under project Life on the Roman road: communications, trade and identities on Roman roads in Croatia from 1st – 8th CE (Croatian Scientific Foundation; UIP-05-2017-9768).

## 9 IN THE CONTACT ZONE: REGIONALITY IN THE AVAR AGE MIDDLE TISZA REGION

**Abstract author(s):** Horváth, Ádám (Institute of Archaeological Sciences, Eötvös Loránd University)

**Abstract format:** Oral

The Middle Tisza region is a geographical mesoregion in the Great Hungarian Plain. The river Tisza intersects its land creating a border zone connecting the middle and eastern part of the Carpathian basin. Based on earlier archaeological research and the preliminary results of the exploratory data analysis, two local groups can be separated. One of them is the Tiszafüred group and the other one is the Tiszántúl group. The former has ties with certain Transdanubian groups while the latter is connected to other communities in the eastern part of the Carpathian basin. They may have connections to different social groups (ethnicities?). The author of this paper seeks to examine three question groups regarding the local, microregional and macroregional structures of the mesoregion: (1) What kinds of historical, social (attitudes toward gender or age, and their connections to group identities), economic (subsistence strategies, rate of social inequalities, earlier and contemporary infrastructure) and environmental (changes in the river systems or climate, natural borders) events and processes affected or driven these local groups and their organisations? How do these events and processes affect each other or reflect a macrostructure? Are there any of them helping or preventing the growth, change and cooperation of each communities and local groups? Is there any factor demanding ingroup and outgroup cooperation? If yes, are there any signs of these? (2) Can any of the cemeteries be connected to central places in the mesoregion? If yes, do these places structure the region? (3) Is there any sign in the local and microregional level of the analysis of macroregional structures? If yes, can the differences between the local groups and communities be explained by different roles they played in the macroregional structure or by different opportunities each groups and communities had?

## 10 ANIMAL SKINS AS SIGNS OF SOCIAL STATUS? INTERPRETATION OF AN EARLY MEDIEVAL BURIAL CUSTOM IN EASTERN HUNGARY

**Abstract author(s):** Gulyás, Bence (ELTE)

**Abstract format:** Oral

The skulls and the lower legs of the horses, which are presumably left in the skin, are common features in the early medieval graves of the stock-breeder societies in the western part of the Eurasian steppe belt. Based on the most common interpretation, the appearance of the horse skin burials refers to an economic crisis. According to these views, society cannot afford such a waste of meat, so the animals were eaten during the feast except for their heads and legs. However, this explanation is insufficient and outdated. In the area of the present study, a large number of graves contain more than one animal skin, which contradicts the theory of impoverishment. The accumulation of animal skins in the graves is common in the western fringe of the Tiszántúl region, along the Tisza and Maros Rivers. The Byzantine import finds are just like the gold items concentrated in these microregions as well. Is there a link between the number of animal sacrifices and the number of status-related finds? In my presentation, I will try to answer these questions.

## 11 EVIDENCE OF GLASS BEAD PRODUCTION IN THE “LATE AVAR” PERIOD CARPATHIAN BASIN

**Abstract author(s):** Fülöp, Réka (Hungarian National Museum / Magyar Nemzeti Múzeum) - Bajnóczi, Bernadett (Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences, Eötvös Loránd Research Network - ELKH)

**Abstract format:** Oral

In the 8th and 9th centuries, the glass trade was significantly transformed. Our analysis focuses on how the changes in the major redistribution centres affected the Carpathian Basin. In total, more than 4500 beads from 17 cemeteries were examined. From these series, after detailed morphological studies, 50 beads were selected for microchemical and microtextural analysis. In the 8th century, soda glass, which followed Roman and post-Roman traditions, was gradually replaced by glass made with alkalis from the ashes of halophyte plants. This phenomenon is generally associated with the emergence of new production centres in the Islamic world. Long-distance redistribution is well documented by the occurrence of metal-foil beads and millefiori beads. At the same time, glass material obtained from the primary production centres via trade was locally processed into beads of different shapes and colours. Based on the technological features, we can assume that in the 8th and 9th centuries a regional tradition of making glass beads was developed in the Central Danube Basin, with several local differences. We have also found evidence for lead glass, which is significant since it is presumably closely related to the appearance of local workshops.

The local network shaped an interconnected system of workshops of relative cultural independence, maintaining close relations with each other. The characteristic regional bead types of the late Avar period, like melon-shaped beads, can mostly be traced back to Roman traditions. Additionally, new bead-making techniques emerged: copper metal sheets were used to make beads, "hair effect" appearance on the bead bodies, and some other techniques were developed to imitate high-quality beads, made with highly specialised technological knowledge. Thus, our archaeological analysis aimed to find answers to the issues of production, and cultural processes that took place in the late Avar period.

## 12 CHANGES IN THE COMPOSITION OF COPPER ALLOYS IN THE CARPATHIAN BASIN DURING THE LATE AVAR PERIOD

**Abstract author(s):** Mozgai, Viktória (Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences, Eötvös Loránd Research Network - ELKH) - Szenthe, Gergely (Hungarian National Museum) - Villa, Igor (Centro Universitario Datazioni e Archeometria, Università di Milano Bicocca; Institute of Geology, Bern University) - Bajnóczi, Bernadett (Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences, Eötvös Loránd Research Network - ELKH)

**Abstract format:** Oral

We have still only a few data about the production, distribution and use of non-ferrous metals during the Early Middle Ages (8th century AD). However, the origins of the largescale medieval European use of non-ferrous metals seem to go back to the 8th and 9th century AD. Therefore, in our project we investigate this period in detail. During late Avar period there was a drastic change in the use of metals in the Carpathian Basin, which is primarily reflected by the drastic growth of copper alloys in circulation. Although some traces indicate that the production of certain strategic goods (especially iron) had begun in this region, in case of copper we have not known the sources yet. The study of the copper alloys distributed en masse in the entire Carpathian Basin contributes not only to our knowledge about the technological traditions, but through the combined use of lead isotope and chemical analyses we expect results on the sources of the copper, too. According to the first results, the mostly cast objects were manufactured from lead-tin bronzes. However, the alloy compositions underwent some changes between the first and second half of the late Avar period. The difference is detectable in the more heterogeneous alloy compositions of the later part of the period, and in the presence of higher zinc content as well. The composition of the rivets has also changed. While the first half of the late Avar period is represented by rather homogeneous unalloyed copper, in the course of time the size of the rivets became smaller and their composition more heterogeneous with higher amount of lead, tin and zinc. The lead isotope composition of the unalloyed copper rivets was compared to the lead isotope database of copper ores, and most probably a northern source can be assumed.

## 13 BOUND BY BELTS. SOCIAL NETWORKS IN THE LATE AVAR PERIOD CARPATHIAN BASIN (LATE SEVENTH–EARLY NINTH CENTURY AD)

**Abstract author(s):** Szenthe, Gergely - Soós, Bence (Hungarian National Museum)

**Abstract format:** Oral

The Avars are traditionally interpreted as a nomadic people who arrived in the Carpathian Basin in the 6th century AD. In fact, in the first half of the Avar era; war booty and gifts played a decisive role in operating Avar society. After the mid-7th century, rapid changes led to the emergence of a radically new cultural, economic, and most probably, social model. The context of this "Late Avar" culture was the early medieval transformation of the European environment. This time, settlement became relatively dense in the Carpathian Basin and early village structures occupied new zones. The emergence of new regional centres or settlement hubs, and the restructuring and development of agricultural and craft production are well-proven. More recently, there is also a growing body of research on the social background of this system, as well as its embeddedness in the redistribution and power network. This latter issues are explored in our research in relation to a specific type of object, the ornamental belt. The circumstances in which ornate belts were deposited suggest their role in social representation. From the Late Avar period, we know of thousands of belt ornaments, mainly cast in copper alloy, from 20 to 40 percent of the Avar male burials. Our network analysis is based on the ornament combinations of 962 belt sets. By applying network models and statistical methods we hypothesized the main traits of the social mechanisms that shaped the visual representation of the Late Avar communities and patterns of interaction within the Late Avar society.

**Theme: 2. [Re]integration****Organisers: Denis, Solène (Masaryk University; UMR 8068 TEMPS) - Defranould, Elsa (Université Côte d'Azur; UMR 7264 CEPAM) - Kačar, Sonja (University College Dublin, School of Archaeology; UMR 5608 TRACES) - Szilágyi, Kata (Kiel University, Institute of Pre- and Protohistoric Archaeology)****Format: Regular session**

Borderline is understood here as an umbrella term for spatial, temporal overlapping and social processes which clearly shows the indefinite situations, so-called transformations. Our session will explore this notion thanks to lithic analysis. Neolithic cultural entities were mainly defined based on the typo-stylistic analysis of the pottery, neglecting other materials. Lithics have been poorly included in this issue. But they are a first-choice proxy to overcome the spatial perception of these entities. Indeed, of very good conservation, they are ubiquitous on prehistoric settlements and thanks to recent development, it is often possible to finely identify the raw material outcrops. Furthermore, because any action on the material is irreversible, they are offering first-rate documentation to decipher technical know-how. As such it is possible to draw and compare new spatial groupings: systems of the value of lithic tools among groups, raw material circulation networks, communities of practice...How to sketch their outlines? Are there overlaps between different spatial proxies? How to qualify frontiers/margins effects? Our session aims to [re]integrate lithic industries in the construction of Mesolithic and Neolithic narratives, especially from a methodological point of view.

In this perspective, we want to gather experts from Europe with different research traditions to identify and explain borderline effects.

We welcome contributions to the following questions:

1. Methodological point of view: how to highlight the phenomena of boundaries/margins (geographical, spatial, chronological, cultural) from the lithic data?
2. [Re]integrating socio-historical interpretations from this approach: how deciphering European Neolithic according to its lithic's borderline brings new insights in the understanding of these societies? Which social processes are at play in margins areas - (im)permeability, interaction, opposition, mixture, innovation?

By comparing these spatial patterns on a large European territory, we want to challenge the diversity of behaviours of these first agro-pastoral communities facing different environmental and geographical areas.

**ABSTRACTS****1 MULTI-LAYER ANALYSIS AND THE IDENTIFICATION OF DIFFERENT BORDER[LINES]: IF ONE CROSSES THE LINE?****Abstract author(s): Denis, Solène (Masaryk University) - Defranould, Elsa (Université Côte d'Azur, UMR 7264 CEPAM) - Kačar, Sonja (University College Dublin, School of Archaeology) - Szilágyi, Kata (Kiel University, Institute of Pre- and Protohistoric Archaeology)****Abstract format: Oral**

Lithic analyses reveal multiple interdependent spatial organisations, questioning their social meaning. We suggest here to discuss the articulation between three scales: long-distance circulation networks; regional communities and settlements organization. To introduce this session, we will gather different examples from Central Europe, North-Western Europe, and the Mediterranean area to compare the different spatial patterns underlying the dimensions of connectivity or isolation between territories. According to the three scales defined, we will question the different perceptions of borderline effects. The confrontation between our different examples will be dedicated to bringing new insight into the social meaning of these margins/boundaries. Besides this, our goal is also to discuss these social-material-technological borders, and how can we compare them with relation to different geological units. We have to pay special attention to the fluid character of borderlines, which derives from the flexibility of the border idea, e.g. the potential borders relating to raw material distribution could be different than those relating to technological traits.

**2 BETWEEN THE BALKANS AND THE MEDITERRANEAN: INTERACTIONS, INTEGRATIONS AND BORDERS DURING THE LATE MESOLITHIC AND EARLY NEOLITHIC OF SOUTH-EASTERN EUROPE****Abstract author(s): Kacar, Sonja (University College Dublin; TRACES, UMR 5608)****Abstract format: Oral**

Prior to the arrival of Neolithic settlers, south-eastern Europe was inhabited by local groups of hunter-fisher-gatherers, who, between cca. 6500 and 5500cal BC, occupied the area between the Balkans and the Adriatic. These Late Mesolithic groups are broadly identified with the so-called « Blade and Trapeze technocomplex » of western Eurasia. Known as Castelnuovian culture in the context of the central-western Mediterranean, their lithic assemblages

are characterized by a change in the conception of technological systems and the emergence of new knapping techniques.

The social mechanisms behind these transformations still require proper characterization and to date several explanations have been suggested, but there is no consensus. However, the disruption of the entire technological system can be primarily explained by an influx of foreign traditions.

This presentation aims to confront lithic data obtained from Montenegro, Croatia and Slovenia in order to examine the development of the Late Mesolithic of south-eastern Europe. Can it be viewed as a uniform phenomenon (emerging from the same "centre of origin") or is it possible to observe local/regional particularities, i.e. Late Mesolithic of south-eastern Europe as a result of the integration of different traditions. How can this be approached from the perspective of lithic assemblages? Are there notable differences in the traditions of lithic production (e.g. use of different methods and techniques, manufacture of different tool types) and if so, do they coincide with geographical borders, i.e. is there a difference between continental and littoral regions? Finally, how did these Late Mesolithic traditions shape the future "cultural boundaries" that would designate the Early Neolithic of south-eastern Europe?

### 3 THE STONE INDUSTRY FROM THE LOWER VOLGA REGION SITES DURING THE NEOLITHIZATION.

**Abstract author(s):** Vybornov, Alexander (-) - Kulkova, Marianna (-) - Giljazov, Filat (-)

**Abstract format:** Oral

The Lower Volga region is located in the steppe and semi-desert zones. The transition to domestication connects with the Cis-Caspian (Prikaspiyskaya) culture. The stone industry of this culture has strong differentiation from previous Neolithic Orlovskaya culture. For the manufacture of stone tools, the new raw source of stone has been used. Flint was exchanged for quartzite. There are known quartzite sources in the Lower Volga region. This quartzite type has differences in comparison with sources used in the earlier cultural tradition. This is evidence of raw material source changing. The new enhanced pressure technology to obtain long and wide plates was developed. The assortment of stone tools has been changed also. The microliths disappeared and arrowheads were used. They were treated by means of the bifacial retouch. Their shape is a peculiarity of the Cis-Caspian culture. All these transformations were connected with the appearance in this region of new population. The conjunction of the special raw material sources used, the technique of chipping, and different types of stone tools allows us to mark the territorial borders of the Cis-Caspian culture distribution and establish their chronology from ca. 5500 to 5000 calBC. On the base of these features, the traces of this culture were found in other regions and also other chronological periods. For example, about 5000 calBC in the stone tool assemblage of the Khvalinian culture in the Lower Volga region there was noted a combination of flint and quartzite raw sources which has been applied for tool making. The technique of an enhanced pressure was used for tool making. This supports the influence of the Cis-Caspian culture on the formation of the stone industry of the Khvalinian culture.

### 4 MODES OF CHIPPED STONE TOOLS PRODUCTION OF THE EARLY FARMING SOCIETIES IN THE SOUTH OF THE EASTERN EUROPE

**Abstract author(s):** Kiosak, Dmytro (Ca' Foscari University of Venice)

**Abstract format:** Oral

The chipped stone assemblages of early farmers (EF) in the south of the Eastern Europe take several shapes. 1) They can have a developed laminar component, with production wastes underrepresented, with a high percentage of retouched items (mostly blades with lateral retouch and end-scrapers on blades), an exploitation of a high-quality long-distance imported raw material. These assemblages usually are numerically small. 2) Some complexes demonstrate a "simplified" technical set (wide use of hard-hammer), many wastes of production, relatively low percentage of formal tools, most retouched tools on flakes (mostly retouched flakes and end-scrapers on flakes), an exploitation of medium quality local chert. These assemblages are relatively larger in numbers. The latter complexes are often explained via the interaction with a local hunter-gatherers' population.

An alternative explanation can be sought via the notion of social organization of flintworking by EF. The EF were able to develop a complex system of flintworking based on intra- and inter- communal specialization and constant exchange of blanks and tools. The complexes of the first type result from an inclusion of a settlement into its exchange network. The complexes of the second type represent domestic production of households, satisfying its needs on its own, being excluded from its exchange network. So, EF flintknapping existed in two modes: "domestic" and "exchange". "Exchange" mode is a common way of chipped stone tools production in early farming societies. "Domestic" mode is common in "borderline situation" under conditions of on-going Neolithization of new terrain. Every early farming lithic assemblage can be treated as composed of products of these two modes to varying degree.

## 5 UNDERSTANDING EARLY NEOLITHIC LOCAL COMMUNITIES THROUGH THEIR TECHNOLOGICAL TRADITIONS: THE DISTRIBUTION OF THE CASA MONTERO FLINT IN CENTRAL IBERIA

**Abstract author(s):** Castañeda, Nuria (Universidad Autónoma de Madrid) - Herrero-Alonso, Diego (Museo Arqueológico de Cacabelos; Universidad Autónoma de Madrid) - Cabrera-Taravillo, Cristina (Universidad Autónoma de Madrid) - Tarrío, Antonio (Universidad del País Vasco/Euskal Herriko Unibertsitatea) - Consuegra, Susana - Díaz-del-Río, Pedro (Consejo Superior de Investigaciones Científicas - CSIC)

**Abstract format:** Oral

The Early Neolithic communities of central Iberia were considerably small and mobile and developed aggregation mechanisms in order to build and maintain extra-local relationships. One such activity was flint mining. Communal events created shared knowledge, experiences and technological traditions that reinforced a sense of community and belonging. Perhaps the main evidence of these local traditions is the deliberated addition of crushed bone as temper in most pottery containers.

The second line of evidence comes from the extraordinary archaeological record recovered at the Casa Montero flint mine, one that displays the organizational complexity of early farming communities, most noticeable in the array of learning activities that assured the continuity of knowledge and traditions. However, the site and the vast amount of invested collective labor contrasts with the striking scarcity of its contemporary domestic record.

Small flint blades were the main production at Casa Montero. These blades were subsequently distributed through both mobility and social networks. We present the first technological and petrological analyses of a set of contemporary lithic productions from ten sites. Results suggest that lithic production is another key way of approaching, recognizing and tracing technological tradition of these Early Neolithic groups.

## 6 OUTSIDE THE BOX – LITHIC ANALYSIS AS AN INDICATION OF EARLIEST LBK CROSSING CULTURAL BORDERLINES

**Abstract author(s):** Bauer, Lisa (University of Erlangen-Nürnberg)

**Abstract format:** Oral

For the earliest LBK in Central Europe, Southern Bavaria marks a marginal area of the Early Neolithic distribution. To the south, the northern Pre-Alps represent an "empty space", where no simultaneous interaction or landuse can be shown archaeologically. Therefore, the Southern Bavarian area is suitable as a basis for discussing several aspects regarding borderline phenomena – from diverse landuse and raw material procurement to cross-cultural contact and interaction. Regarding Neolithic research in this region, the focus has been largely on pottery analysis as basis for chrono-cultural questions, leaving lithic analysis as a proxy for spatial processes at a lower resolution. To confront this gap in the empirical basis, a lithic assemblage from an earliest LBK site in Southern Bavaria in the Isar valley was studied with a special focus on typo-technological aspects and raw material analysis. As a result, the raw material use shows bridges to the southern Alpine region and Switzerland, which supports the assumption of a more permeable quality of the clear-cut archaeological borders. This opens up discussion about the agents and processes of long-distance raw material transport, relations of cultural entities as well as mobility of the earliest LBK itself across its archaeological borders.

## 7 NIGHTMARE AT THE BORDER: LIMINAL CONTACTS AND POROUS MARGINS DURING THE 6TH AND 5TH MILLENNIA IN SOUTHERN FRANCE

**Abstract author(s):** Defranould, Elsa (CEPAM - UMR7264) - Galin, Wilfrid (Paléotime; UMR5608-TRACES) - Gibaja Bao, Juan Francisco (Escuela Española de Historia y Arqueología en Roma - EEHAR-CSIC, Consejo Superior de Investigaciones Científicas)

**Abstract format:** Oral

Defining precisely the notion of borders has always been a delicate exercise for the prehistorian, since we generally only focus on the material aspects of borders. Generally, the cultural or chronological definition of an entity involves the perception of the limits of these different technical, economic or symbolic features, which we then sometimes consider as a frontier. The approach to supply systems and the circulation of raw materials on the one hand, and the recognition of technical traditions, their diffusion, adoption or rejection on the other, constitute heuristic keys in an attempt to circumscribe chronocultural entities. Finally, understanding what happens on the periphery of these entities raises the question of whether it is possible to characterize the presence of real border phenomena (temporal, spatial, cultural), or on the contrary to consider these margins as spaces of cultural syncretism or zones of multiple influences.

Using examples from Southern France in the second half of the 6th to the beginning of the 4th millennium, we will see how lithic industries allow us to understand various manifestations of these liminal phenomena and their social and economic implications. In particular, we are interested in the development of large-scale specialist product distribution networks; focusing on areas perceived as peripheral. In this paper, we will try to distinguish in the lithic pro-

ductions what are internal anchorings and what testify to external influences, as well as dealing with the integrations or modifications of the different technical systems. Technical borders, symbol borders, zones of syncretism, shared or confronted networks... We will see how the lithic industries testify that the Neolithic margins are not hermetic borders but rather porous zones of passage marking discontinuities while affirming and recomposing cultural identities.

## 8 OBSIDIAN AND BLOND BALCANIC FLINT - SILEX SANS FRONTIÈRES?

**Abstract author(s):** Sommer, Ulrike (Institute of Archaeology, UCL)

**Abstract format:** Oral

Ulrike Sommer, Ivana Jovanović

The distribution of lithic raw materials is normally interpreted in terms of trade "as an action of distance". In contrast, pottery styles and lithic tools are traditionally used to define archaeological cultures, or areas of closer interaction.

We are going to look at two types of lithic raw material, blond Balcanic flint from Bulgaria and Carpathian obsidian which are widely distributed in South-East Europe, in order to understand how cultural boundaries influence the distribution of these two materials, both in the early Neolithic (Starčevo-Körös-Criş) and the later Vinca-LBK-Bükk-ALP horizon. We will ignore Wolhynian flint, as it is not found in all of the study area, which can be roughly defined as the Middle Danube and its tributaries. We will discuss if there are different processes of distribution for each obsidian and Balcanic flint. To understand the networks of exchange in general, this should be combined with studies of more local lithic raw materials, lithic technology and lithic tool types, intra-settlement distributions of lithic artefacts, as well as the study of other raw materials like pottery, ground stone, spondylus and copper. This can only be done in an impressionistic manner at the moment, for systematic studies databases are needed.

## 9 EXCHANGE NETWORK BORDERS AND TECHNICAL TRANSFERS ACROSS NEOLITHIC MIDDLE BELGIUM AROUND 4000 BCE

**Abstract author(s):** Collin, Jean-Philippe (Paris 1 University; Namur University)

**Abstract format:** Oral

Between 4300 and 3650 BCE, the area between the Rhine and the Scheldt was occupied by populations belonging to the cultural entities of the so-called Belgian Michelsberg and the Group of Spiere.

In this area of Europe, lithic resources are concentrated on a band of Cretaceous outcrops corresponding to Middle Belgium. At the turn of the 5th and 4th millennia, in the midst of a demographic increase, three mining complexes developed across Middle Belgium, in the Mons Basin, in Hesbaya and in Limburg.

Although geographically distinct, these complexes share a series of common features, notably the centralization and control of the large blades production on the major mining sites of Spiennes (Mons Basin), Orp (Hesbaya) and Rijckholt (Limburg). Moreover this production highlights exclusive technical transfers between them. What socio-economic or cultural processes are at work, as those relationships between the very beating heart of each mining complex appear to be in contradiction with the current vision of autonomous sites feeding contiguous exchange networks? Where are the borders when data derived from lithic technology and exchange networks appear to give conflicting signals?

## 10 SOME DIAGNOSTIC PHENOMENA AMONG STONE TOOLS IN THE HUNGARIAN NEOLITHIC

**Abstract author(s):** Farago, Norbert (Eotvos Lorand University, Institute of Archaeological Sciences)

**Abstract format:** Oral

Research into the Neolithic period in Hungary (between 6000 and 4600/4500 BC) began at the beginning of the last century, and the frames of the cultures we use today were coined relatively early. Not surprisingly, the relevant units, for example, Körös culture, the Bükk culture, or even the Tisza culture, were distinguished based on their ceramic styles and forms. In the last hundred years, Hungarian prehistoric research has done much to delineate the spatial and temporal boundaries of these cultures, and by the 1980s a chronological system had crystallized that is still valid today, while the ceramic-centered approach remains dominant to this day. Although systematic research on Neolithic knapped stone tools does not have a long history, the lessons of the last thirty years are sufficient to try to compare the experience with other elements of material culture and to draw further conclusions by integrating them at a higher level.

It is generally agreed that the expedient nature of Neolithic stone tools does not allow for the kind of sophisticated typologies that we know from the Palaeolithic or Mesolithic. However, we are not necessarily lacking general phenomena that could be used to distinguish one region, period, or one archaeological culture from another. These phenomena may be differences in the choice of raw materials, differences in typology sets, or technological changes. For example, the abundance of end-scrapers and distant, trans-Carpathian raw materials can be connected to the Late Neolithic on the Great Hungarian Plain. However, almost all these phenomena have one common characteristic that can be considered generally true, namely that they are not necessarily exclusive, but rather can be

considered as a rule of thumb. In this presentation, these observations in the Carpathian Basin will be explored and interpreted in the context of our classically known cultural units.

## 11 LITHICS AS PETRIFIED GATEWAYS BETWEEN SOCIAL-MATERIAL-TECHNOLOGICAL BORDERS

**Abstract author(s):** Szilagyi, Kata (Kiel University)

**Abstract format:** Oral

The Carpathian Basin is often called as borders between East and West, which is also the title of the permanent archaeological exhibition of the Hungarian National Museum. In addition to this, we can find several art history and contemporary art, cultural anthropological and also archaeological exhibitions with the same title. This is not a strange coincidence, it emphasizes the similar phenomena of diverse human-made materials and modified landscapes between two different worlds – the Eurasian Steppes and temperate Europe. If we look closer the archaeological research history, we can see that the reaction to the diversity of the archaeological material was to create several contemporary cultures and subgroups. This approach was methodologically largely based on the pottery decorations and the major vessel styles, which were used to indicate regional differences and variations, which were in turn identified with social units and supposed spatial borders between them.

In this paper, I instead focus on the lithic material in Neolithic and Copper Age in Carpathian Basin and its surroundings. I will use the lithic assemblages as an interwoven layer of spatial interaction which show different spatial dynamics as opposed to the pottery-based units. This gives us a broader understanding of the complexities of interregional exchange and social interaction and their change over time.

## 12 CHIPPED LITHICS VS POTTERY. DECIPHERING THE MATERIAL AND SOCIAL PAST IN THE NEOLITHIC OF THE POLISH TERRITORIES

**Abstract author(s):** Nowak, Marek (Institute of Archaeology, Jagiellonian University, Kraków) - Wilczyński, Jarosław (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków) - Brzeska-Zastawna, Agnieszka - Zakrzewska, Justyna (Institute of Archaeology, Jagiellonian University, Kraków)

**Abstract format:** Oral

Reconstructions of the spatial and to some extent chronological differentiation of the European Neolithic, at least in the 'continental' tradition, are based on pottery. Consequently, other elements of Neolithic material culture are subordinated to ceramic divisions. This also applies to chipped lithics, which results in the biased picture of the past. In reality, chipped lithics were a very important element of Neolithic culture, perhaps even more permanently and fundamentally recording technological, typological, functional, social and mental boundaries, when compared to pottery (susceptible to short-term stylistic fashions). Comparative analyses from today's Poland clearly indicate that spatial and temporal borders of visible, territorially and chronologically distinct lithic entities do not coincide with the borders of traditional Neolithic entities, distinguished on the basis of pottery. Only by way of example let us signal two phenomena. As a matter of facts, one entity constitutes chipped lithics of the Linear Pottery culture as well as of many, highly differentiated, post-LBK units (Stroke Band Pottery culture and early/middle Lengyel-Polgár complex). On the other hand, within the Funnel Beaker culture, relatively homogeneous from pottery perspective, several entities within the chipped lithics are easily discernible. The presentation will first present the circulation networks which can be deciphered based on chipped lithic phenomena. The relationships between them and to other circulation networks will be analysed as well. Secondly, social processes which may have been hidden behind these networks and their transformations will be considered. In conclusion, we will argue that the obtained inferences change previous narratives on the diversification and development of Neolithic communities in Polish territories. The presentation will use data from Neolithic sites in Poland, including the multicultural site at Miechów (western Lesser Poland), which will be used as a case study, due to very recent investigations (within the project no. NCN 2016/23/B/HS3/00387).

## 13 LITHIC INDUSTRIE(S) AND STYLISTIC ENTITIES DURING THE EARLY NEOLITHIC (RUBANÉ) IN THE RHINE-MEUSE-SEINE BASINS

**Abstract author(s):** Allard, Pierre - Delvigne, Vincent (CNRS-UMR 8068 TEMPS)

**Abstract format:** Oral

The study of the decorated ceramics of the Rubané or Linearbandkeramik (LBK) has long structured the construction of the chronological sequence of the Early Neolithic of northwestern Europe. Recent contributions make it possible to individualize regional stylistic groups. After a common stylistic stage - the Flomborn entity - the examination of the different regional corpus shows that from the dislocation of this entity, the decorative elements of each region present different evolutions, individualising entities that sometimes seem very homogeneous from a stylistic point of view of the decorations (e.g. the Rhine-Meuse set during the Middle LBK).

This contribution aims to compare the results coming from the ceramic corpus with those of the lithic industry, that shows beyond common basis, regional differences that are also quite significant, whether from the point of view of the procurement of raw materials, their knapping processes and of the tool typology. For example, the geographi-

cal network of raw materials circulation shows preferential axes between certain regions or, on the contrary, border effects that should be confronted with the entities previously defined by decorated ceramics. The theoretical significance of these first observations and the contribution that the techno-economic analysis of lithic industries can make to the understanding of the relations between communities in the Early Neolithic of the Rhine-Meuse-Seine basins will be examined in the framework of this presentation.

## 14 CLASSIFYING BEHAVIOUR FROM ECOLOGICAL PATTERNS. A STUDY OF DIVERSITY IN EARLY NEOLITHIC SICKLES AND BOTANICAL REMAINS IN THE IBERIAN PENINSULA

**Abstract author(s):** Barrera-Cruz, María - García-Puchol, Oreto (Department of Prehistory, Archaeology and Ancient History. University of Valencia) - Cortell-Nicolau, Alfredo (Department of Archaeology. University of Cambridge) - García-Rivero, Daniel (Department of Prehistory and Archaeology. University of Seville)

**Abstract format:** Oral

The identification of different kinds of crop management over space and time is a crucial aspect for the understanding of the Neolithic spread. In this regard, at least two aspects must be considered. First, the current state-of-the-art, revealing oscillations in the crop spectrum and differences in the harvesting technology which have been linked to various episodes of population movements. Second, the underdetermination problem, where archaeological analysis of cultural transmission and spread is frequently forced to rely on large-scale spatio-temporal records.

Considering these aspects, this presentation focuses on the Iberian Peninsula to explore such changes at a higher resolution and at a regional scale. How diverse are these Early Neolithic groups according to the way they interact with the environment? Is the variability in the crop package significative? Which are the factors responsible for this diversity? Could the harvesting lithic set undergo modifications due to fluctuation in the crop spectrum, or were the changes only determined by cultural factors? To what extent can we recognize dispersal and/or culture transmission of Neolithic farmers from the classification of farming behaviour?

In order to answer these questions, we propose a multi-proxy approach where we explore specific differences in the crop package between Early Neolithic groups. This will include the analysis of domestic taxa dominance or diversity, as well as analytical approaches to adventitious species management, all within a multiple time-window chronological frame. Ultimately, we will address whether changes in farming practices relate to lithic technology or we must look for differences in the material culture under the perspective of stylistic and cultural transmission dynamics.

---

## 254 UNDERSTANDING THE DYNAMICS OF MAKING AND TRADING GOODS ACROSS MEDIUM AND LONG DISTANCES IN THE 2ND MILLENNIUM BC

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Roberts, Benjamin (Department of Archaeology, Durham University) - Ialongo, Nicola (Georg-August-Universität Göttingen, Germany) - Williams, Alan - Badreshany, Kamal (Department of Archaeology, Durham University)

**Format:** Regular session

It has long been known that the widespread adoption of tin-bronze across Europe, north Africa and Asia during the 2nd millennium BC had to be underpinned by an extensive connectivity linking directly or indirectly metal producers and consumers. However, the debates concerning the economics and logistics of this Bronze Age trade have tended to concentrate upon single sites or single materials (e.g. metal, ceramics, glass, amber etc.) or widely distributed artefact types. This seems to be missed opportunity especially in the light of limited engagement with potentially overlapping debates concerning the transmission of technologies and foodstuffs, the movement of people as well as the nature of economic systems during the 2nd millennium BC. This session seeks consider how to define and evaluate the dynamics of the Bronze Age trade. The aim is explore, using examples of various traded goods: the organisation of production; the direction and logistics of transport; the potential quantities involved; what was traded; who was involved; the knowledge and expertise required; and the broader economic and social implications.

## ABSTRACTS

### 1 "INTERLINKING EXCHANGE" : FIRST LESSONS FROM THE STUDY OF TEMPORALLY AND SPATIALLY FAR-REACHING RAW MATERIAL-EXCHANGE NETWORKS

**Abstract author(s):** Kerig, Tim - Hilpert, Johanna (ROOTS cluster of excellence CAU Kiel)

**Abstract format:** Oral

The systematic synthesis of individual studies on trade networks of single raw materials (e.g. flint, ground-stone, amber, ivory, glass, metals) has long been missing in prehistoric archaeology. With an increasing interest in economic archaeology and at the same time with new tools of informatic network studies, new possibilities for data collection, organisation and analysis are now emerging.



The contribution will present first results of the joint analysis of different data sets on sourced raw materials from a large area (Europe, North Africa, West and Central Asia) and in long time series (Mesolithic to Late Bronze Age). Interesting fundamental differences are already becoming apparent: a quantitative classification of different exchange networks makes it possible to show different network activities over time.

Using examples from our case studies we will show several network-effects which are important for the research into the second millennium BCE. We will define scales of exchange networks (e.g. household, landscape, kingdom, inter-continental) as well as spheres of interaction (e.g. family, market, administration, diplomacy).

In our current project "Interlinking Exchange", such networks are brought together by the collaboration of the respective researchers. The interdisciplinary project is located within the Cluster of Excellence ROOTS as a collaboration between prehistoric archaeology and data-sciences. It connects archaeologists from all over Europe and works as a moderated but basically open platform for the cooperation of interested parties.

## 2 SCRAP FOR CASH: ASSIGNING MONEY A ROLE IN THE ECONOMY OF LATE PREHISTORIC EUROPE

**Abstract author(s): Ialongo, Nicola (University of Goettingen)**

**Abstract format: Oral**

Prehistoric archaeology never acknowledged money a role. For decades, prehistoric economies were believed to be so small and 'primitive' that they could not be explained by modern economic principles. In recent years, the narrative has changed radically. Increasing evidence suggests that – starting c. 2500-2000 BCE – the whole of Western Eurasia became entangled in a continental trade network driven by the need to secure the supply of copper and tin. However, while research on Bronze Age currencies is slowly starting to provide compelling evidence, money still has not found its place in the grand narratives of prehistoric Western Eurasia.

Data show that, in the Late Bronze Age of Italy and Central Europe, bronze objects were intentionally fragmented to obtain pre-determined mass values, and that these values complied with the weight systems that were in use in those regions where these fragments circulated. The most plausible explanation for this phenomenon is that fragmentation was meant to create small portions of metal that matched the value of the quid pro quo that was required to complete a transaction. That is, what today one would call a price.

Being able to identify metal currencies, however, does not explain why money emerged and how it was used. In this paper, I will explore the significance of monetary patterns of exchange in modelling the movement of metals in late prehistoric Europe. While current research focuses on top-down models of organized, long-distance trade, I will explore the potential role of metallic currencies in sustaining a vast distributed network of small-scale, short-range exchange.

## 3 DYNAMICS OF METAL PRODUCTION IN THE 2ND MILLENNIUM BC EURASIAN STEPPE

**Abstract author(s): Calgaro, Ilaria - Radivojević, Miljana - Altaweel, Mark (University College London - UCL)**

**Abstract format: Oral**

Nomadic pastoralists of the Eurasian Steppe were the major producers and suppliers of copper and bronze in Eurasia during the 2nd millennium BC. Nevertheless, what role did metallurgy play in shaping socio-economic relationships between and beyond the Bronze Age steppe communities is still contentious. Given the volume of copper alloys produced and traded at the time, the characterisation of metalmaking technology in the steppes emerges as a key aspect to inform on the dynamics of communication and supply networks that underline the Bronze Age economy in the Eurasian Steppe.

In a previous work, we built a database of metallurgical evidence collected from 14 small- and large-scale metal-making sites across 2nd millennium BC in the steppes and Eurasia in order to observe patterns of production that may connect them. It highlighted the diverse pathways metalsmiths at the time took to master the two stages of metallurgical production – matting and matte smelting – mainly through different furnaces design and recipes.

This contribution expands on our former results by developing an SQLite database in QGIS including compositional and provenance legacy data from 144 2nd millennium BC workshops, metal extraction sites, settlements and burials of the Eurasian steppes, in progressive update. Statistical analyses of such legacy data will enable a wide spectrum investigation of the metallurgical knowledge and traditions. Plus, our SQL database considers both the spatial and temporal dimensions by matching coordinates and radiocarbon and relative dates with legacy data to explore the logistics behind the quality of raw materials exploited, the stages of the process involved, and the type of smelted metal across different Eurasian Steppe regions during different chronological intervals.

In this way, we aim to further explore socio-economic networks across 2nd millennium BC communities of the Eurasian Steppe Bronze Age through the lens of metalmaking technology.

## 4 THE DYNAMICS AND IMPACT OF MEDIUM AND LONG DISTANCE TRADE OF METALS IN THE 2ND MILL BC EURASIAN STEPPE

**Abstract author(s):** Radivojevic, Miljana (UCL Institute of Archaeology)

**Abstract format:** Oral

Over the last 30 years it has been convincingly argued that the control of resources, innovation and intensification of production and use of copper and bronze artefacts in the Eurasian Steppe was at the heart of social, economic and technological transformations that took place from the Atlantic to the Pacific between c. 3500 and 1000 BC. The vast expanse of the Eurasian Steppe was populated with a varied range of pastoralist societies, whose sociopolitical, economic and technological advancement in the BA has long been inconsistent with the Childean and later models of the evolution of societies, involving chiefdoms, states or empires. Yet, this diverse conglomerate of steppe communities living outside the shifting boundaries of the 'urban', 'settled' or 'civilised' worlds carried out the earliest pan-Eurasian trade network, unrivalled in complexity, power and scale, effectively feeding the 'civilised' realm.

The recent archaeometallurgical research in the Bronze Age steppes presents the scale of connectedness of metal production technology across small and large scale metal making sites. Networks analysis show the regionalisation of supply networks for ores and metals, while environmental data point at significant impact of metallurgy on the landscape at the time. A synthesis of the current state of knowledge on the synergies of metals, trade and environment reveals the most important factors that facilitated the growth of the metals trading industry in the 2nd mill BC steppes: communication, logistics and access to resources.

## 5 ON THE ROAD WITH MILLET: DISPERSAL OF BROOMCORN MILLET AND THE ECOLOGY OF ITS EARLY CULTIVATION IN EUROPE

**Abstract author(s):** Filipovic, Dragana (Christian Albrecht University Kiel) - Silva, Fabio Parracho - Vander Linden, Marc (Bournemouth University)

**Abstract format:** Oral

In Europe, cultivation and consumption of broomcorn millet began in the mid-2nd millennium BC, in the Middle or Late Bronze Age. This was the time of marked growth of population, ongoing shift in burial ritual from inhumation to cremation, modifications in architecture and settlement layout, increase in the production and trade of metal. Moving along the trade routes, millet spread fast across the continent, into both prime and marginal farming zones. At the time, a range of cereal, pulse and oil/fibre crops was already cultivated and consumed, i.e. there was no obvious shortage of cultivars. But the apparently increasing population and the unstable (Subboreal) climate, involving cold and dry phases and, in the second half of the 2nd millennium BC, increasing aridity, perhaps stimulated the rapid dispersal of this highly-adaptable, drought-resistant, fast-growing cereal. Along with millet spread the knowledge of its properties and management. Adoption of the new crop likely prompted changes in the existing agricultural systems and technologies. These may have related to, for instance, cultivation intensity, organisation of work, seasonality of agricultural tasks, extent/location of land under cultivation, types of tools and techniques, cuisine and recipes, plant-related rituals and symbolism.

This paper summarises the existing multi-proxy evidence on the spread of millet from Asia to Europe and the possible regional and local routes and mechanisms via which this movement took place. It reviews the changes in agricultural production potentially related to the adoption of millet and explores the character of ecological niches in which early millet was cultivated.

## 6 BRINED STORIES IN THE BRONZE AGE EAST OF THE CARPATHIANS (ROMANIA)

**Abstract author(s):** Bolohan, Neculai („Alexandru Ioan Cuza” University of Iași)

**Abstract format:** Oral

Lately, there is a keen interest in unveiling the role of salt sources (brine, crystalized salt) in the life of ancient communities. The concentration of scientific concerns is enhanced by the visible association between archaeological sources and the location of brine sources, which have been exploited since the Eneolithic period. This is a favorable situation! But what about the Bronze Age communities located in the Eastern Carpathian area, knowing that their lives are closely linked to the breeding and exploitation of animals? The first consistent answer was given by the results of research in eastern Transylvania, where we can already talk about the industrial exploitation of brine in the Bronze Age. Apparently, there is no evidence of the use of brine or salt by these communities for the proposed work area. Gradual answers could be found in a more careful reading of the landscape, the distribution of these sources, the evaluation of the technological potential, the identification of the transport routes, etc. In order to go through the proposed stages, a work area was chosen, represented by depressions in which there are old springs of salt and in which the old communities exercised an apparent control over them. Cartographic, ethnographic and archaeological sources were used in this initiative to facilitate inferences about economic and social implications.

## 7 HOW SHOULD WE UNDERSTAND THE BRONZE AGE TIN TRADE IN EUROPE AND BEYOND?

**Abstract author(s):** Williams, Robert (Durham University) - Montesanto, Mariacarmela (University degli Studi di Firenze) - Ponting, Matthew (University of Liverpool) - Badreshany, Kamal - Roberts, Benjamin (Durham University)

**Abstract format:** Oral

Identifying the sources, routes and dynamics of the trade in tin (ore and metal) during the 2nd millennium BC has been debated since the 19th century, invariably with only fragmentary evidence. However, the last decade has seen major archaeological discoveries and scientific advances which, when integrated, shift our understandings of the Bronze Age tin trade in Europe and beyond. This paper will evaluate the evidence and contexts for the origins of tin-bronze alloying, contrasting these with the transmission and contexts of tin-bronze as a widely adopted metal. It will highlight the high quantities of tin involved in the 2nd millennium BC production and trade from major and minor tin ore sources when compared only to copper metal output from 2nd millennium BC copper mines.

It will provide an integrated review of the archaeological, geological and geochemical evidence in southwest Britain to propose a de-centralised model for the exploitation and production of tin by small farming communities. It will review the current state of knowledge regarding the provenancing of tin metal to tin ore sources. Finally, it will propose models for the routes of movement and logistics of the tin trade over hundreds of kilometres and contrast these with the (pre-)existing movements of other goods and technologies.

## 8 CERAMIC TRANSPORT JARS AND THE EMERGENCE OF SOCIAL COMPLEXITY IN THE EARLY BRONZE AGE LEVANT

**Abstract author(s):** Badreshany, Kamal (Durham University)

**Abstract format:** Oral

Purpose built storage and transport vessels emerge in great numbers across the Levant during the third millennium BC. This period saw the emergence of complex societies, alongside population expansion and urbanisation. This paper presents new evidence indicating that these jars underpinned a system of centralised agriculture and were designed for trade and reinforcing tributary relationships in the earliest Levantine states. They were likely used for storing and transporting high-quality commodities, such as olive oil and wine, and facilitated the circulation of these commodities within the Eastern Mediterranean, but especially with Egypt where Levantine jars are found in large numbers. This paper focuses on a region of northern Lebanon, exploring specifically the role of these jars in maritime trade with Egypt during the 'Pyramid Age' and what benefits this relationship delivered to local elites. We then examine jars of the second millennium BC showing how the economic templates established during the Early Bronze Age were utilised for millennia in the region.

## 9 WHAT WE THINK WE KNOW ABOUT TRADE BETWEEN THE AEGEAN AND OTHER PLACES DURING THE SECOND MILLENNIUM BC: A SUMMARY

**Abstract author(s):** Aulsebrook, Stephanie (University of Warsaw)

**Abstract format:** Oral

This paper aims to summarise the current thinking on the role of the Aegean in the extensive trade networks that existed between Africa, Asia and Europe in the second millennium BC. Often characterised as an intermediary between East and West, the geographical position of the Aegean situates it at the heart of both maritime and overland routes. All the evidence, from the analysis of both artefacts and iconography, points towards the palaces, the centres of political power within the Aegean, as playing a major role in these international networks, yet intriguingly any mention of trade is absent from the fragmentary deciphered texts from the palatial administrative archives (Linear B). Despite this, the importance of the metal trade in particular is unequivocal, through the inclusion of the Aegean in the copper oxhide ingot network, with 'exotic' materials such as amber, elephant ivory, glass and lapis lazuli demonstrating the range of connections. There is also evidence of what the Aegean offered to its trading partners, including high-quality metalwork, textiles and perfumed oil, as well as clear indications for the movement of people (e.g., fresco painters) and ideas (e.g., the "gold embroidery" technique), with tantalising glimpses of how aspects of this trade may have functioned from finds such as the Ulu Burun shipwreck. The organisation of trade appears to have changed over time, following major shifts in political power, and it has been suggested that these international contacts, especially the ability to access new trading partners and act as a 'gatekeeper', may in itself have played an important role in these internal political developments within the Aegean. Nevertheless, significant gaps in our knowledge still exist, which this paper will also endeavour to highlight.

## 10 EMISSARIES, PRINCESSES AND TRINKETS: AMENHOTEP III SCARABS IN THE LATE BRONZE AGE AEGEAN AND WEST ANATOLIA

**Abstract author(s):** Frankovic, Filip (Institute for Prehistory, Protohistory and Near Eastern Archaeology, Heidelberg) - Matić, Uroš (Austrian Archaeological Institute)

**Abstract format:** Oral

This paper will analyse the distribution of scarabs and other objects from the reign of the Egyptian pharaoh Amenhotep III in various archaeological contexts in the Aegean and West Anatolia. Such an analysis allows a reconstruction of the direction and logistics behind diplomatic travel. The Eastern Mediterranean itinerary of Amenhotep III is attested on his colossal statues at Kom el-Hetan, Upper Egypt. This itinerary consists of toponyms in the Egyptian language which can be identified with the Aegean toponyms in Linear B texts and possibly West Anatolian toponyms in the Hittite language. Furthermore, the Amarna letters EA 31 and 32 testify of the diplomatic relations between the West Anatolian king Tarhundaradu of Arzawa and Amenhotep III. In this paper we will present the results of the analysis of the chronological, spatial and quantitative distribution of Egyptian scarabs and other epigraphic material from the Amarna period (Amenhotep III to Akhenaten) in the Aegean and West Anatolia. We will argue that most of this material, despite its occasional appearance in later contexts, originates from an intense diplomatic exchange between Amenhotep III and his peers. Finally, the questions we want to address are: 1) whether scarabs and other epigraphic material testify of trade or gift-exchange; 2) whether these two models necessarily exclude each other; 3) what the broader economic and social implications of such highest-level diplomacy are; 4) whether the distribution of these objects corresponds to the Kom el-Hetan itinerary as previously suggested by other scholars.

## 11 UNDERSTANDING WESTERN EUROPE "AMBER ROUTE" IN THE 4TH TO 2ND MILLENNIA BCE

**Abstract author(s):** Romero García, Galo - Garrido-Cordero, José Ángel (Department of Prehistory and Archaeology - University of Seville) - Odrizola, Carlos P. (Department of Prehistory and Archaeology - University of Seville; UNIARQ - University of Lisbon)

**Abstract format:** Oral

Much has been discussed about amber dynamics, its geographical origin and distribution patterns. It is assumed that amber follows a down the line distribution pattern from its sources (Baltic Sea and Sicily) to its destination, rather than a directional trade pattern. However, the paths that ended with these Baltic and Sicilian ambers in the Iberian Peninsula during the 4th-2nd millennia BCE are highly biased by geomorphology, because it limits humans' mobility capacity.

The research on human mobility during the last two decades have refined computational and quantitative methods to model human movement dynamics in Prehistory (Palmisano, 2017). Towards what, spatial analysis has played a preeminent role.

In this paper we model human mobility and connectivity in the Iberian Peninsula, specifically in the Tagus basin, during 4th-2nd millennia BCE based on statistical analysis of amber artifacts distribution.

Least Cost Path (LCP) is presented as one of the most efficient applications of GIS. White (2015) defines it as a quantitative geospatial tool, which can help archaeologists to better understand how people could have moved through a territory. The multitude of results to be obtained does not depend solely and exclusively on the algorithm used, but also on the cost model chosen, which in most cases is associated with what are known as cost components (Herzog, 2014). In addition to the GIS analysis, the results must be interpreted considering the absence of prehistoric orographic data in an area whose geomorphology has undergone great variations over the past millennia.

## 12 THE RISE OF SOUTH BOHEMIA: THE IMPACT OF EARLY BRONZE AGE TRADE NETWORKS

**Abstract author(s):** Hlášek, Daniel (Institute of Archaeology of the Czech Academy of Sciences, Prague) - Chvojka, Ondřej (Institute of Archaeology, University of South Bohemia in České Budějovice) - Ernée, Michal (Institute of Archaeology of the Czech Academy of Sciences, Prague)

**Abstract format:** Oral

South Bohemia belongs to specific regions of European prehistoric development. Due to the absence of the best agricultural soils, they were very sporadically inhabited in the agricultural prehistory until the end of the Late Neolithic. This changed fundamentally in the first half of the second millennium BC, probably due to intensive copper mining in the eastern Alps. Copper was transported further north through southern Bohemia to the dynamically developing areas of the Early Bronze Age. This process caused one of the greatest peaks of prehistoric settlement in the region of southern Bohemia.

The region is a suitable model area for studying various aspects of trade. The north-south orientation of the main trade artery following the course of the Vltava River is evident. There is significant evidence of archaeologically visible tradable commodities such as copper in the form of numerous hoards of ingots of the raw material. Finds of Baltic amber are significantly represented. The region's comparative advantage may also have been its rich natural deposits of

gold or graphite. During the first half of the second millennium BC, a hierarchy of settlements was established. It is a dense network of hillforts following the expected trade routes, but also an exceptional settlement in Hostý - a trade and production centre of supra-regional importance. South Bohemia thus appears to be a suitable area for testing economic models of Bronze Age trade.

### 13 **TEXTILES AND TRADE DURING THE 2ND MILLENNIUM BCE: A CASE STUDY OF BRITAIN IN ITS WIDER EUROPEAN CONTEXT**

**Abstract author(s):** Harris, Susanna (University of Glasgow)

**Abstract format:** Oral

Here, trade will be taken in its broad sense to include all modes of the exchange of goods between the two or more parties. The second millennium BCE is an important juncture in understanding the significance of textiles as trade goods beyond the immediate farmstead unit. Where there are written and representational sources, textiles feature as significant trade goods alongside metals, crops and livestock. Yet, due to their perishable nature, textiles as trade goods are difficult to identify outside these sources. As the field has evolved, textile researchers have developed methods to approach textile trade from the archaeological evidence, including the analysis of textile tools, scientific investigation, production centres and access to fibre resources. Using models of trade taken from these sources, this paper will explore textile trade through a case study of Britain in the second millennium BCE in its wider geographical context. It will consider what made textiles desirable as trade goods, aspects of textiles that can be traded, and the archaeological evidence for textiles in the context of the other trade goods that characterise this period. The aim of this paper is to take a difficult category of archaeological evidence, textiles in second millennium BCE Britain, and re-evaluate it in the light of short to medium distance trade.

### 14 **LEAD ISOTOPES AND CHEMICAL COMPOSITION OF SILVER REVEAL DEVELOPMENTS IN THE MEDITERRANEAN METAL TRADE DURING THE BRONZE AND IRON AGES**

**Abstract author(s):** Eshel, Tzilla (University of Haifa)

**Abstract format:** Oral

Silver, before the invention of coins, was the dominant means of value and exchange in the southern Levant. Approximately 40 silver hoards, unearthed in various contexts, assert that silver served as currency in the Levant throughout the Bronze and Iron Ages. The hoards were studied for their chronology, context and content, and the silver was subjected to chemical and isotopic analysis. The results of this study reveal a persistent, wide diversity in silver sources. In several sub-periods within the Bronze and Iron Ages, clear changes in ore sources can be pointed out. Each such change has broad implications on the study of long-distance maritime trade in the Bronze and Iron Ages because silver-bearing lead ores do not occur in the Levant. Using an interdisciplinary approach, we combined geochemical methods and careful archaeological investigation in order to associate between changes in silver ore sources and transformations in regional trade systems, which are often imperceptible in ceramics.

### 15 **FIRST EVIDENCE OF ATMOSPHERIC TIN POLLUTION IN PREHISTORY: A PROXY TO UNDERSTAND THE PRODUCTION AND CIRCULATION OF METALS?**

**Abstract author(s):** Silva-Sánchez, Noemí (Instituto de Ciencias del Patrimonio, Incipit-CSIC) - Martínez Cortizas, Antonio (Ecopast Research Group, Universidade de Santiago de Compostela) - Armada, Xose-Lois (Instituto de Ciencias del Patrimonio, Incipit-CSIC)

**Abstract format:** Oral

The scarcity of tin sources and their concentration in very specific areas explains the high degree of connectivity in Bronze Age Europe. This has led some authors to define this period as a type of pre-modern globalisation.

The Northwest of the Iberia Peninsula is one of the most important tin areas in Western Europe. However, the archaeological study of the exploitation and circulation of these resources faces several problems. In this paper, we present a high-resolution chronology of past tin atmospheric pollution determined by Inductively Coupled Plasma Mass Spectrometry (ICP-MS) and obtained from a peatland in NW Iberia. The peat record showed a significant tin enrichment since Prehistory, something that was considered highly unprovable until now, as it was thought that tin extraction methods, based on placer mining, would not have produced a detectable environmental impact. Significant tin enrichments were found in peat layers dating between 3422 BC and 950 AD, with three relatively higher levels within this temporal frame; although the maximum tin enrichment occurred in recent times.

Our data reasonably matches the archaeological knowledge about tin use in prehistory and history, and we will present some arguments in support of the circulation of these metal resources in the Atlantic area during the 2nd millennium BC. Furthermore, our data also suggest that the palaeopollution approach, if extensively used and applied to other stanniferous mining areas, will be of great importance to get insights into the chronology and intensity of past tin mining and metallurgy.

## WHAT MAKES A WORKSHOP? CERAMIC PRODUCTION IN LATE BRONZE AND IRON AGE IBERIA

**Abstract author(s):** de Groot, Beatrijs (The University of Edinburgh)

**Abstract format:** Oral

In the Iberian Peninsula, the shift to the systematic production of ceramics as surplus for interregional and long-distance trade is generally ascribed to the establishment of Phoenician mercantile colonies on its southern coastline. Phoenicians utilised the double-chambered updraught kiln and low-mounted potter's wheel, producing tangible evidence of the emergence of workshop modes of production. Due to limited evidence, however, little is known about the organisation of ceramic production prior to the adoption of these innovations, driving the assumption that hand-made ceramics are produced domestically for local and personal consumption.

Drawing on archaeometric studies from across the Iberian Peninsula, this presentation aims to shed light on the organisation of ceramic production prior to the introduction of the potter's wheel in different regions in the Iberian Peninsula. It highlights differences between the production processes of hand-made and wheel-made ceramics, as well as discussing new evidence from northern Iberia of the interregional circulation of hand-made ceramics during the Iron Age. This informs discussions on the difference between the economic systems in which Bronze Age and Iron Age modes of ceramic production were embedded and on what a workshop makes in Late Bronze Age and Iron Age Iberia.

## GLOCAL COMMUNITIES IN LATE BRONZE AGE SOUTHWEST EUROPE

**Abstract author(s):** Diaz-Guardamino Uribe, Marta (Durham University)

**Abstract format:** Oral

This paper examines the role of local Iberian communities, traditions and places in the mediation of regional and global connections with the Atlantic and the Mediterranean during the Late Bronze Age. Approaches to connectivity often have problems in reconciling top-down macro-scale models with local and regional dynamics, failing to acknowledge the active role of the so-called 'peripheries'. This paper adopts a bottom-up, multidisciplinary approach within a 'glocalization' framework to focus on local engagements with material culture and landscape, and their connections with the regional and the global. The paper discusses various interrelated phenomena and their contribution to understanding the temporal depth and landscape dimension of connectivity networks within and beyond Iberia at multiple scales: rock art, metals, amber, etc., potential riverine and terrestrial routes and coastal landing places. Ultimately, the paper seeks to highlight the importance of considering various lines of evidence at multiple scales to provide a better understanding of regional and global connectivity in Late Bronze Age Europe, in this case through Iberia as a case study.

## BOOT-SHAPED VESSELS AND POTTERY DECORATED WITH BRONZE BUTTONS: CONTACTS BETWEEN THE DANUBE REGION AND VENETO IN THE LATE BRONZE

**Abstract author(s):** Jankovits, Katalin (Pázmány P. Catholic University)

**Abstract format:** Poster

Vessels modelled in the shape of boots or other footwear or human legs can be found in various regions of Europe from the Neolithic onward. These have been interpreted as cult vessels whose function can be compared to rhytons that were used for presenting libations. In the Danube region, vessels of this type began to be used more frequently from the Tumulus period, although their true flourish was the Urnfield period. Their use is attested up to the La Tène period.

Early boot-shaped vessels have principally been brought to light on settlements. In contrast, the exemplars from the Late Bronze Age were mostly recovered from burials.

A strong concentration of boot-shaped vessels could be noted in the Budapest-Békásmegyer cemetery of the Urnfield culture (Ha A2–B1). Several types could be distinguished based on their form and ornamentation.

A distinctive ornamental mode noted in the Békásmegyer cemetery was the use of small bronze buttons to decorate pottery, which in addition to various other vessel types, was also employed in the case of some boot-shaped vessels (Graves 47 and 51).

A handled cup decorated with bronze buttons has been reported from Grave 222 of the Vörs-Battyáni disznólegelő cemetery in southern Transdanubia. The grave dates from the Ha A1 period. In Italy, the earliest pottery adorned with bronze buttons comes from the Casalbo cemetery and the Frattesina settlement.

The use of boot-shaped vessels and the practice of decorating pottery with bronze buttons began in the Carpathian Basin, whence it spread to Veneto, where the use of similar pottery flourished in the 8th–6th centuries. These vessels are yet another attestation of the many strands linking the material and spiritual culture of the Danube region and north-eastern Italy and of the interactions between these two regions.

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Maijanen, Heli (University of Oulu) - Campanacho, Vanessa (American Museum of Natural History; Centre for Functional Ecology, University of Coimbra); Laboratory of Biological Anthropology and Human Osteology, CRIA, New University of Lisbon) - Savolainen, Jenna (University of Oulu) - Seppänen, Liisa (University of Turku)

**Format:** Discussion session

Repatriation, reburial, and analysis of archaeological human bones is an ongoing topic of debate. The 'right way' to handle human remains may take different forms in various contexts. Current ideas about morals, essentialism, human rights, religion, sanctity, ethnicity, and national identity are examples of factors that can influence the decisions on how human remains are treated and whether they are curated or reburied. For example, in the United States the Black Lives Matter movement has impacted the discussion about ethical issues of researching and curating unclaimed African American skeletons in historical collections. Other examples of human remains' treatment are grounded in practical reasons such as lack of resources. For example, in Finland the current practice of reburying skeletons excavated from historical sites is partly driven by the lack of storage space.

This session aims to share case studies and general processes behind the decisions of whether human skeletons are curated and available for research or whether they are repatriated and/or reburied. Furthermore, issues concerning practical and ethical questions related to the treatment of human skeletons will be addressed in this session. Discussions on skeletal collections from various contexts including those without connections to present cultural or religious groups, remains from historic periods, remains from indigenous and other minority groups but also majority groups are welcomed. We encourage the presenters to discuss how these decisions affect both living individuals as well as scientific research.

## ABSTRACTS

### 1 GREY AREA: ABORIGINAL AND TORRES STRAIT ISLANDER LIFE CASTS AND CASTS OF HUMAN REMAINS IN EUROPEAN COLLECTIONS

**Abstract author(s):** Howes, Hilary (The Australian National University)

**Abstract format:** Oral

Since the 1960s, calls for repatriation from First Nations peoples in Australia, Canada, New Zealand and the USA have spread to become a global movement. Collecting institutions in virtually every continent continue to return human remains to their Traditional Owners where there is sufficient provenance information available. Calls for the return of secret/sacred objects, ceremonial objects, antiquities, and other cultural heritage material have also received greater attention in recent years. In contrast, casts (plaster or plastic copies of skulls and skeletal elements, as well as models and moulds taken from the bodies and faces of living or recently deceased individuals) have received relatively little specific attention to date. Nevertheless, the Australian Government is currently supporting the establishment of a National Resting Place to care for the remains of Aboriginal and Torres Strait Islander ancestors that are unable to be returned to their communities of origin, including not only skeletal or mummified remains, hair, biological samples and grave goods, but also casts. This paper discusses ethical concerns around such casts and reasons Indigenous communities may seek their return, focusing particularly on Aboriginal and Torres Strait Islander life casts and casts of human remains in European collections.

### 2 JUST LIKE BIOBANKS? A NEW APPROACH TO HUMAN OSTEOLOGICAL COLLECTIONS.

**Abstract author(s):** Alves-Cardoso, Francisca (LABOH/CRIA – Centro em Rede de Investigação em Antropologia, Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa; Cranfield University, Defence Academy of the United Kingdom) - Riso, Brígida (Instituto de Saúde Ambiental, Faculdade de Medicina, Universidade de Lisboa; Instituto Universitário de Lisboa - ISCTE-IUL, Centro de Investigação e Estudos em Sociologia, Lisboa)

**Abstract format:** Oral

This presentation forwards a new understanding of Human Osteological Collections (HOC), their role in advancing science, and their importance as agents of research agendas. Rather than framing HOC exclusively within cultural heritage and archaeological contexts, it expands their profile into the arena of biological and medical sciences, bringing a different perspective that may have implications on current practices and decision making on storing human remains (regardless of their provenance), and consequently in societal policy-making. To achieve this, we will draw a comparison with the notion of biobanks – repositories of human biological samples associated both with personal and medical data. It explores how HOC would fit into this concept, specifically identified HOC, since these contain human remains and associated biographical data (e.g. sex, age, cause of death, and other information). Additionally, the ongoing academic discussion on the definition and provenance of samples/remains incorporated

into HOC is not far from biobanks. As so, expanding the profile of HOC sets in motion the need to consider additional ethical, social, legal and practical issues when considering the storing and accessibility of HOC and associated data, as it happens with biobanks. Furthermore, we will address this latter point combining the “cultural heritage” framework. This new approach to HOC raises questions that have not been considered to date, and that may impact curation and preservation practices and policies, by establishing HOC as relevant, reliable and valuable resources for research.

### 3 **ENTANGLED VIEWS: THE HISTORY, RESEARCH, AND EDUCATIONAL APPLICATIONS OF ANATOMICAL COLLECTIONS IN THE US IN THE WAKE OF ETHICAL CONCERNS**

**Abstract author(s):** Campanacho, Vanessa (Department of Anthropology, New York University) - Alves Cardoso, Francisca (LABOH—Laboratory of Biological Anthropology and Human Osteology, CRIA—Centro em Rede de Investigação em Antropologia, Faculdade de Ciências Sociais e Humanas, Universidade NOVA de Lisboa) - de la Cova, Carlina (Department of Anthropology, University of South Carolina)

**Abstract format:** Oral

The initial creation of documented human skeletal collections in the United States is intimately tied to the development of anatomy and physical anthropology. This paper offers a view on the history and research undertaken on these collections, discussing the current ethical concerns that may shape/transform the profile and use of anatomical collections. In the 19th and early 20th centuries, physical anthropology studied skeletal variation, with an emphasis on racial classification. To observe the wide range of human anatomical diversity, dissection of human bodies was needed. However, in the late 18th and early 19th century due to the increasing numbers of medical schools and dire need for teaching/practicing material, despite its illegality, grave-robbing was relied upon for access to human remains. Facing illegality and populace uprisings, in 1831, the first Anatomy Act was passed in Massachusetts. This legislation legalized access to the bodies of unclaimed individuals for anatomization, deterring grave-robbing. Other states followed suit in passing anatomy acts. These laws would ultimately allow anatomists and physical anthropologists to legally amass documented human skeletal collections from dissected bodies. Despite this legal frame of permissiveness, in recent years ethical concerns associated with the composition of anatomical collections are growing. These include the absence of consent, aligned with replication, in death, of structural violence individuals in these collections experienced during their lifetimes. One consequence has been the request for repatriation and reburial of many remains. Another is the calls for scientists to seek descendants' consent before researching skeletons from ancestors or members of their community. Guidelines will be discussed on how to ethically engage with anatomical collections.

### 4 **EVOLUTION OF HUMAN REMAINS PRESERVATION IN PADUA (ITALY): FROM THE 18TH CENTURY COLLECTIONS TO THE MODERN MORGAGNI MUSEUM**

**Abstract author(s):** Magno, Giovanni (University Museums Centre CAM, University of Padua) - Zanatta, Alberto (Department of Cardiac, Thoracic, Vascular Sciences and Public Health - University of Padua)

**Abstract format:** Oral

The first scientific museum in Padua (Italy) was born during the 18th century thanks to Antonio Vallisneri, collecting rare and peculiar biological specimens. This museum was established for students' education, departing from the previous attitude of the Cabinets of curiosities. Giovanni Battista Morgagni also tried to create a medical museum in 1756, although never completed. It was only in the 1860s that Lodovico Brunetti managed to establish the first Museum of Pathology, collecting various antecedent collections.

The absence of laws on body acquisition and the lack of medical records made difficult to know if the specimens were voluntarily donated or if they were collected posthumously. Also, different attitudes to death and the dead may have favored a spontaneous donation of bodies.

In 1933 and thereafter, new laws have significantly limited the possibility of specimen preservation in Italian anatomical museums. In 2011 the University of Padua started to promote a body and anatomical parts donation program within the Institute of Human Anatomy, for the purposes of teaching and scientific research. A new legislation was introduced in 2020, allowing consensual body donation for study, medical training and scientific research, and updated regulation for body restitution.

Today the growing criticism of traditional medicine has shown the need for a medical museum to keep equally in step with the times. Thus, the old Museum was recently renovated and renamed Morgagni Museum of Pathological Anatomy, to improve educational and scientific usability of the specimens, also for non-specialistic visitors. The exhibition focuses on the scientific nature of the preparations in accordance with methods that ensure respect for the human body, to increase the knowledge on sensitive topics and issues, such as human pathologies and the ancient living conditions, often intended only for specialists. Indeed, nowadays, these specimens have also important value for understanding Western cultural heritage.



## 5 **CONSIDERING REPATRIATION? EXPERIENCES FROM THE ANATOMICAL COLLECTIONS OF KAROLINSKA INSTITUTET STOCKHOLM, 2015 TO PRESENT**

**Abstract author(s):** Ljungström, Olof - Gustavsson, Ann (Karolinska institutet, Medical History and Heritage)

**Abstract format:** Oral

What do we do when we repatriate human remains? As custodians of the remaining anatomical collections at the Karolinska Institutet Medical University (KI) in Stockholm (in practical terms the Stockholm medical faculty), we have carried out a number of repatriations of human remains to various indigenous populations in the period 2015-2019, followed by a hiatus due to the pandemic, but still ongoing.

We would like to take the opportunity to present and discuss some of our internal considerations in relation to these processes (all of which typically have come with peculiar inflections making them all distinct in some way). In a successful repatriation process, ending with the hand-over and departure of the remains, the focus is primarily on the happy occasion for the recipients and their experiences. What is not automatically presented, often underreported, are the procedural underpinnings and reflective considerations that have gone into what remains after all exceptional decisions on the part of the KI. Some of this is due directly to the legal underpinnings of how the Swedish system of government administration parses agency, responsibility and institutional independence (not least relevant for universities), and the levels of freedom of initiative this accords us. At other times it is a matter of judgement calls regarding the exceptional status accorded in particular indigenous native population around the globe.

Our experience is already one of a considerable mismatch between how we as university administrators and professional academic researchers with museum collection responsibilities frame our own understanding of the issues, and how often media and large and parts of the public view this. Not least relevant in Sweden is a seemingly rapid dissemination of ideas of genetics as the basis for collective identities (nationality or even "race"), for both minorities and national majorities.

## 6 **THEORY AND PRACTICE OF CURATING ARCHAEOLOGICAL HUMAN REMAINS IN POLAND**

**Abstract author(s):** Jastrzebska, Emilia (University of Warsaw)

**Abstract format:** Oral

The topic of keeping human remains in museum collections and displaying them to the public has been debated for several decades, however, the debate mostly focused on the post-colonial assemblages, for the most part leaving the „unclaimed" majority aside. Post-colonial collections in Poland are relatively small and rarely discussed as controversial. Therefore the ethical dilemma related to curating human remains discussed broadly in the West, also never received the attention it deserves, even though human tissue is present in Polish museums in a variety of contexts. Until recently, very little have been published regarding the issue. It is worth mentioning that legal regulations remain tremendously unhelpful in this matter. To address the question I have made an effort to interview a considerable number of Polish museums to find out about their staff's opinions and attitudes as well as practices regarding archaeological human remains kept in their collections, which varied greatly among institutions. The questions raised in the process were: should museums acquire human remains at all? Should they enter the inventory record and in what manner? How should they be stored and displayed (if at all)? And is reburial the right thing to do? The project was conducted in cooperation with the National Institute for Museums and Public Collections and resulted in officially opening the debate in a Polish museum environment, which will hopefully lead to developing straightforward, accessible, and universal guidelines for museums in the near future.

## 7 **CURATION OF HUMAN SKELETAL REMAINS IN FINLAND – TOWARDS MORE HOLISTIC DECISION-MAKING**

**Abstract author(s):** Savolainen, Jenna - Maijanen, Heli (University of Oulu) - Seppänen, Liisa (University of Turku)

**Abstract format:** Oral

The preservation and curation of skeletal remains have been a part of Finnish archaeology since the 19th century. No specific laws nor instructions have been established regarding the curation of osteological remains for scientific purposes and deposition decisions are made by following common practices and the general atmosphere of the scientific interests at the time. The Finnish Museum Agency has provided a guide for their own curation and handling practices. This guide, however, does not involve other stakeholders and it does not outline a detailed decision-making process regarding collection and curation of human skeletal remains.

The absence of uniform guidelines has led to the decision-making being more individual-based and subjective, thus conflicting the idea of preserving collections for future research as well. Furthermore, pre-historical and historical skeletal remains have been valued inequally in the decision-making process. Where all prehistoric skeletal remains are annexed into the National collection, historical (14th to 19th century) remains are not. Historical remains are often reburied after a basic skeletal analysis. These reburial decisions are often motivated by the religious status of the deceased – they were buried in a Christian cemetery and thus should be reburied. Another, more practical reason is the

lack of storage space. In addition, the field of bioarchaeology has been quite small in Finland and the future research needs have not been fully recognized. At the very moment, skeletal collections are curated and/or stored in the National collection, local congregations and museums, universities, and other parties assigned the right of possession. In this presentation, we discuss the current curation practices in Finland and their long-term effects on research and emphasize the importance of securing skeletal collections with both ethical and scientific considerations.

## 8 HISTORY AT OUR HANDS - ADBOU, A DANISH RESEARCH COLLECTION

**Abstract author(s):** Weise, Svenja (University of Southern Denmark)

**Abstract format:** Oral

In Denmark, research on, and display of, local historical human remains are mostly met by the public without reservations. The curation of skeletons is largely unproblematic, and it is a common practice for the museums to deliver new finds from excavations to one of the two still growing skeletal collections in Copenhagen (KU) or Odense (SDU). Since 1992, ADBOU at SDU has specialized in curating and studying human remains from all time periods. Currently the collection comprises nearly 17,000 skeletons, all excavated in Denmark, and the size of the different samples varies from single individuals to large cemeteries.

Museums pay for the storage of skeletons and permit their use for research and teaching, including handling the bones by students and researchers. The ADBOU collection is open for guest researchers after assessment of their projects. Occasionally destructive methods are employed, but only after careful evaluation and with permission by the owning museum. Conferences, workshops, and seminars are held on a regular basis, often also involving hands-on parts. Apart from university teaching there are offers for non-scientific audiences; from evening classes for adult learners to the "Bone Box" for schools and museums, a training aimed at disseminating knowledge about history and human biology through practical work with skeletons. "Open house" days at skeletal excavations are well attended.

Over the last 20 years, reburial of local skeletons only happened twice in Denmark; in both cases the deceased were originally buried in recent times. Museums display human remains in permanent and temporary exhibitions regularly, and the homogeneous composition of the ADBOU collection ensures that no interests of minority groups are harmed. Generally, Danish citizens are very interested to learn from skeletons about the lives of their ancestors and perceive them as source of information rather than distressing.

---

## 257 BIG PROJECT, BIG DATA: CREATING A WEB OF KNOWLEDGE

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Plunkett, Emily (High Speed Two - HS2) - Schweitzer, Holger (Jacobs)

**Format:** Regular session

As Daniel Keys Moran highlighted "You can have data without information, but no information without data".

As an industry we need to ask ourselves:

- How do we ensure that we apply a process to avoid collecting data with no end goal, but at the same time avoid bias in the development of the goal?
- How do we "close the loop" and ensure our project data allows decision making and storytelling?
- How can we account for the needs of different project stages which use the same data for diverse purposes?

Large scale projects, such as infrastructure or long term research, generate some of the largest data sets which form the core of their legacy for research and future projects. Due to the scale of the data being generated and managed, projects have developed innovative approaches to transform data into information and ensure integration of data into the project lifecycle.

Large projects also present opportunities to gather data and generate information to assist in the effective management of heritage assets. Data can assist in decision making and responses to threats from development or other factors, such as changes in planning regime, natural forces, or cultural shift. In addition, when data becomes information it can support communication of stories or expressions of community heritage.

We will discuss thoughts or perspectives on tools, concepts, solutions, or approaches to manage data across all stages of the project lifecycle from assessment to excavation, and beyond.

This session is a space for sharing knowledge and we also invite papers that consider:

- How data and information we generate is viewed by the end users?
- What does innovative integration of "information creation" into data generation look like?
- What does innovation in data mean for the future of the profession or research potential?

## 1 BIG DATA AND LOTS OF DATA ARE NOT THE SAME THINGS: SMALL DATA SOURCES IN THE SOCIAL SCIENCE OF ARCHAEOLOGISTS

**Abstract author(s):** Aitchison, Kenneth (Landward Research Ltd)

**Abstract format:** Oral

Big Data is a misunderstood but technically definable concept; it's large volume, unstructured, heterogenous information, being generated at a high velocity - which normally means it is being constantly updated in real time. And, in many situations, this is very difficult to work with; an analogy might be to compare the curated content of Netflix, which is a (very) large but structured data set, with the unending chaos of YouTube content, which is Big Data.

Since 1998, consistent, comparable longitudinal (time-series) datasets have been collected on professional archaeology in the United Kingdom on a roughly five-year cycle, and these data have been analysed and published in a series of Profiling the Profession reports. On two occasions, in 2008 and 2014, these exercises were expanded out to become pan-European projects – Discovering the Archaeologists of Europe. A lot of data points have been assembled, and the important thing has been that these have been structured, comparable and interrogable Small Data.

The data gathered for these projects were not archaeological data, they were social science data – and data gathered from current survey populations is different, as the longer it has been since the data were harvested the less 'fresh' they become, and loss of freshness leads to loss of (perceived) value, when compared with historical data (including archaeological data) that hold value over time.

This paper will review the challenges of gathering comparable data from similar but different targets to produce labour market intelligence reports that are then reliable and useful, and that allow employers, educators, heritage agencies and individual archaeologists to plan for their individual, corporate or sectoral futures.

## 2 ONE ARCHIVE, MANY WINDOWS

**Abstract author(s):** Green, Katie - Zoldoske, Teagan - O'Brien, Jenny (Archaeology Data Service)

**Abstract format:** Oral

Large data sets are both a blessing and a curse. They contain a tremendous wealth of information, but navigating, finding, and understanding everything they hold can be a challenge. The UK is currently undertaking the largest single archaeological intervention in its history in advance of building a new high speed rail line connecting the North and South of England. The archaeological data archive from the High Speed 2 (HS2) project is expected to be over 15 terabytes in size, increasing the holdings of Archaeology Data Service (ADS) by about 60%. It will be difficult to effectively disseminate such a large and complicated dataset in an ordered and re-usable manner, but it provides an opportunity to explore different methods to disseminate a large data set to different audiences. These methods will include interactive maps and data viewers, data searches, thematic data dissemination, data papers and integrated publications with the digital journal Internet Archaeology.

This paper will set out the ADS and Internet Archaeology's ambitions for the dissemination of the HS2 dataset, the challenges that will be faced, and how the different windows into the data will be used to foster greater public benefit. By giving access to data, enabling readers to come to their own conclusions, we are giving individuals the opportunity to assimilate and manipulate (in personal ways) the content they are being exposed to. Additionally, by allowing the data to be accessed via different means, e.g., spatially, temporally, or by subject term, we are increasing the number of people who are able to view and re-use the data. This will be a sign of a successful public benefit legacy.

## 3 REALLY SAYING SOMETHING? MAKING HISTORIC CHARACTERISATION MORE ACCESSIBLE

**Abstract author(s):** Conway, Melissa (LUC)

**Abstract format:** Oral

This paper will cover recent work to make characterisation data more accessible through the use of common, clearly explained, terminologies using a series of case studies. Case studies will include HS2 Phase 2b and urban historic characterisation.

Historic characterisation takes an archaeological approach to understanding the landscape around us. It has been applied at various scales in the UK since the early 1990s, either funded wholly by the government's historic environment advisor or through partnership between national and local government. In England, characterisation work has ranged from large-scale studies of seascapes and landscapes to in-depth reviews of archaeological data for historic cities. Although these are valuable resources, uptake and use of studies has not always been as widespread as desired, in part due to issues with terminology between studies but also due to poor understanding of how outputs can be used.

Historic landscape characterisation (HLC) data has been used to understand and report the effects of HS2 Phase 2b for the scheme's Environmental Impact Assessment (EIA). This required concordance of 11 HLC datasets and rationalisation to common typology. These all used different terminologies and were created over a 15-year span so required significant retooling to create something useable at project-scale. Subsequent work focussed on training and mentoring those using the HLC dataset so that robust and transparent EIA assessments could be undertaken.

Characterisation of the urban historic environment has been a key focus of Historic England for the past thirty years. Over this time the focus has expanded and studies now span character, archaeological potential and deposit modelling. Recent review has highlighted the crucial importance of common terminologies in maximising the impact of studies. This has resulted in design of a London-specific typology for articulating and analysing character, allowing understanding of character and change at both local and London-wide level.

#### **4 COLLECTING INFORMATION AND DEVELOPING NARRATIVES: THE USE OF DATA ON HS2 PHASE 1, UK**

**Abstract author(s): Halsted, John (HS2 Ltd; Atkins)**

**Abstract format: Oral**

Large Infrastructure projects create vast amounts of data during the course of programmes of archaeological investigation from complex three-dimensional survey data to the description of an archaeological deposit. It is key for future research and the completion of the archaeological programme that the data are useful for the questions we wish to ask. Those questions are clearly influenced by existing prevailing narratives and in the case of HS2 Phase 1 have been set out in a research and delivery strategy.

For HS2 Phase 1 a series of data specifications were set out from the outset. This paper will consider to what extent the specification of data delivery has been influenced by the questions we ask and the extent to which incoming data deliverables may influence the narratives that are developed. The paper will also consider which data are key for different stages of the project lifecycle, how those data are received and how they are disseminated. Looking to the future the paper will consider the balance between fixed data specification and the need for flexibility and change.

#### **5 METADATA FOR DISCOVERY - PLANNING FOR AN INFORMATION NETWORK**

**Abstract author(s): Zoldoske, Teagan - Green, Katie - O'Brien, Jenny (Archaeology Data Service)**

**Abstract format: Oral**

The UK is currently undertaking the largest single archaeological intervention in its history in advance of building a new high speed rail line connecting the North and South of England. While the High Speed 2 (HS2) project has created a wealth of new information, before any of that information can be disseminated to the general public it must first be properly collected, documented, and linked. To this end, data collection is integral to facilitate effective data dissemination and FAIR - Findable, Accessible, Interoperable and Reusable - data to achieve the greatest public value for an archive. The most exciting search results and maps come from what is often seen as scary technical jargon.

This paper will discuss some of the limitations the Archaeology Data Service (ADS) experiences as a digital repository and what is currently being done to maximise the reach of the ADS collections. Starting at the beginning of the data life cycle, this paper will show how large infrastructure projects like HS2 allow the ADS to work with depositors to raise issues about data collection, generation, and description during project development and how collaborative efforts can improve the creation and import of data and metadata into the archive. This paper will then present how the ADS has made steps towards keeping our data FAIR but simple, by streamlining what metadata is essential to foster better discovery and reuse within an archive, and from there, how metadata can be passed to external data catalogues such as ARIADNEplus and The National Archives in the UK. The paper will then conclude with a reflection on how innovations facilitated by the HS2 project can be implemented in smaller archives and benefit the ADS's cataloguing policy and practice as a whole.

#### **6 ARCHAEOLOGISTS, HUNTER-GATHERERS OF DIGITAL DATA**

**Abstract author(s): Urankar, Rafko (PJP d.o.o.) - Krajšek, Jure (The Celje Regional Museum) - Lipovec, Boris (Abacus BL d.o.o.)**

**Abstract format: Oral**

The rapid advancement of digital technologies has paved the way for a revolution in archaeological documentation. Since digital cameras, tablets, portable printers, drones, and other electronic gadgets have become readily available and easily replaceable, this sensitive electronic equipment has become a much more common sight at excavation sites.

In the not so distant past, information about small finds, stratigraphic units etc. had to be documented on paper and later manually transferred into digital formats. The data were stored and processed using various programmes, many of which were less than ideal for the task. Indeed, the process of digitalising the data was itself suboptimal and

a source of many hours of extra work, which carried significant financial consequences. To alleviate these issues, we began developing a specialised programme that would enable entering and combining data from different work phases and ultimately produce reports directly usable in final site publications. Enter Zoot, a database interface for inputting and retrieving data such as lists, photos, 3D site models, small finds details etc. It can process data, perform calculations, and prepare exports intended for further processing with more specialised programmes.

Zoot provides a framework for keeping track of and linking all graphical documentation (photos, drawings, models ...), small finds data, and samples with the primary excavation documentation. In addition, it supports the direct retrieval of data for GIS and statistical processing. Most importantly, the programme is a paperless solution designed to shorten the time of writing reports as it automatically generates catalogues (e.g. of small finds, graves etc.). This enables researchers such as us faster data evaluation, and ultimately leads to more affordable and timely publications of our work.

## 7 OLD TECH'S NEW WAVE – WHY ARCHAEOLOGISTS SHOULD GET FAMILIAR WITH RTI ONE MORE TIME. A NEA PAPHOS EXAMPLE

**Abstract author(s):** Lech, Pawel (Polish Centre of Mediterranean Archaeology, University of Warsaw) - Kłębowski, Marcin - Beldyga, Michał - Ostrowski, Wojciech - Wilk, Łukasz (Warsaw University of Technology)

**Abstract format:** Oral

Technological changes are accelerating today at unprecedented speed. This phenomenon does not bypass archaeology. From omnipresent 3D models, through GIS to LIDAR – all these tools improve documentation techniques and allow archaeologists to answer more questions. Still not all technologies are fully usable from the beginning. It is normal that some of them evolve and new areas for their use occur.

One of these technologies is Reflection Transformation Imaging (RTI), which is a computational photographic method that records surface, shape, colour and light simultaneously. 20 years had passed since the introduction of RTI, and digital imaging moved forward. The Cultural Heritage Imaging organisation popularised the use of RTI in the area of archaeological finds digitalization. As an organisation created to promote digital capture of the cultural heritage they had also published a number of RTI software. Today's RTI models are easy to prepare, transfer and online use.

After 20 years of RTI operation we would like to present it in a new light. For the needs of the Polish Archaeological Mission in Cyprus, led by prof. Ewdoksia Papuci-Władyka we had prepared a number of RTI models of archaeological finds. We have carried out our works using newly constructed dome, that capture data for 2.5D RTI models in an automatic process. It also provided us with fast data transfer and fixed work conditions. The experiments in the area of data capture led us to create an original workflow for mass documentation of archaeological finds like amphora stamps or coins. Models after automatic processing are stored in a web-database built on Arches – an open source platform which was integrated with MARILE RTI viewer. A final database record containing field data and interactive RTI imagery could be annotated and studied by any member of the team from any place in the World.

## 8 VISUALISING HERITAGE: USING 3D IMMERSIVE TECHNOLOGIES TO INNOVATE, DOCUMENT AND COMMUNICATE RICH NARRATIVES FOR HS2

**Abstract author(s):** Wilson, Andrew - Sparrow, Thomas (University of Bradford)

**Abstract format:** Oral

The University of Bradford have established wide-ranging skillsets and capabilities as Visualising Heritage that have been built around expertise in 3D imaging of human remains, artefacts, archaeological sites, landscapes and heritage structures. This presentation will reflect upon how these have been put to use during enabling works for HS2 and also the potential of this work for analysis, public engagement and legacy. Firstly, we will discuss the capture of the world's first railway roundhouse designed by Robert Stephenson at Birmingham Curzon Street, together with immersive content that helps to tell the story of its discovery and exposure. We discuss 3D modelling that help to link both to the original architectural drawings and to the broader narratives for understanding changes to the design of the building during its working life and its place within the historic environment. Secondly, as HS2 embarks upon the post-excavation phase, we will also discuss the potential that recent investment in our capabilities at Bradford offers, building upon our pioneering 3D work at the object scale with 'Digitised Diseases', to bring within reach the tantalising possibility for high throughput digital capture. This offers the potential to streamline high fidelity 3D capture for key human bioarchaeology exemplars as digital assets that would otherwise be lost to future study as they are destined for reburial.

## SUEDLINK – THE CHALLENGES OF MANAGING CULTURAL HERITAGE A NATIONAL INFRASTRUCTURE PROJECT IN A FEDERAL ENVIRONMENT

**Abstract author(s):** Schweitzer, Holger (Jacobs)

**Abstract format:** Oral

Stretching over more than 700 kilometers Suedlink is currently, Germany's largest infrastructure project and one of largest underground cable projects worldwide. It is part of Germany's goal to implement the transition towards renewable energies. The aim is to enable the exchange of wind electricity produced in the North of Germany with solar energy generated in the southern parts of the country.

The enormous scale and unprecedented way of implementing such a cable project underground results in several challenges, including mitigating its impact on a multitude of cultural heritage sites. Another major challenge lies in the projects planning and implementation context. Whilst being a national project funded by the German Government, and subject to a new accelerated planning route, the cable route passes through six separate federal states (Bundesländer), each with its own political and administrative structure.

Without a unifying national heritage legislation, both the requirements in terms of procedure and methods of each Bundesland must be met, whilst also serving the standardization needs of a major project. With heritage legislation implemented on a federal level, the archaeological profession in Germany is consequently largely organized towards this respective regional scope. Consequently archaeological consultancy for nationwide projects, such as Suedlink, with associated heritage management demands has hitherto not played a significant role and is therefore largely in its infancy.

This paper presents the challenges and opportunities of implementing international standards of best practice in protecting and mitigating impacts on cultural heritage in the complex project environment of Suedlink.

## THE ROLE OF BIM AND GIS IN HS2 ARCHAEOLOGICAL DATA MANAGEMENT

**Abstract author(s):** Plunkett, Emily - Aryankhesal, Fred Farshid (HS2)

**Abstract format:** Oral

High Speed Two (HS2) railway as the backbone of Britain's transport network, is more than a railway project. Beside building bridges, tunnels, tracks, and stations, HS2 project includes the largest single archaeology programme ever undertaken in the UK.

The remarkable aspect of this programme is the fact that it has been fully integrated with the overall construction programme, as an evolution of existing and recent approaches to the design and delivery of historic environment works associated with major infrastructure projects. To put this approach into practice, Historic Environment Research and Delivery Strategy (HERDS) has been introduced. HERDS sets out the project mechanisms for:

- designing works,
- undertaking evaluation,
- delivering investigations,
- undertaking post excavation assessment, and
- archive deposition.

For creating and managing information on construction projects across the project lifecycle, including design, construction, and operational stages, Building Information Management (BIM) and Geographic Information Systems (GIS) have been deployed as the two key elements of HERDS structure, to fulfill this important demand of archaeological data delivery and management. According to BIM approach, HS2 archaeological assets are considered as part of the construction assets, alongside the other disciplines assets such as highways, bridges, tunnels, fencing, etc. Meanwhile, GIS and geospatial data play the role of a glue to demonstrate the interrelationship and hierarchy between archaeological assets, recording their location and geometry, designating a unique asset ID (UAID) to each archaeological asset, and joining them to their attributes table.

According to HERDS, HS2 archaeological primary assets, and according to their hierarchical order are as follows: Location Specific Written Scheme of Investigation (LS-WSI), Project Plans (PPs), Written Scheme of Investigation Interventions (WSI-Interventions), Archeological Features, and Archaeological Objects.

Such an efficient, transparent, and readable asset data structure provides a lasting and valuable legacy for the lifecycle of the project.

## 11 ORPHANED HERITAGE: COLLATING DATA IN A BLIND QUANTITATIVE MANNER

**Abstract author(s):** Evans, Daniel (Arcadis)

**Abstract format:** Oral

In the UK, large infrastructure projects require a detailed assessment of the historic environment as part of the consenting process. Data is generated in large quantities to inform an understanding of impact from proposed developments, allowing decision makers to judge the merits of proposals.

However, the issue faced in collating these big data sets is that the methodology focuses on quantitative metrics and not the qualitative content of the data being collected. Study areas are usually established by a simple buffering of the proposed development boundary, with a disregard to the nature of the historic and present environment around the development site. This leads to assets being severed from their associated groupings by an imaginary blue line, x meters, from an imaginary red line.

It also leads to data being considered, which hold no relationship with the development area and therefore holds next to no value in the assessment. As a result, this paper will discuss real examples to illustrate issues in data generation in planning based assessments and theorise challenges and opportunities to innovate in how we collate data for a proportionate presentation.

## 12 A HIDDEN STORY: HERITAGE IN THE DESIGN ENVIRONMENT

**Abstract author(s):** Farr, Sarah-Jane (HS2)

**Abstract format:** Oral

This paper presents the results of a review of how High Speed Two Ltd. (HS2) addresses heritage in our design processes - from the perspective of highlighting and delivering opportunities to physically integrate the results of our investigations and also share them through a range of other engagement media.

How has HS2 identified and maximised opportunities in scheme design and design stages? How do we as HS2 historic environment experts identify and promote colleagues to take the 'leap of faith' often required to secure commitment to the 'information' potential in advance of the 'data' delivery?

This paper:

- considers our processes and stages of when, and how, to integrate our historic environment research, survey and intrusive investigations in the HS2 scheme design,
- shares case studies of identifying and maximising opportunities in scheme design and interpretation through variety of story-telling media,
- identifies any lessons learnt and opportunities to improve integration of heritage in HS2 scheme design.

## 13 ARCHAEOLOGY DATASETS AND MAJOR INFRASTRUCTURE PLANNING AND CONSTRUCTION

**Abstract author(s):** Carver, Jay (4AD Consultants Ltd)

**Abstract format:** Oral

From the late 1990s to now, major infrastructure projects in the UK have sought to develop systems to source, manage, create and share for reuse, large amounts of new archaeological data. We shall look at some of the key milestones along this journey with UK project examples, and review how big data integration is being addressed in a current large rail project High Speed 2 Phase 1 London to Birmingham. We shall discuss current issues, and how the future may look for data that is standardised, interoperative, and genuinely capable of effective reuse with least effort. Is it even achievable and or desirable? Or are the barriers to real integration too large? Finally we shall highlight some the different audiences for reuse of the data, from teams undertaking post excavation synthesis (what do they need?), future researchers (what will they need?), and local communities. What tiered approaches are required to maximise the use and reuse of data and how should it be shared?

---

## 260 WHOSE POT IS IT ANYWAY? STYLE, INFLUENCE, INTEGRATION AND MEANING IN EUROPEAN CERAMICS

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Hall, Derek (Independent Researcher) - Casimiro, Tania (NOVA University Lisbon) - Wennberg, Tom (Goteborgs Stadsmuseum) - Witte, Frauke (Museum of Southern Jutland)

**Format:** Regular session

Nothing originates from nothing, and this seems to have been the case of medieval, early modern, and even contemporary European ceramics. All around Europe many traditions originated with the Romans with some of those technical aspects spreading. Tin glazed ware may be considered as a paradigmatic example. While it was developed in the East it entered Europe through the Iberian Peninsula due to the Muslim presence. By the 14th century it was already being made in Italy from where it was sent to countries such as France, England, and the Netherlands,

reaching the North in the middle of the 18th century, already as an industrial production. This type of ceramic production then receives an external influence motivated by global contacts in the 16th century when all European countries began to adopt an Eastern style in their productions.

The way cultural traditions are shared in Europe at different times and speeds and how they are reflected in pottery production and use is what we intend to discuss in this session. We aim to defy traditional approaches that tend to talk about ceramic production as an isolated phenomena and instead locate it in the wider European panorama discussing if these can be considered as assimilation, diffusion, refusal, or appropriation processes. These similarities reflect how Europe may share identity aspects and can be seen not only in techniques, forms, decorations, or symbols, but also in ways of using such objects in different environments and how they reflect social, cultural, and even political behaviours.

We welcome proposals for papers from the fields of archaeology, iconography, ethnography, geography, history, linguistics, and other related fields.

## ABSTRACTS

### 1 "KERNOI" OF ENEOLITHIC-EARLY IRON AGE IN THE NORTHERN BLACK SEA REGION

**Abstract author(s):** Makhortykh, Sergey - Kotova, Nadia (Institute of Archaeology Ukrainian Academy of Sciences, Kiev)

**Abstract format:** Oral

Our presentation is devoted to consideration of very exciting ceramic class conventionally classified by kernoï, which are located in the northern Black Sea region. They mainly belonged to the two chronological epochs – the Eneolithic and Early Iron Age. There are several typological groups among this ceramic material (multi-mouthed vessels, vessels with integral small cups or tubes on their shoulders, etc), which were found in settlements or necropolei contexts like Starye Bedrazhi, Krutukha Zholob, Neporotiv, Yaseniv, Komarov, Velikaya Aleksandrovka, etc. This ware usually functioned as cult feasting or offering pottery, but sometimes they were also used as proper grave goods. Appearance of "kernoï" in the northern Black Sea region was connected with various kinds of cultural impetus (migrations or network of long-distance culture contacts) came from the Danube-Carpathian and Mediterranean regions. At the same time, distribution of multi-spouted vessels also known in Italy, is possibly associated with the Near Eastern influence. Kernos-type vessels functioned as a symbol of group identity and represents similar religious beliefs, although many of them had own style and were local production.

### 2 WHOSE URN IS IT ANYWAY?

**Abstract author(s):** Kovacic, Ana (Independent researcher) - Stemberger Flegar, Kaja (PJP d.o.o.)

**Abstract format:** Oral

The Latobici were a Celtic tribe who resided in the area of the modern day Dolenjska region in Slovenia (Roman Pannonia Superior). Their presence is attested both epigraphically as well as in the works of ancient authors. The uniqueness of Praetoricum Latobicorum (Trebnje) and Municipium Flavium Latobicorum Neviodunum (Drnovo) and their surroundings in the Roman period is most strikingly manifested in local forms of pottery, which are especially prominently featured in the mortuary sphere. Some of these forms are clearly relics of Prehistoric traditions, as the area was flourishing in the Iron Age.

However, the distinct form of vessels known as house urns are not such a relic despite being exclusive to the region and limited to the funerary setting. Initially, the urns were ascribed to the Latobici tribe by Peter Petru, who named them 'Latobici house urns' (hišaste žare Latobikov) due to their distribution, but Dragan Božič argued against the connection of the prehistoric tribe with this specific pottery form since not a single urn was actually found in graves that could be dated to the prehistoric period or to the transition between Prehistory and the Roman period.

This paper aims to revise the typo-chronology and distribution of different types of these house urns. Moreover, it discusses possible explanations of the origins of this unique form in the context of the major shifts observable in material culture after the Roman occupation.

### 3 EARLY MODERN MERCURY PRODUCTION AT IDRİJA, SLOVENIA: RESULTS FROM THE EXCAVATION AT THE MERCURY ORE ROASTING SITES

**Abstract author(s):** Kawashima, Takamune (Hiroshima University Museum) - Rupnik, Janez (Avgusta, d.o.o.) - Hudson, Mark (Max Planck Institute for the Science of Human History) - Uchiyama, Junzo (Sainsbury Institute) - Pelloli, Claudio (Independent Researcher)

**Abstract format:** Oral

Idrija is known as one of the most important mercury mines in the world and was registered as a UNESCO World Heritage Site in 2012. However, the early mercury smelting in Idrija is only known in the literature, and the early stages of



smelting activities and trade are still unknown. As no archaeological excavation has been conducted before 2019, previous studies have been conducted based on pottery collected on the ground surface. Therefore, the changes in the pottery and the date of the sites have not been clarified. The authors conducted small-scale excavations in 2019 and collected mercury ore roasting pottery stratigraphically at several sites. As well as accumulations of pottery sherds, we could find the fragments of clay seals for the pottery at the Trate and the Padarjeva grapa sites, which have been firstly recognized archaeologically. At Padarjeva grapa, under a thick layer of the black soil, we could find a possible hearth platform. A geomagnetic survey at the Prenštat site revealed the concentration of the pottery sherds at some places, one of which was an accumulation of the sherds. By a survey at the Pod rovtom site, we found the sherds with inscriptions, which might imply the potter or the kiln. These results will contribute to clarify the early stage of mercury production in Idrija, transportation of the mercury, and supply system of the pottery.

#### **4 ACCULTURATION, ASSIMILATION, CONNECTIVITY IN THE EARLY MEDIEVAL CARPATHIAN BASIN: CASE STUDIES FROM THE POTS POINT OF VIEW**

**Abstract author(s): Hajnal, Zsuzsanna (Hungarian National Museum / Magyar Nemzeti Múzeum)**

**Abstract format: Oral**

5-8th cc has meant the period of Great Migration in the Carpathian basin various peoples formed states with their special pottery traditions and need. Two almost totally (70-80%) excavated settlements of around 5 hectares at Kolked-Feketekapu and Tiszagyenda-Lakhatom were examined and more than 30.000 ceramic shards unearthed from each site.

The Kölked site could be dated to the 6-8th centuries and consisting of several families of high social status, metal finds of the burials speaking of close and strong connections with Late Antique and Merovingian material culture; giving evidence of people of different origin living under Avar rule. The earlier flourishing phase has closer parallels with Italy, the Balkans and the western Germanic kingdoms than the Avar Khaganate' sites in fashion, in the used pottery, and even in architecture as well. The process of social (political) changes and with new cultural influences could be visible during the 7th c. The decline of Mediterranean trade, the radical reduction of spending power of the households, the elimination of cross-border connections, and the assimilation into the mass population of the late Avar Empire could be detected on the ceramic material as well.

The Tiszagyenda site would be represented as a control case study: what happened after the Huns burnt down the former Sarmatian settlement, how a new population did formed their village and how they lived through the Avar conquest in the eastern part of the Carpathian basin. Changes in settlement structure and reorganizing the economic units of the site would reflect in transformation of the used vessels also.

Intra site analyses of distinctive and characteristic ceramic technological groups together with comparisons of their presence, frequency in other areas of the Carpathian basin are planned. The lecture would focus on the questions of producing centres, trade, acculturation, assimilation that visible on the pottery.

#### **5 THE INFLUENCE OF THE VISTULA TRADING ROUTE ON THE DISTRIBUTION OF CERAMIC VESSELS IN POST-MEDIEVAL POLAND**

**Abstract author(s): Starski, Michal (University of Warsaw, Faculty of Archaeology)**

**Abstract format: Oral**

The paper is devoted to the main trading route in Poland from the 15th ct. to the end of the 18th ct. Beyond mass products such as grain, wood and raw materials also, pottery was distributed from production centres to the main towns, both from the south to the north and also from the north to the south. The signification of such trade was primarily focused on local or regional demand, but some products were sold across the Baltic Sea.

The paper will outline the main trends of products distributed on the internal market in Poland (whitewares, glazed whitewares, local slipware, pomeranian faience). For example, data from Gdańsk, Puck, Bydgoszcz, Płock, Warsaw and others will be presented. The time range for discussion is specified from the second half of the 15th ct. to the 18th ct. Also, a future perspective for identifying such products around the Baltic Sea will be outlined.

#### **6 A WHITER SHADE OF CLAY. MEDIEVAL AND POST-MEDIEVAL WHITEWARE POTS NORTH OF THE CARPATHIANS – AN OVERVIEW**

**Abstract author(s): Trzeciecki, Maciej (Instytut Archeologii i Etnologii Polskiej Akademii)**

**Abstract format: Oral**

White kitchenware vessels appeared and disappeared with varying intensity in different places of East-Central Europe between the 10th and 18th centuries. Researchers generally perceive them as a material indicator of technological progress, allegedly necessary to work with this type of raw material, and study them with regard to a given region or at most a country, usually within the borders after 1945.

This paper proposes a broader view, taking into consideration both the *longue durée* approach and a broader geographical perspective that includes vast territories north of the Carpathians, between the Oder and Dnieper rivers. In such a perspective, studies on the production and distribution of whiteware in East-Central Europe point to the variability of cultural, economic, and political entanglements of societies living in this part of Europe. Each time the emergence, widespread, and finally decline of whiteware manufacture and use seem to be strongly related to fundamental socio-cultural changes, frequently promoted or even forced by the political power. The sources of inspiration seem to be different each time, both in terms of the directions of technology transfer and the ways of adaptation/interpretation of stylistic features. The paper focuses on three issues that can be regarded as fundamental: whiteware manufacture in the princedoms of Kievan Rus' (11th-13th century), the inflow of white pots into Polish towns chartered on so-called German Law (14th-15th century), and, finally, mass-scale production and distribution of the white ceramics in the territories of the Polish-Lithuanian Commonwealth (17th-18th century). Given the current state of the research, the observations are only preliminary, but they clearly set out the great, although still not recognized, the cognitive potential of this ware group.

## 7 THE (IN)VISIBLE COOKING POT: SOME THOUGHTS ON KITCHENWARES IN MEDIEVAL TARTU (ESTONIA)

**Abstract author(s):** Haak, Arvi (Tartu City Museum; University of Tartu, Department of Archaeology and History)

**Abstract format:** Oral

Among the archaeological collections from the medieval town of Tartu, the ceramic assemblages have shown differentiation even among kitchenwares. During the town formation period (13th century in Estonia), the influence of Northwest Russian ceramic tradition on the local wheel-thrown pottery production has been recognized, and such flat-bottomed vessels are numerous. At the same time, a small number of western imports have entered the cooking sphere, mostly Paffrath-style globular pots. Thus, differentiation exists even in that sector.

From the 14th century onward, the use of local earthenware vessels clearly diminishes, although these are present in latrine complexes of 15th-century dating, even from plots with clear evidence of conspicuous consumption. Compared to neighbouring areas, this can be considered rather late development. As ceramic tripod pots, another common form, remain almost non-existent in Tartu until mid-16th century, the question remains, what has remained of late medieval cooking vessels? Could the metal tripods, which leave very limited traces in the urban archaeological record, have filled not only the upmarket niche, but become standard equipment in most urban households? If so, how to interpret the parallel usage of local earthenware pots?

These developments, namely several influences, parallel developments and temporal changes in Tartu are used as a basis for interpretations on diffusion, tradition, assimilation, and refusal in the ceramic sphere, which will be seen as related to the development of appliances for heating and cooking, and methods of food preparation.

## 8 UNCONSCIOUS SIGNALLING: MIGRATION AND APPROPRIATION IN THE DIVERSE POTTERY-MAKING TRADITIONS OF THE WESTERN BALKANS.

**Abstract author(s):** Carlton, Richard (University of Newcastle) - Djordjevic, Biljana (National Museum of Serbia in Belgrade)

**Abstract format:** Oral

The current pottery-making traditions of the Western Balkans centred of Bosnia-Herzegovina arguably exhibit, in their surviving remnants, greater diversity than those of any other part of Europe. Although not presented as a direct analogy, the presence of such diverse traditions, represented by starkly different production technologies as well as their products, is reminiscent of the picture presented by the distribution of Roman and medieval pottery derived from archaeological contexts here and elsewhere. Thus, in eastern Serbia and Bulgaria semi-industrial potters producing glazed wares using foot-wheels and updraught kilns exist alongside potters using hand-building and open-firing techniques, while to the west are potters using hand-wheels and open- or single-chamber firing methods to produce predominantly calcite-tempered cooking wares. This paper will discuss the notion of 'tradition' in the context of these potters, investigating its parameters with respect to ethnographic and archaeological perspectives. Aspects of the continuing hand-wheel tradition suggest the continuity of technological tradition since it was imported in the early medieval period, while the ramifications of a century-long migration of Piroćanci potters from the eastern tradition (itself heavily influenced or derived from late Ottoman and Byzantine traditions) into 19th and 20th century Bosnia and Northern Croatia will also be discussed. The latter will focus on the example of a single potter, Zoran Jontić, who migrated 600 km westwards into Croatia from eastern Serbia in the 1980s, returning to Serbia in the early 1990s. His willingness to adapt to local demand in both Western Croatia, where he began to produce local as well as imported forms in the mid-1980s, and currently in Serbia, where he produces local forms as well as imitations of West Serbian hand-wheel potters, is considered along with the wider, continuing impact of the Piroćanci tradition.

## 9 TRANSFER OF FASHION – THE SLOW NORTH?

**Abstract author(s):** Witte, Frauke (Museum of Southern Jutland)

**Abstract format:** Oral

The expression of the post medieval earthenware in the southern part of Scandinavia and Northern Germany is very similar to other European areas. Common forms and decorations shows common fashion awareness.

Through transport of ceramic by water and land as food containers or gifts, the local potters became to know pots, bowls and plates people had brought with them. In addition, moving potters have carried on the style of their homeland.

At the same time, the local understanding of motives was crucial for the interaction between potter and buyer/customer. The result was a fashion that has its roots in the faience and earthenware of southern Europe and the Netherlands. It can be compared in many ways with different regions of Europe, but it has also its own character. What is interesting about this adaptation of forms and decoration is both the selection of motives and the shift in time that has occurred. This can be partly explained by political and religious circumstances.

## 10 THE DISTRIBUTION OF ANABAPTIST FAIENCE IN THE HABSBURG MONARCHY

**Abstract author(s):** Blažková, Gabriela (Institute of Archaeology of the Academy of Sciences of the Czech Republic)

**Abstract format:** Oral

Anabaptist faience is a special phenomenon of world cultural heritage. It is an important concept in the field of art history and (private) collecting. Anabaptist faience was produced in Anabaptist workshops in South Moravia. Its origin dates back to the second half of the 16th century. Production in Moravia ended around 1620 when most of the workshops closed due to the Thirty Years' War. In 1622, the Anabaptists were expelled from Moravia for religious reasons; however, faience production continued smoothly in present-day western Slovakia and Transylvania.

Archaeological excavations have documented twelve workshops that produced richly painted ceramic tableware of representative function. Anabaptist religious principles forbade depicting living creatures (humans and animals) as well as making humorous vessels in terms of shapes. The largest workshop was found in Vacenovice where a large-capacity ceramic kiln was discovered. The initial production of faience was sold to aristocratic and patrician households. Thanks to orders faience products became part of aristocratic families' property throughout the territory of the Habsburg Monarchy.

Archaeological research of the Anabaptist workshops plays a key role in solving the question of where the Anabaptists learned by the technology of faience. It turns out that the direct source of inspiration was southern Germany where faience technology was already known in the 16th century and where a large group of members of the Moravian community of Anabaptists came from. It follows that the influence of Italian faience was secondary and mediated in the case of Moravian production.

## 11 FAIENCE PRODUCTION IN SCANDINAVIA - A BRANCH OF THE EUROPEAN TIN-GLAZED EARTHENWARE TREE

**Abstract author(s):** Wennberg, Tom (Museum of Gothenburg)

**Abstract format:** Oral

Faience production in Scandinavia begins in Copenhagen 1722. From there it spreads over Scandinavia during the course of the 18th century. Faiences are being produced up until the very early 19th century when it's ousted by industrial earthenware from Britain. The Swedish production changes from faiences to refined earthenware during this period.

This paper will discuss workshop materials and how the faience potter's knowledge spread over Europe in general and in Scandinavia and the Baltic area in specific. Excavated material from Marieberg in Stockholm, Pålsjö outside Helsingborg and Sölvesborg in the southeast of Sweden will be presented. These manufactures were producing faience in the latter half of the 18th century. The excavations yielded different kind of kiln furniture like parts of saggars, saggar pins, setters and more. The workshops are related in many ways. The production techniques will be discussed in relation to the group of Baltic tin-glazed earthenwares and in connection to a general European tradition of faience production in the early modern times.

## 12 HOW A WORKING-CLASS COMMUNITY IN 19TH CENTURY COPENHAGEN ACCESSED A GLOBAL CERAMIC STYLE – INTERPRETATIONS OF A LARGE POTTERY ASSEMBLAGE

**Abstract author(s):** Keenan, Samuel (Museum of Copenhagen)

**Abstract format:** Oral

In 2018 archaeologists from the Museum of Copenhagen excavated a series of 13 brick lined latrines from a backyard of a row of houses in the Nyboder area of central Copenhagen. Historical sources, as well as the archaeology,

show that these latrines were put out of use and filled with household waste in the 1850s. From these latrines approximately one tonne of ceramics were collected, including large amounts of Chinese and European porcelain and English whitewares.

Although coming from a working-class area of Copenhagen, this assemblage is very similar, in terms of its distribution of ceramic types, to those that have been found from South America to South Africa, and across Europe in this period. From this we see a working-class community that has adopted an identifiably global aesthetic. However, much of this material was likely acquired through second-hand markets and thus demonstrates the varying modes of acquisition different groups exploited to take part in this global style. It also shows how poorer sections of society were able to access the same trends and fashions as wealthier citizens due to developments in the commercial and manufacturing spheres of the globalising 19th Century economy.

Despite being representative of a global style, this assemblage has several distinctly Danish characteristics, including significant amounts of Danish produced porcelain, as well as redwares from several production centres across Denmark. As such, a large assemblage such as this can inform us about local social and political structures, despite its seemingly generic nature.

### 13 **“TRACING BACK YOUR POT”: PUNIC-ROMAN FOODWAYS AND CERAMICS AND THEIR PERMANENCE IN SOUTHERN IBERIA UNTIL NOWADAYS**

**Abstract author(s):** Sánchez Moral, Carmen María (Universidad Autónoma de Madrid)

**Abstract format:** Oral

Ceramics are the most direct -yet silent- witness to daily culinary practices. Food consumption, besides being fundamental to human existence, transcends a mere physiological necessity and reaches a deeper dimension, since it is the result of the choices and cultural interpretation made by a human group within its specific socio-economic and cultural framework. Thus, foodways and the (pottery) technology linked to them represent an invaluable marker for cultural dynamics and their evolution during centuries, as well as the integration, reinterpretation, resignification, imitation and assumption of foreign traditions. These are practices that define the way a society understands and conceives itself, but also its self-representation and identity.

This being said, the main aim of this paper is to study some cooking and culinary habits -food preparation, conservation, consumption and storage methods- that survive until the present day in Southern Iberia and can be traced back to Punic-Roman times, the Middle Ages and Early Modern Period. Even if starting from a specific geographical framework, archaeological and ethnographical parallels with other areas of Northern Africa and the Mediterranean Basin will be considered, since they shared a common past (current Italy, Portugal, Greece, Tunisia, etc.). The principal method to do so will be the ceramological study of the Hellenistic, Punic and Roman cooking pots and tableware pottery -which have been the object of my PhD Thesis as part of the “Carteia Project”- and the long-term persistence of some of their technical and typological features and culinary uses in subsequent historical periods until nowadays. We will proceed with a polyhedral and holistic approach, that is, taking into account other fields of knowledge such as Experimental Archaeology, Ethnology, Etymology, Nomenclature, Metonymy or Commensality.

A necessary interdisciplinarity required by these complex yet fascinating artefacts: ceramics. True “History pots”.

### 14 **GUESS WHO'S COMING TO DINNER? CERAMIC FORM AND STYLE IN MEDIEVAL SCOTLAND, A REFLECTION OF DIETARY CHANGE AND EXTERNAL INFLUENCE**

**Abstract author(s):** Hall, Derek (Independent Consultant)

**Abstract format:** Oral

This paper will consider the effect of the introduction of new eating and drinking habits into Medieval Scotland by looking at the development and manufacture of different types of pottery vessels. The creation of the first towns in Scotland (burghs) by King David the First in the 12th century and his introduction of the major monastic orders introduced new settlers into Scotland from both England and the Continent. Pottery specialists have often considered the possibility that the arrival of these new people can be identified in both the origin of pottery that is found and the noticeable change in locally produced vessel forms and decorations. The introduction of the consumption and preparation of new foodstuffs into everyday life can also be seen to be reflected in the use of new types of ceramic forms. This presentation will examine the available evidence from excavated ceramic assemblages to see if this theory holds true.

## 15 FROM THE MEDITERRANEAN TO THE BALTIC: THE SPREAD OF USE AND PRODUCTION OF LEAD GLAZED EARTHENWARE

**Abstract author(s):** Langkilde, Jesper (Roskilde Museum)

**Abstract format:** Oral

The technique for lead glazing earthenware had spread from its origin in the Near East to the Western Roman Empire during the first century BC to the first century AD. In the following centuries, lead glazed earthenware was produced in small amounts in Europe north of the Alps at Roman production centers in Gaul and Britain. Like many other Roman innovations, lead glaze disappeared north of the Alps following the 4th century, but continued in the Mediterranean and the Byzantine Empire. Transalpine lead glazed earthenware production then reappeared in Frankia in the 8th-9th centuries and in Britain in the 9th-10th centuries, but it was not until the time around 1200 that lead glazing took the jump to local production in Southern Scandinavia and the western Baltic. Why did it take so long for this technique to go from Western Europe to Scandinavia and the Baltic? This paper will try to give short overview of the travel of the lead glazing technique from the Mediterranean to the Baltic and discuss the dynamics and cultural context for this process. Emphasis will be on the transfer from Western Europe to Southern Scandinavia/Western Baltic.

## 16 THE INS AND OUTS OF EUROPEAN EARLY MODERN TIN GLAZE WARE: TECHNIQUES, AESTHETICS, AND IDENTITY

**Abstract author(s):** Casimiro, Tania (CFE HTC - Nova University of Lisbon)

**Abstract format:** Oral

The first experiences of early modern tin glaze ware production in Europe occurred still in the Middle Ages in the Iberian Peninsula and from there it widespread to other countries. Although the medieval production is a fascinating subject and the genesis of what will happen in later centuries, this paper will discuss European productions from the late 15th to the late 18th century and how different countries assimilated similar traditions. Although a thorough analysis of the distribution of European tin glaze ware within Europe is not made yet it seemed that the countries which were producing such wares were also consuming wares made in other countries. In this sense Portuguese, Spanish, Italian, British, Dutch, and French vessels were circulating around the European continent. This means that potters had access to what was being made and could do similar things. This European productive and consumer panorama did not only used the same techniques, but it shared similar subjects in their decorations. Drawing from the theme of this session it would be important to discuss, based in archaeological evidence, how these relations made that a similar aesthetic behaviour occurred within Europe, especially in the cities associated to maritime trade where these objects can be recognized as the materialization of European cultural contacts allowing the possibility to discuss even a shared identity.

## A. SMALL CERAMIC VESSELS IN THE CHEESE-MAKING PROCESS - FROM THE NEOLITHIC TO THE MODERN ERA

**Abstract author(s):** Zdeb, Katarzyna - Żurek, Magdalena (Institute of Archaeology Cardinal Stefan Wyszyński University in Warsaw)

**Abstract format:** Poster

Vessels with sieves were found on the archaeological sites. Such vessels dated from the Neolithic period till the Early Iron Age are different in shape - vessels are similar in form to strainers, as well as cups, bowls, and funnels, with sieves on the whole surface, but we know also bowls with sieves in bottoms. In early mediaeval layers, cups with sieves in bottoms occur. Research over the last few years shows us that even in late mediaeval and early modern archaeological material we can distinguish vessels with sieves. Their function is still under discussion but some of them could be used in the cheese-making process. To prove these chemical analyzes are required. They are necessary to determine if vessels have been in contact with foods and if so, they can determine a kind of food.

Four cups are presented that were found during the excavations in the Teutonic Knights castle at Przewmark. These cups have few sieves in bottoms and they are dated to the end of the late mediaeval period. This has decided to carry out analyzes of the fatty acid content of these vessels.

A case of Przewmark cups shows us that the tradition of using vessels with sieves for cheese production was still alive – from bowls with sieves from the Neolithic period till ceramic moulds are applied nowadays in traditional housekeeping. Perhaps because of this tradition cups with sieves were produced to use them in a new technology of cheese production – for rennet dispensing in the rennet-cheese making process, implanted in northern Poland at that time. At this point, it is important to stress the need to use different methods to verify the results that can be the starting point to develop our knowledge about the castle inhabitants diet.

**Theme:** 2. [Re]integration

**Organisers:** Luciañez Triviño, Miriam (University of the Basque Country - UPV/EHU) - Provenzano, Noëlle (CNRS, Université Paul Valéry-Montpellier III) - Choyke, Alice (Central European University)

**Format:** Discussion session

"Craft specialization" is an archaeological category used to define and identify degrees of socio-economic complexity. It is also one of archaeology's most loosely employed terms due to the widespread assumption that specialization is self-evident, that the concept is understood in the same way and does not require clarification between different cultural contexts. Criteria for "specialised" craft activity are usually not made explicit, making comparative studies difficult. Binomial, often mutually exclusive, concepts are found in the archaeological literature that may or may not refer to the same thing or actually to different things: e.g. Craft specialization versus Non-specialized craft production; Independent craft specialization versus associated craft specialization (for objects produced in different media) and Full-time craft specialization versus Part-time specialized craft activity.

Some suggested criteria include: 1) Place and size of production units; 2) Procurement strategies for raw material; 3) Choice of raw material; 4) Special time of year for production; 5) Level of technical segmentation; 6) Level of know-how (expertise); 7) Homogeneity of transformation modes; 8) Volume and variety of productions; 9) Specialization of the tools used; 10) Scale of product distribution; 11) Workshop associations with products in other media.

Presenters will be asked to reflect on the various criteria, both objective and subjective, they use to define and identify craft specialization in their worked osseous assemblages. We aim at a diachronic and transdisciplinary session in order to assess different definitional practices, regardless of chronological period. Contributions from Archaeology, Ethnography, Cultural Anthropology, etc. are welcome. We invite researchers in worked osseous assemblages from any period to share how they identify the archaeological signature of craft specialization using examples from their own work. Papers should include direct commentary on definitions, parameters and even doubts about issues of craft specialization.

## ABSTRACTS

### 1 **MOTIVATIONS FOR TECHNOLOGICAL INVESTMENT, OR BEING EVASIVE ABOUT CRAFT SPECIALISATION**

**Abstract author(s):** Christidou, Rozalia (UMR 5133, CNRS/Univ. Lyon 2)

**Abstract format:** Oral

In the Aegean Neolithic and Bronze Ages, the worked hard tissues of animals, with the exception of the imported ivories and the Spondylus and Murex shells represent rarely compelling cases for testing the social and economic implications of the adoption of specialised complex technologies. The osseous materials which were locally available feature various tools and techniques used to process them and the involvement of bone tools in diverse tasks typically related to the domestic economy. They also often show variability in the quality of the products made and the care used in the production, suggesting small-scale, household-level activities. However, certain areas of the Final Neolithic bone-working demonstrate introduction and careful manufacture of new tool types and tool decoration patterns and strategic modifications of the products obtained from select bones such as the deer antlers. In the Bronze Age, the production of personal items becomes part of the bone-working activities and largely based on the use of metal tools. Although the scale of production does not seem to change in these periods, the technical aspects of the production indicate different production agendas and a motivation for self-definition and advertisement of producers.

The Aegean Final Neolithic and the subsequent Bronze Age are characterised by the restructuring of local economic and social systems and receptiveness to novel ideas. Then, should we be more careful about the ways this evolution influenced personal and group motivations for technological investment and reshaped tasks related to bone-working? Thus, the beginning of specialised craft production from bone could start to be explored in a methodical manner.

### 2 **SPECIALISATION IN THE BRONZE AGE? REFLECTIONS ON THE OSSEOUS PRODUCTIONS OF THE NORTH ITALIAN TERRAMARES**

**Abstract author(s):** Provenzano, Noelle (CNRS)

**Abstract format:** Oral

For a very long time, many studies have been interested in the question of the specialization of production in pre- and protohistoric contexts, focusing, in particular, on the theoretical elaboration of criteria that could define the different levels of specialization and the status of craftsmen. The numerous works on flint, ceramics, metal or some prestigious

materials have demonstrated the informative potential of this approach for the understanding of the organization of these societies of the past. Production on hard animal materials has attracted much less study, with the exception perhaps, of certain very specific productions or those elaborated on prestigious materials like ivory or certain shells. Bone productions are nevertheless an integral part of the whole economic system but, in addition to not always being numerically abundant, they are marked by a strong and perennial technical tradition that can sometimes give them a monotonous aspect of a daily domestic production. Beyond the theory, we tried to establish the most reliable and objective criteria possible that can help us understand to what extent we can evaluate the organization of these bone productions, their destination and the role of the actors of these productions. In order to carry out this reflection, we have focused on the bone productions from the Terramare of the Northern Italian Middle Bronze Age, productions known for their impressive quantity and quality and which are one of the particular aspects of this culture.

### **3 CHALCOLITHIC IVORY CRAFTSMANSHIP IN THE IBERIAN PENINSULA. SPECIALISED CRAFTS(WO) MEN AND SPECIAL(ISED) CONSUMERS?**

**Abstract author(s):** Luciañez Triviño, Miriam (University of the Basque Country UPV-EHU; University of Seville)

**Abstract format:** Oral

Today, everyone accepts that ivory work is a specialised activity. It seems to be true that the production of ivory objects and their consumption have characteristics to define it as specialised craft. Here a reflection on ivory working in the Iberian Peninsula during the Chalcolithic period is presented. Valencina de la Concepción (Seville, Spain) is used as a case study. As far as our studies have revealed, we have some data on: procurement strategies for raw material (through exchange or trade from other Mediterranean areas); choice (selected for the most showy objects); segmentation of chaîne opératoire (the procurement and preparation of the blocks, and probably also the procurement of the blanks, was carried out at the place of origin of the raw material); homogeneity of production modes (systematised exploitation, mainly through the production of longitudinal plates); variety of products (production of a huge variety of objects, aimed at specific groups or collectives) and use of specialized tools (metal tools). However, there are still gaps to be filled in the Iberian Peninsula, probably in Europe as a whole. Where are the place of production? how are and where are the workshops? how can we define them? which is the volume of production and scale of distribution? The data available to date for defining (or not) ivory craftsmanship as specialised is discussed here. In addition to presenting and reflecting on some criteria that have been observed archaeologically, I would also like to reflect on whether "the end user" is, or can be, a further criterion for defining specialised craftsmanship.

### **4 DECORATE, FIT AND COMBINE. INLAYS AND FACING IN THE HARD ANIMAL MATERIAL INDUSTRY OF THE IRON AGE. SPECIALIZED CRAFT TECHNIQUES**

**Abstract author(s):** Blasco Martín, Marta (ICAC, Tarragona, Juan de la Cierva-Formación.) - Soria Combadiera, Lucía (Univ. de Castilla-La Mancha. Dpto. de Historia, Área de Prehistoria. ARQPAT - Arqueología y Patrimonio) - Mata Parreño, Consuelo (Universitat de València. Dpto. de Prehistòria, Arqueologia i Història Antiga. GIUV2015-222 GRAM)

**Abstract format:** Oral

The studies of hard animal materials industries of the Iron Age in the Iberian Peninsula have made possible to document a great craft variability in the objects, the raw materials and the techniques used. Among them, it is worth highlighting the decorative techniques of inlays and facing. Both suppose two technological decisions linked to a specialized degree of know-how, because they imply a planning, a precise mastery of the tools and the actions carried out and the work of various raw materials, either by the same craftsperson or by the communication between several of them. For the first time in the western Mediterranean area in these chronologies, artefacts with the indicated technologies have been found, they combine various exogenous materials, such as amber and ivory. In this work we will focus on what type of objects present these decorations, what materials are combined and how they would be accessed, in what places they appear and who could carry out these ornamental techniques related to a high degree of craft knowledge.

### **5 COMPARING PRACTICES OF WORKED ANIMAL OBJECT PRODUCTION AT ANCIENT METHONE**

**Abstract author(s):** DiBattista, Adam (Institute for the Study of the Ancient World, NYU)

**Abstract format:** Oral

Archaeological evidence for the production of worked animal materials in the Greek world is severely limited during the Early Iron Age and Archaic Periods (ca. 1100-500 BCE). However, the site of ancient Methone, an early Greek colony in northern Greece, represents some of the only direct evidence for the production of worked animal objects during this period. Moreover, the deposition of the Methone assemblage (ca. 800-600 BCE) coincides with a time when individuals were dedicating new forms of worked animal objects at sanctuary sites across the Greek world. The assemblage shows extensive evidence for worked elephant ivory, strongly suggesting that craftspeople at Methone were creating objects intended for dedication at such sanctuaries. However, the wide variety of animal materials (e.g., bone, antler, boar tusk) and final products indicates that different forms of craft production were occurring si-

multaneously; analysis of the site also suggests that the social arrangement of craft production changed throughout time. In order to better understand the different approaches to creating worked animal objects at ancient Methone, this talk examines the variations among the choice of animal materials, acquisition methods, final products, and production environments at the site.

## 6 EVIDENCES OF CRAFT SPECIALISATION DURING THE HUNGARIAN LATE NEOLITHIC: AN OVERVIEW

**Abstract author(s):** Tóth, Zsuzsanna (Hungarian National Museum, Department of Archaeology)

**Abstract format:** Oral

Worked hard osseous industry of the Hungarian Neolithic is characterised already from the Early Neolithic onward by standardised tool types in raw material selection, shape as well as manufacturing methods.

The Late Neolithic is a time period of complex social and cultural changes which is reflected also in the worked hard osseous industry. The average technological background and available raw materials and tools are more or less unified with minor variabilities between certain regions and sites of the period. Variabilities can be detected in raw material selection regarding species and skeletal elements of certain tool types, but typological composition of the different site's assemblages show some differences, too. In my opinion these variations cannot be explained only by regional or cultural differences, but certain tool types (such as bipartited awls and double points) prove the emergence of craft specialisation. In my presentation I try to present an overview of Hungarian Late Neolithic worked hard osseous industry as such and shed light of possible traces of craft specialisation through the examination of worked hard osseous assemblages of several Late Neolithic sites.

The research was granted by NKFIH 121128.

## 7 A ROMAN BONE-PROCESSING HOUSE IN AQUAE GRANNI (AACHEN, GERMANY)

**Abstract author(s):** Nolde, Nadine (Institute for Prehistory, University of Cologne) - Schaub, Andreas (Stadtarchäologie Aachen) - Deschler-Erb, Sabine (IPNA, University Basel) - Deschler-Erb, Eckhard (Archaeological Institute, University of Cologne)

**Abstract format:** Oral

During a sewer renovation between 2013 and 2017 in the vicus Aquae Granni, (the modern city of Aachen, Germany), a large quantity of late Roman animal bones from a street-side house close to the forum and thermae, possibly destroyed in the context of the riots in the years 275/276, were found by excavations. Particularly striking was the distribution of animal remains as well as their modifications and state of processing within this house, that could be associated with at least one bone-processing craft. Three single rooms indicating different bone-working activities within each chamber. In one room, half-finished products, blanks as well as a specific waste spectrum associated with the workshop of a bone carver were present. Another room, facing the street is interpreted as a sales area and contained mostly finished bone needles and pins. The faunal material from the third room, however, is more indifferent and, apart from bone carving, may have housed another bone-processing trade, such as a glue boiling shop or a soup kitchen. In this case a combination of different trades under one roof reflects the symbiosis between all the craftsmen working in the processing of animal remains, such as bone, meat, marrow and glue.

## 8 CRAFT SPECIALIZATION IN WORKED ANTLER AND BONE IN URBAN RIBE AS SEEN IN WORKSHOPS FROM DIFFERENT AREAS BETWEEN 700-1300 AD

**Abstract author(s):** Qvistgaard, Sarah (Sydvestjyske Museer) - Sindbæk, Søren (AU)

**Abstract format:** Oral

Ribe, Denmark, faces the North Sea with travel routes towards the European continent and Scandinavia. Excavations in recent years have produced a large and well-documented corpus of workshop waste and finished objects. They reveal extensive production using red deer antler, which shifts over time towards bone from cow and horse. This is a development paralleled in many other Viking-age and Medieval towns.

The occurrence and relative amount of finds of endemic red deer, horse, cow, and goat, and Nordic exotica such as reindeer and whale, give an impressive insight into craftsmanship and raw-material procurement over 600 years.

Specific contexts such as house floors or activity areas hold evidence of exceptional artefacts from different, specialized workshops, not just from combmakers, but also glass bead makers and copper-alloy metalworkers. The craft specialization took place in a combined dwelling-cum-workshops, where specialized craft activities were integrated in the living spaces of the household.

Consistent patterns of material selection for Scandinavian-type comb as opposed to Frisian/North-Sea types show the importance of style and regionality. The quality of the combs show a wide range of variation. Some combs display excellent, highly skilled craftsmanship with precise symmetry and ornamentation. Others are plainly functional, and a few are distinctly poorly made, and were not ever brought into use. The presentation will discuss the implica-



tions: What does the patterns reveal about the level of artisan craft specialization and the artisans, whose work was at times highly skilled, or at others just about home-made "5- minute crafts?"

## 9 GATHERED, EXCHANGED AND VALUED? IDENTIFYING SEMI-SPECIALIZED ANTLER WORKING IN MIDDLE BRONZE AGE HUNGARY

**Abstract author(s):** Choyke, Alice (Central European University)

**Abstract format:** Oral

The Middle and late Middle Bronze Age marks a time of increasing social and technical complexity in the Carpathian Basin. Bronze metal working must have been controlled by specialists, forming part of an organized and far-flung system of trade and distribution that provided predictable access to ores. Production of goods also required specialist knowledge without the need, necessarily, for actual workshops supplying demands of a market economy.

Much less is known about specialization in other crafts, for example, the worked hard osseous materials still found abundantly in site materials from this period. Bone objects still followed manufacturing trends from earlier periods which operated on the household level. Tools and ornaments were manufactured as the need arose on an individual basis using abrasion and cutting-scraping-drilling with chipped stone tools. A technical shift becomes apparent with antler working. Fitting one criterion for semi-specialized manufacture, settlements lying outside ecotone regions of present-day Hungary may have had to barter in antler raw material. In addition, all antler manufacturing was carried out using metal tools, including the first stage of manufacturing, segmentation of red deer antler rack.

It is in this period that topological and technical innovations occur in antler manufacture. These include fine decorative incising, employing motifs found on metal objects, fine imitations of metal objects, use of a pinning technique and inlay. These new techniques and objects are widely distributed would have required specialized metal tools and people with the manual dexterity to use them at a high level. Using materials drawn from the site of Százhalombatta-Földvár as well as other coeval Bronze Age sites in Hungary, I will outline my argument for the existence of semi-specialized workers who produced a small range of refined, highly decorated commodities, perhaps for a more elite audience.

## 10 CRAFTS ON THE EASTERN SHORE OF THE BALTIC IN THE LATE BRONZE AGE: SPECIALISED SITES, SPECIALISED CRAFTSMEN?

**Abstract author(s):** Luik, Heidi (Tallinn University)

**Abstract format:** Oral

The new settlement type – fortified settlements first appeared within the settlement pattern of the eastern Baltic region in the first quarter of the first millennium BC. These settlements were not evenly distributed in the area. In Lithuania, they are known from the north-eastern part of the country, in Latvia mainly from the Daugava River basin. Only a few fortified settlements are known in Estonia. Traces of different crafts have been found in these sites, e.g., bronze casting, pottery making and bone and antler working. Were the crafts spread in the same way in all fortified settlements, or were they rather concentrated in only a part of such sites? Is it possible to identify the specialisation of any areas or buildings for different crafts within these settlements? Are there differences in specialisation between different crafts, for example when comparing bone and antler working with bronze processing, which requires more knowledge and skills? How did the availability of raw materials affect the specialisation of different crafts? The raw materials needed for bronze casting, copper and tin are not found locally in the eastern Baltic region. Bone and antler are locally sourced materials. Domestic animal husbandry played an important role in these settlements, but hunting was of secondary importance, and there are only few bones of wild animals in these sites. Certain differences can be found between the use of domestic animal bones and the antlers of wild animals.

## 11 CRAFT SPECIALISATION AND HOME-BASED PRODUCTION IN BONE AND ANTLER PROCESSING FROM THE EARLY MEDIEVAL CATHEDRAL ISLAND IN WROCŁAW, POLAND

**Abstract author(s):** Baron, Justyna - Diakowski, Marcin - Jaworski, Krzysztof - Pankiewicz, Aleksandra (University of Wrocław)

**Abstract format:** Oral

The Cathedral Island (polish "Ostrów Tumski") is a prominent center of the state and church administration of the early Polish State. It was located at the crossroads of important trade routes connecting Prague with Greater Poland and Pomerania, as well as Western Europe with Kievan Rus. The oldest structures of Cathedral Island (including massive wooden ramparts) date back to the middle 10th century.

The collection of over 1,000 objects made of bone, antler, horn, ivory and teeth were excavated from the 1940s to the present day. They come from almost 20 settlement layers that can be dated from the mid-10th to the mid-13th century. They were both finished products, half-products and numerous waste materials proving local production,

however, that the early medieval workshops have not been discovered. Today the collection is the richest and most diverse of early medieval Poland.

Based on formal and technological features, two basic groups have been distinguished. They differ in both the assortment of types and the tools used to manufacture them. The first group includes items carefully made with the use of a wide range of tools, such as saws, compasses, files, drills and knives. These were decorated elements of boxes, combs, chess pieces, inkwells, styluses, parts of a horse harness. The second group, in formal terms, includes everyday items such as needles, pointed objects (awls, perforators), arrowheads, buttons, skates, etc. They were made with the use of multi-functional tools such as knives and probably axes. An interesting aspect is also the relation between the forms and the selected raw material, which is well illustrated by the production of skates almost exclusively from horse metapodial bones. We argue, these two groups reflect the existence of various degrees of specialisation. In this case both home-based and craft activities represent the most contrasting strategies.

## 12 CRAFT SPECIALIZATION IN MEDIEVAL BUDA

**Abstract author(s):** Font, Ágnes (Central European University)

**Abstract format:** Oral

Craft specialization is a complex issue in medieval archaeology. In recent decades, there have been numerous publications on the subject and on the theoretical frameworks that can be used to characterize and discuss zones of workshop activity or even to localize specific workshops in the mirror of worked bones or antlers. In Hungarian archaeology, there have been numerous attempts to interpret worked animal raw materials in the context of medieval crafts. On the basis of the established criteria and the combined analysis of different types of historical and archaeological sources, several attempts have been made to analyze materials related to workshop activities and craft specialization in the Carpathian Basin. Generally, it is difficult to have a complete picture of the medieval craftspeople, workshops, local trade, and everyday life through the study of archaeological material or the written sources alone. By reviewing the available sources, archaeological materials, and documentation, I aim to discover the existing concepts in archaeology about craft specialization in connection with the hard osseous finds from the excavations in the territory of the medieval Buda Castle District. With regards to this, the following questions can be addressed. How can we, and should we attempt to localize different types of workshops based on written, topographical, and archaeological sources? How are they connected, inter-related to each other? How do the different types of sources overlap, complement, or contradict each other? How can we map the spatial information gained from the written sources? In my paper, I attempt to discover these connections and relationships between the various types of medieval handicrafts in the mirror of worked hard osseous materials.

---

## 264 BIOARCHAEOLOGICAL APPROACH TO HUMAN HEALTH THROUGHOUT THE MEDIEVAL PERIOD IN EUROPE

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Roshem, Irmine (University of Aberdeen) - Veiga-Rilo, Clara (Universidade de Santiago de Compostela)

**Format:** Regular session

The pandemic has highlighted a need to better understand the relationship between people and health in order to better assess our resilience as a species. The discipline of bioarchaeology is ever-evolving and holds a large amount of data from various sources about health in the past (pathological evidence, isotopes, DNA, calculus composition, and many others). This historical data provides insight into our understanding of health today and in the future. In this session, the focus is placed on the Medieval period in Europe, which extend from the AD5th until the AD16th centuries. For instance, the session may include studies on the impact of the environment and climate changes on disease patterns; stress indicators; diet reconstructions; epidemics; frequency of interpersonal violence; and migration patterns. This session also covers how these factors affected settlement types, genders, social classes, and occupations differently. Contributions related to the bioarchaeology of care and treatments are also welcome.

## ABSTRACTS

### 1 INJURY CHARACTERISTIC FROM POLÁKY-DOLANY SITE: PATTERNS, PREVALENCE AND VIOLENT-RELATED TRAUMA IN A SMALL EARLY MEDIEVAL BOHEMIAN VILLAGE.

**Abstract author(s):** Witan, Joanna (University of West Bohemia in Pilsen; Institute for Preservation of Archaeological Heritage of Northwest Bohemia)

**Abstract format:** Oral

Poláky-Dolany (Chomutov District, Ústí nad Labem Region) site represents one of the few early medieval villages in Bohemia, which was archaeologically studied including its cemetery. According to archaeological evidence the settlement existed already in the 11th century. Afterward the nucleated village of Dolany, which was established during

the later Middle Ages, was demolished in the late 1960s due to construction of a dam reservoir. Archaeological data indicate that inhabitants of the early medieval settlement were farmers, benefited also from the nearby river and ran a local smithy. It would seem Dolany was an average, small agriculture settlement.

Trauma is one of the more common palaeopathological changes observed on bone material from archaeological excavations. Their incidence depends on many factors that occur in various periods and cultural contexts. This study, based on skeletal trauma, tries to supplement the information about daily life and the dangers that the individuals buried in Dolany had to face. 118 individuals and 1 ossuary (MNI = 23) were examined to determine the type of fracture. Signs of trauma were found in 20 individuals; the majority of them were accident related. However 6 individuals had fractures probably associated with violence-related trauma of which 2 were sharp-force trauma. Therefore, it can be concluded that the lives of residents were generally peaceful, but there was also a risk of work-related injuries. Moreover, the residents occasionally experienced the injuries as a result of possible violence, which are not unusual, but quite rare in the rural populations.

## 2 APPROACHING PATHOLOGICAL CASES IN MEDIAEVAL IBERIA THROUGH THE ARCHAEOLOGY OF CARE PERSPECTIVE: BEING SICK IN AL-ANDALUS

**Abstract author(s):** Olivé-Busom, Júlia (Universitat Autònoma de Barcelona; Group EcoPast - GI-1553, Universidade de Santiago de Compostela) - López-Costas, Olalla (Group EcoPast - GI-1553), Universidade de Santiago de Compostela; Archaeological Research Laboratory, Stockholm University; Laboratorio de Antropología Física, Facultad de Medicina, Universidad de Granada) - Kirchner, Helena (Universitat Autònoma de Barcelona)

**Abstract format:** Oral

Since 711 AC a new and Islamic political entity emerged in the Iberian Peninsula, Al-Andalus, and with it a new medical current that incorporated novelties to Galenic medicine. Islamic medicine achieved renown throughout Europe, influencing medical theory taught in *māristānāt* and Christian universities. However, we have little knowledge on daily medical practice, especially in rural areas.

We present a biocultural approach to paleopathological cases of three Iberian skeletons from rural sites of this context to understand the societal effort put towards their care. We also introduce testimonies of Mediaeval Islamic medical treatises (MIMTs) regarding their conditions and available treatments to comprehend the repercussions these had.

The first case focuses on a ~12 years of age-at-death skeleton. It presents a possible case of otitis media that developed into mastoiditis, possibly causing hearing loss and vertigo. MIMTs recommend drainage to treat abscesses and copper acetate to aid cicatrization. A second skeleton belonging to an adult male presents lesions compatible with severe ankylosing spondylitis, which would have caused chronic pain and disability affecting motor skills. Avicenna was aware of such spinal diseases, recommending the use of traction and diet therapy together with edible and local medicines to treat inflammation. Thirdly, a 20-30 years of age-at-death male skeleton suffered an ante-mortem trauma to the frontal bone. Considering the characteristics of the lesion, they were likely cared for by its community during convalescence and, possibly, the prefrontal and orbitofrontal cortex were affected. MIMTs recommend trepanation for cranial trauma and topical treatments, dietary administration and oral medications, and manipulations to treat traumatic brain injuries. These cases show not only that individuals from rural areas had access to specialised medical treatments but that their communities were able to care for them through long convalescences or chronic illnesses.

## 3 BIOARCHAEOLOGY OF CHILDREN AND HEALTH PROFILES FROM A MEDIEVAL CEMETERY SITE (GZ10) IN GIECZ, POLAND

**Abstract author(s):** Slusarska, Katarzyna (Uniwersytet Szczeciński) - Agnew, Amanda (The Ohio State University) - Miciak, Magda (Muzeum Pierwszych Piastów na Lednicy, Rezerwat Archeologiczny Gród Wczesnopiastowski w Gieczu)

**Abstract format:** Oral

The medieval cemetery in Giecz (site 10) is part of a complex linked to the early Piast state stronghold (Giecz, Greater Poland voivodeship, Poland). The burial ground is dated to XI up to XIII centuries based on C14 and stylistic analyses of material goods.

The site is excavated collaboratively by the Slavia Field School in Mortuary Archaeology (Slavia Foundation, First Piasts Museum in Lednica, and The Ohio State University). Over 150 graves have been discovered during the period from 2014 to 2021. Subadults aged up to 11 years old at the time of death represent almost 50% of all individuals from the excavated part of the cemetery (n=75).

The study examines burial treatment and health in the youngest group. Preliminary analyses show a weak correlation between age and grave depth and construction but no clear correlation with other ritual parameters (e.g., presence of grave goods). Therefore we can assume that differences in this aspect may be dictated by cultural rather than biological factors.

The subadults were grouped into smaller cohorts based on dental development and eruption, epiphyseal fusion, and metric assessments (e.g., pars basilaris and clavicle). The group of peri- and neonates group is underrepresented (n=7), likely as a result of various factors, both cultural and taphonomic.

Cranial lesions were observed the most frequently in groups of infants and children up to 6 years (n=18/65; 28%). Usually, they were characterized by excessive porosity and periosteal reaction on the occipital, sphenoid, and temporal bones.

Demographics of the children in this study were compared with other medieval skeletal series from Poland.

#### 4 LET'S TALK ABOUT THE WEATHER - POPULATION DEVELOPMENT AND MORTALITY PATTERNS OVER THE MEDIAEVAL PERIOD

**Abstract author(s):** Weise, Svenja (University of Southern Denmark)

**Abstract format:** Oral

Population size and differential mortality between the sexes are shaped by biological and cultural factors; both interact with the availability of resources, which varies dependent on the climate.

Survival and population size depend strongly on the availability of healthy nutrition, and therefore the amount of arable land and other readily available natural resources, e.g., fish. Population estimates for the Mediaeval Period vary widely, but a trend is clearly visible. After population growth in the High Middle Ages the decrease started already around AD 1300. The changing climate and the resulting shortages in resources prepared the ground for the epidemics that reduced population size after AD 1350, with the lowest point in the first half of the 15th century.

Mortality patterns for both sexes are contrasted for populations with different subsistence forms: farming, beginning urbanization, and urban centers of trade. There is a change in young adult mortality during the Medieval and Early Modern history: from an increased female mortality during the reproductive years through a period of nearly equal risk of dying for both sexes to a surplus mortality of young males. The observed transitions run parallel to changes in subsistence and gender roles, driven by the availability of land and hands to work it: from farming villages to a well-connected urban network with a high level of migration into towns and the areas surrounding them.

Human mortality has changed noticeably over time. Mortality data derived from skeletons in combination with historical data can help to reconstruct these changes and add to our understanding which processes shaped the structure of historical populations.

#### 5 CLIMATE CHANGE IMPACT ON RESPIRATORY HEALTH IN MEDIEVAL IRELAND

**Abstract author(s):** Roshem, Irmine - Dittmar, Jenna (University of Aberdeen) - Drain, Deidre - Carlsson, Stine (Queen's University Belfast) - Crozier, Rebecca (University of Aberdeen) - Oxenham, Marc (University of Aberdeen; Australian National University) - Murphy, Eileen (Queen's University Belfast)

**Abstract format:** Oral

Northern Europe experienced two major climate periods during medieval times: the Medieval Warm Period (9th to 14th centuries) and the Little Ice Age (14th to 18th centuries). During the former, the warmer temperatures allowed the expansion of agricultural land and a consequent increase in production. The transition to the Little Ice Age led to a sharp cooling of temperatures which significantly impacted people's lives. Despite past climate reconstructions often being used in current climate studies, they often neglect how human health was affected at a local scale. To better understand the relationship between climate and health, this research aims to determine the effects of past climate changes on respiratory health throughout the medieval period. To assess this, the human skeletal remains from three Irish sites, Ballyhanna (n=695), Ranelagh (n=167) and Stacumny (n=68), were macroscopically examined with the aid of an endoscope for evidence of maxillary sinusitis, otitis media and pathological rib lesions. The human remains within these collections were divided into three groups: those that date to before, during and after the medieval climate transitions. The results are presented in this session. This study is part of a larger project comparing medieval respiratory health in Ireland and Scotland. By considering the palaeoclimates in Ireland and Scotland, the potential causes of regional variation are discussed. Such research has the potential to provide insight into current climate challenges.

## THE IMPACT OF THE NATURAL ENVIRONMENT ON HEALTH IN PAST POPULATIONS FROM IRELAND AND SCOTLAND: PRELIMINARY RESULTS FROM IRISH SITES

**Abstract author(s):** Carlsson, Stine (Queen's University Belfast; University of Aberdeen) - Murphy, Eileen (Queen's University Belfast) - Crozier, Rebecca (University of Aberdeen) - Oxenham, Marc (University of Aberdeen; Australian National University) - Dittmar, Jenna (University of Aberdeen) - Drain, Deirdre - McKinley, Jennifer (Queen's University Belfast)

**Abstract format:** Oral

It has long been known that human health and the environment are inextricably linked, and that there are a number of external factors that influence our health and wellbeing. The climate, local availability of resources, diet, geochemical composition of local soil and water, as well as other factors, can all have a significant impact on the levels of physiological stress in a given population. The role in which the physical environment, specifically the underlying geology, plays in the observed levels of physiological stress in populations from Medieval Ireland and Scotland has not been investigated on a large scale. This study is aimed at utilising available environmental and geological data to determine if, and to which extent, the local environment in which humans lived had a significant effect on the levels of physiological stress within and between populations. By looking at non-specific indicators of physiological stress, specifically cribra orbitalia, porotic hyperostosis and linear enamel hypoplasia, we hope to gain better insight into past Irish and Scottish physiological stress profiles. In taking into account the wider cultural, biological and socio-economic context of the populations, as well as the role of different diets, we investigate the relationship between the physical environment and physiological stress. In this session, preliminary results garnered from the Irish sites Stacumny, Co. Kildare, Ranelagh, Co. Roscommon and Ballyhanna, Co. Donegal, will be presented.

## INVESTIGATING ENVIRONMENTALLY DRIVEN HEALTH ISSUES IN MEDIEVAL YPRES THROUGH OSTEOLOGICAL- AND STABLE ISOTOPE ANALYSES

**Abstract author(s):** Spros, Rachèl (Analytical, Environmental & Geo-Chemistry, Dept. of Chemistry, Vrije Universiteit Brussel; Maritime Cultures Research Institute, Dept. of Art Sciences & Archaeology, Vrije Universiteit Brussel) - Jackson, Veronica (Maritime Cultures Research Institute, Dept. of Art Sciences & Archaeology, Vrije Universiteit Brussel; Anatomical Research and Clinical Studies, Vrije Universiteit Brussel) - Lambert, Bart (Historical Research Into Urban Transformation Processes Research Unit, Vrije Universiteit Brussel) - Veselka, Barbara (Analytical, Environmental & Geo-Chemistry, Dept. of Chemistry, Vrije Universiteit Brussel) - Probyn, Steven - Snoeck, Thyl (Anatomical Research and Clinical Studies, Vrije Universiteit Brussel) - Claeys, Philippe (Analytical, Environmental & Geo-Chemistry, Dept. of Chemistry, Vrije Universiteit Brussel) - Snoeck, Christophe (Analytical, Environmental & Geo-Chemistry, Dept. of Chemistry, Vrije Universiteit Brussel; Maritime Cultures Research Institute, Dept. of Art Sciences & Archaeology, Vrije Universiteit Brussel)

**Abstract format:** Oral

Just like today, the late medieval period knew many challenges caused by climate change and diseases. The Little Ice Age, starting in the fourteenth century, and the famines and diseases that followed left their marks on past European populations, which are still visible today in the human skeletal remains. The influences of these potential stressors on human skeletons from the late medieval population from Ypres, Belgium, is assessed via stable isotope and osteological analyses. Ypres, rapidly growing into one of the biggest cities in Europe during the thirteenth century, was struck by social polarisation, conflicts, proletarianization, and famines. As a result, the booming city once known for its cloth industry, started to decline during the fourteenth century and provides a good opportunity to study the dynamics of densely populated urban centers during such tumultuous times. Preliminary results from the stable carbon and nitrogen isotopes ( $\delta^{13}\text{C}$  &  $\delta^{15}\text{N}$ ) analyses seem to indicate some levels of physiological stress with higher  $\delta^{13}\text{C}$  &  $\delta^{15}\text{N}$  values observed in some of the individual's ribs compared to the femurs, suggesting they may have suffered from malnutrition or even starvation. The stable isotope results occasionally match pathological changes. One individual in particular displayed enamel hypoplasia, cribra orbitalia, and vitamin D deficiency and had high  $\delta^{15}\text{N}$  values in the ribs (14.1‰), reinforcing the possibility that inhabitants of Ypres suffered from starvation. This presentation provides more insights into how bioarchaeology can help research the health status in Ypres during its rise and decline in the late medieval period.

## FROM FISH TO PALEOPATHOLOGY: DIETARY RECONSTRUCTION OF MEDIEVAL PONTEVEDRA (NW SPAIN) COMBINING PALEOPATHOLOGY AND STABLE ISOTOPES

**Abstract author(s):** Veiga-Rilo, Clara - Mangas-Carrasco, Elvira (CRETUS. Group EcoPast - GI-1553, Area of Archaeology, Dpto History, Facultade de Xeografía e Historia, Universidade de Santiago de Compostela) - López-Costas, Olalla (CRETUS. Group EcoPast - GI-1553, Area of Archaeology, Dpto History, Facultade de Xeografía e Historia, Universidade de Santiago de Compostela; Archaeological Research Laboratory, Stockholm University; Laboratorio de Antropología, Departamento de Medicina Legal, Toxicología y Antropología Física, Facultad de Medicina, Universidad de Granada)

**Abstract format:** Oral

During the Middle Ages (12th to 16th centuries), Pontevedra (Galicia, NW Spain) became one of the most important ports on the Atlantic coast. The economy of the village was based on fishing and trading of derived products due to the concession of royal privilege in the monopoly on exporting, processing and conserving four marine species. Also, detailed historiographic studies have revealed an incredible dependence on marine products. The bioarchaeological study of the two necropolises located inside-walls provides an excellent opportunity to approach lifestyle in such a characteristic site. Santa María (marine activities guilds, n=60) and San Bartolomé o Vello (artisan's guilds, n=22) were studied. The populations buried were not socially diverse, i.e. middle-class people related to seafaring and craft activities. The main objective was to define health status and dietary patterns in these collections through three different approaches: (1) dietary reconstruction using stable isotope analyses in bone collagen ( $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ ), (2) oral pathology studies (caries, dental wear) and (3) non-specific stress markers (cribra orbitalia, cribra femoralis, cribra humeralis, porotic hyperostosis and hypoplastic enamel defects). The isotopic studies suggest that they were some of the most marine resources dependent populations in Europe, also showing variation between both studied necropolises -higher  $\delta^{15}\text{N}$  levels in Santa María than in San Bartolomé- and with an important intake of C4 plants, i.e. millets. Elevated dental wear frequencies were observed possibly related to fish consumption. High frequencies of cribra orbitalia and cribra femoralis have been found in comparison with other Iberian sites, which has been associated with possible parasitic infections, related to smoked or salted fish, and millet consumption. Historiographic and biological information both coincide about a very specific lifestyle of the Pontevedra inhabitants during the Middle Ages, distinct from other Iberian Peninsula populations of the same chronology but different economies.

## FOOD, HEALTH AND ORIGIN OF A CHRISTIAN MOZARABIC RURAL COMMUNITY IN AL-ANDALUS: THE CASE OF TÓZAR (GRANADA, SPAIN)

**Abstract author(s):** Mattei, Luca - Sarr, Bilal (Department of Medieval History, University of Granada) - Alexander, Michelle (BioArCh, Department of Archaeology, University of York) - Jiménez Brobeil, Sylvia (Department of Legal Medicine, Toxicology and Physical Anthropology, University of Granada) - Sánchez Almazo, Isabel (LIE Laboratory, CIC, University of Granada) - Abdelaziz, Mohamed (Department of Genetics, University of Granada)

**Abstract format:** Oral

The use of bioarchaeology and different types of biomolecular analysis is increasingly employed to investigate the information included in the bones of individuals who have constituted the past societies and communities. In this work, we present a case of study to enrich the knowledge of a mozarabic community who has lived in the X and XI centuries in Iberian Peninsula, more specifically in Tózar, in the western mountains of Granada.

We present an interdisciplinary bioarchaeological research about individuals of the necropolis associated with the mozarabic village, in combination with data extrapolated from a previous anthropological study.

In this session we provide the data obtained from different analysis, especially carbon ( $\delta^{13}\text{C}$ ), nitrogen ( $\delta^{15}\text{N}$ ) and oxygen ( $\delta^{16}\text{O}$ ) stable isotope, which were performed on the bone collagen. Furthermore, DNA has also been investigated in a representative sample of individuals.

All of this data will shed light on diet patterns, strategies of food production associated to the food supplies network of this rural village, the overall health status of the population, and the mobility and provenance of this minority rural community that lived in the times of Al-Andalus.

## OF STRESS AND PLAGUE: AN ASSESSMENT OF STRESS INDICATORS IN THREE FRENCH BURIAL SITES RELATED TO THE FIRST PLAGUE PANDEMIC

**Abstract author(s):** Holleville, Marion (UMR 5199 PACEA – De la Préhistoire à l'Actuel : Culture, Environnement et Anthropologie, Université de Bordeaux, CNRS, MC, Pessac) - Durand, Raphaël (UMR 5199 PACEA – De la Préhistoire à l'Actuel : Culture, Environnement et Anthropologie, Université de Bordeaux, CNRS, MC, Pessac; Service archéologique de Bourges Plus, Bourges) - Castex, Dominique - Deguilloux, Marie-France (UMR 5199 PACEA – De la Préhistoire à l'Actuel : Culture, Environnement et Anthropologie, Université de Bordeaux, CNRS, MC, Pessac) - Kacki, Sacha (UMR 5199 PACEA – De la Préhistoire à l'Actuel : Culture, Environnement et Anthropologie, Université de Bordeaux, CNRS, MC, Pessac; Department of Archaeology, Durham University)

**Abstract format:** Oral

The bacterium *Yersinia pestis* caused tens of millions of deaths during three historical pandemics that profoundly shaped European societies. The first plague pandemic, also known as the 'Justinianic Plague', raged in Europe and the Mediterranean basin from the 6th to the 8th century AD. At that time, Europe was undergoing numerous climatic, political and societal changes that presumably have created a fertile ground for its emergence. Here, we contribute to discuss this hypothesis by assessing the health status of the populations that were struck by the pandemic. To this end, we conducted a multi-proxy study on skeletal remains recovered from three early medieval burial sites from Central France (Sens, Bourges and Poitiers). Besides testing the detection of the bacillus through palaeogenomics analyses, we assessed the presence of stress indicators to evaluate the environmental conditions the individuals were exposed to before they died from plague. Prevalence of stress indicators, which were similar in all three skeletal series, match those previously reported for Black Death burial sites, suggesting an epidemiological analogy between the first and the second pandemic. Overall, this multidisciplinary study allowed for a richer and more vivid representation of the population of Central Gaul between the 6th and 8th centuries and suggests massive level of stress in the populations that were confronted with the plague.

## BIOMECHANICS OF PHYSICALLY IMPAIRED INDIVIDUALS IN MEDIEVAL IRELAND

**Abstract author(s):** White, Jessica (Queen's University Belfast)

**Abstract format:** Oral

It is difficult to visualise how individuals in the past would have functioned with physical impairments and how treatment may have increased their mobility. Disability is not defined by a set of disease conditions; individuals will have different experiences of their condition depending on the nature of their environment, culture, social status, and skills. Thus, the day-to-day quality of life of an individual, and associated limitations in activity or restriction in participation, cannot be inferred from macroscopic analysis of bone alone. Bone can adapt according to the mechanical stresses placed on it. Bone form indicates function, therefore, analysis of bone morphology may have the potential to reveal information regarding the daily life of physically impaired medieval Irish individuals. By assessing the amount of cortical bone in long bones using radiographs, this study may reveal limb function after disability. Crucial to the understanding of bone morphology is the assumption that the levels and patterns of habitual biomechanical stress are reflected in the quantity and distribution of cortical bone in the diaphysis. It is based on this assumption, that allows comparison of limbs for signs of weight bearing, revealing the level of function after injury/illness. This along with macroscopic analyses will reveal if the individual used walking aids following incapacitation of their lower limbs. From this, the level of care they may have required can be established, revealing information about the type of community these individuals lived in. Three-dimensional musculoskeletal models of the physically impaired individuals will be developed to allow visualisation of their gait revealing how they may have functioned on a day-to-day basis. Assessing the impact of physical impairment in an archaeological setting will reveal information about the care and treatment in the past and will also show the development and outcome of diseases and injuries if left untreated medically.

## INJURED, MAIMED AND IMPAIRED: FEMALE EXPERIENCES OF PHYSICAL IMPAIRMENT AND DISABILITY IN MEDIEVAL SCOTLAND

**Abstract author(s):** Dittmar, Jenna - Crozier, Rebecca - Baker, Nick (University of Aberdeen) - Cameron, Ali (Cameron Archaeology) - Hall, Derek (University of Stirling) - Mann, Bruce (Aberdeenshire Council Archaeology Service) - Oxenham, Marc (University of Aberdeen; Australian National University)

**Abstract format:** Oral

Within medieval society, perceptions of disability and able-bodiedness were largely based on the extent to which an individual was able to perform the socially-defined duties that they were expected to undertake. As such, many variables affected the social assignment of disability including; status, age and gender. The aim of this research is to explore how chronic physical impairment, both acquired and congenital in nature, impacted the lives of medieval Scottish women. Through a series of case studies, this paper reconstructs the lived experiences of three medieval women with acquired and congenital impairments including: severe scoliosis, bilateral hip dysplasia and an antemortem pelvic ring fracture. The human skeletal remains were macroscopically examined, and biomechanical data

was derived from micro-computed tomography. When historically contextualised and interpreted through the lenses of the 'bioarcheology of care' framework, the unique care requirements for each individual are discussed, as are the physical and social consequences of living with a physical impairment during the medieval period. This research highlights the heterogeneity in the lived experiences of women with physical impairments which contributes to the ongoing discussion about care provision and social constructions of disability within the rigidly constructed gender roles of medieval society.

#### **A. CHILDHOOD AND ADULT DIETS IN PLAGUE AND FAMINE VICTIMS FROM THE MEDIEVAL MINING COMMUNITY OF KUTNÁ HORA (CZECHIA, 13TH–16TH CENTURY)**

**Abstract author(s):** Dřítkolová Kaupová, Sylva (National Museum) - Frolík, Jan - Světlík, Ivo (Czech Academy of Sciences) - Velemínský, Petr (National Museum) - Brzobohatá, Hana (Czech Academy of Sciences)

**Abstract format:** Poster

Due to intensive copper and silver mining activity, Kutná Hora developed into one of the most important centres of the medieval Czech Kingdom. Through overall prosperity, its inhabitants, however, had to face all the negative aspects of intensive urbanisation related to overcrowding and poor sanitation.

This study presents the preliminary results of dietary reconstruction of the local population buried in a medieval cemetery uncovered during rescue excavations around Kutná Hora/Sedlec ossuary. A total of 1837 skeletons were unearthed, mostly from mass burial pits. A combination of archaeological finds and radiocarbon dating enabled these graves to be linked with two historically documented events. The first group can be linked to the famine that occurred after climate changes and crop failures at the beginning of the 14th century (1318). The second group can be linked with the deadly plague epidemic in Europe in 1348–1350.

This study presents the carbon and nitrogen isotopic values of bone collagen of 90 individuals, removed from mass graves and single inhumations in a regular cemetery. An intraindividual sampling strategy was applied, taking 1) a sample of bone tissue to reflect the long-time dietary average from adulthood and 2) a sample of tooth dentine (lower part of M1 root) to reflect the childhood diet.

Carbon and nitrogen isotopic values of the studied dataset are typical for a terrestrial, predominantly C3-based diet with variable proportions of animal products. The results are further analysed and discuss i) whether the dietary habits in earlier life predisposed the individual to higher mortality risk from both famine and plague, and ii) whether the socio-economic composition of the buried population changed during the mortality crises.

This study was supported by Czech Science Foundation (21-09637S), Ministry of Culture (DKRVO 2019-2023/7.II.d, 00023272) and Ministry of Education, Youth and Sports (OP RDE CZ.02.1.01/0.0/0.0/16\_019/0000728).

#### **B. INFECTIOUS DISEASES IN A MEDIEVAL URBAN ENVIRONMENT: SIGTUNA AS A CASE STUDY**

**Abstract author(s):** Pochon, Zoé - Krzewińska, Maja - Götherström, Anders (Centre for Palaeogenetics, Department of Archaeology and Classical Studies, Stockholm University)

**Abstract format:** Poster

Infectious diseases are not easy to detect in paleopathology. Long-lasting diseases such as tuberculosis, leprosy, syphilis and brucellosis can leave visible traces on the bones, but this is not the case for most infectious diseases. With the development of next-generation sequencing techniques, it is now possible to recover the genomes of ancient humans but also of the pathogens they were hosting at the time of their death such as *Yersinia pestis*, the agent of plague.

Here we focus on the impact of urbanization on infectious disease with the medieval town of Sigtuna as a case study. Over 40 individuals were subjected to shotgun sequencing and screening for potential pathogens. Preliminary results are promising with the detection of foodborne pathogens and sexually transmitted diseases, among others. This analysis is part of a larger project tracking the impact of early urbanization on infectious diseases from the late Iron Age to the medieval period in present-day Sweden.

#### **C. LIVING THROUGH TIMES OF POLITICAL UNREST: EXAMINING LIVING CONDITIONS IN LUXEMBOURG CITY THROUGH OSTEOLOGICAL AND BIOARCHEOLOGICAL ANALYSES**

**Abstract author(s):** Kremmer, Anne (AG Biogeology, University of Tübingen) - Bocherens, Hervé (Fachbereich Geowissenschaften, Forschungsbereich Paläobiologie, Universität Tübingen; Senckenberg Center for Human Evolution and Palaeoecology - HEP, Universität Tübingen)

**Abstract format:** Poster

Since its first mention in 963 AD the city and especially the fortress of Luxembourg had been growing steadily throughout the medieval times under the rule of the counts of Luxembourg. However, it is only in 1443, after the conquest by Philip the Good, duke of Burgundy, that the city of Luxembourg, which by then had become one of the strongest fortresses in central Europe, finally entered the geostrategic playing field opposing the interests of all the major political



forces of the time. From then on until the demolition of the fortress in the mid 19th century, life in Luxembourg City had been dominated by foreign occupations as well as several sieges and wars. This first comprehensive interdisciplinary study aims to shed light on the impact of these times of political unrest on the lives of the inhabitants of Luxembourg City through the analysis of 391 graves from a Franciscan cemetery in the city center, whose two occupancy phases have been dated to ~1445-1650 AD and ~1650-1798 AD through 14C-analysis as well as historical and archaeological sources. Data on dental status, metric analyses, stress indicators and pathological as well as traumatic lesions on bones were evaluated together with  $\delta^{15}N$  and  $\delta^{13}C$  stable isotope data to reveal differences but also similarities in living conditions in the city over time, between the sexes and between groups of different social status.

## 267 TOWARDS THE SEA: HUMAN ECOLOGY, SUBSISTENCE AND ADAPTATIONS ALONG THE EUROPEAN COASTS FROM THE LOWER PALAEOLITHIC TO THE NEOLITHIC [PAM]

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** García-Escárgaza, Asier (Department of Human Science, University of La Rioja. Logroño; Department of Archaeology, Max Planck Institute for the Human Science. Jena) - Simões, Carlos (ICArEHB - Interdisciplinary Center for Archaeology and the Evolution of Human Behaviour, University of Algarve) - Monteiro, Patrícia (ICArEHB - Interdisciplinary Center for Archaeology and the Evolution of Human Behaviour, University of Algarve.; Direção-Geral do Património Cultural - DGPC – Laboratório de Arqueociências - LARC) - Dias, Rita (ICArEHB - Interdisciplinary Center for Archaeology and the Evolution of Human Behaviour, University of Algarve. Faro, Portugal.; ERA Arqueologia S.A.) - Sierra Sainz-Aja, Alejandro (AASPE Archéozoologie, Archéobotanique: Sociétés, Pratiques et Environnements, Muséum National d'Histoire Naturelle, Dept. Homme et Environnement, Paris)

**Format:** Regular session

Coasts have long been hypothesised as key areas for human populations due to being very relevant areas for sourcing protein, essential for reproductive and cognitive success and, in turn, stimulating technological and cultural innovation. Also, they are seen as crucial areas for the rapid dispersal of our genus out of Africa, before becoming sites of increasingly sedentary societies around shell middens in the Mesolithic period of Europe, for example. Therefore, increasing our knowledge on the role of coastal environments for hominids throughout Prehistory is crucial for better understanding human-environment interactions, but also forager and first farmer subsistence strategies, among other very relevant aspects, such as the diffusion of the economic and technical innovations occurred during the Pleistocene and Early/Middle Holocene. In this session, we aim for studies focusing on human populations that inhabited littoral areas along Europe from the Lower Palaeolithic to the Neolithic. From a more specific point of view, we are very interested in littoral resource exploitation patterns and its management throughout time, human occupation, and mobility patterns along the coasts, and archaeological sites' formation processes. We also want to focus on paleoenvironmental reconstruction and climate change implications for human ecology across the Atlantic and Mediterranean Europe, as well as the role played by marine environments during climate anomalies. Nevertheless, all those papers that study of the modus vivendi of hominids in littoral areas are welcomed.

## ABSTRACTS

### 1 FIREWOOD EXPLOITATION DURING THE EARLY HOLOCENE IN ABRIGO DO POÇO ROCKSHELTER (LEIRIA, CENTRAL PORTUGAL)

**Abstract author(s):** Monteiro, Patrícia (Laboratório de Arqueociências - LARC - Direção-Geral do Património Cultural; ICArEHB – Interdisciplinary Center for Archaeology and Evolution of Human Behaviour – Universidad do Algarve) - Nora, David (Institute of Archaeology – Hebrew University of Jerusalem; ICArEHB – Interdisciplinary Center for Archaeology and Evolution of Human Behaviour – Universidad do Algarve) - Paixão, Eduardo (TraCER – Laboratory for Traceology and Controlled Experiments, MONREPOS – Archaeological Research Centre and Museum for Human Behavioural Evolution, RGZM; ICArEHB – Interdisciplinary Center for Archaeology and Evolution of Human Behaviour – Universidad do Algarve) - Évora, Marina (Centro de Estudos Globais - Departamento de Ciências Sociais e de Gestão – Universidade Aberta; ICArEHB – Interdisciplinary Center for Archaeology and Evolution of Human Behaviour – Universidad do Algarve) - Carvalho, Vânia (Museu de Leiria, Câmara Municipal de Leiria) - Holliday, Trenton (Tullane University, New Orleans, USA; Centre for the Exploration of the Deep Human Journey – University of Witwatersrand) - Pereira, Telmo (Departamento de Artes, História e Humanidades – Universidade Autónoma de Lisboa; Instituto Politécnico de Tomar, Portugal; Centro de Geociências da Universidade de Coimbra; UNIARQ – Centro de Arqueologia da Universidade de Lisboa)

**Abstract format:** Oral

To address firewood exploitation modalities to understand coastal adaptations is important to characterize the local landscapes and also recognize the reliance on inland resources. Concerning hunter-gatherer communities' inherent mobility and their growing dependence on marine resources during the Holocene, it is important to comprehend the role of other inland resources on their mobility and occupation patterns. The case presented here is Abrigo Poço

rockshelter, specifically, the early Holocene occupation, dating from the cold Bond Event 6. The hunter-gatherers that occupied this site had access to both coastal and inland resources since Poço rockshelter is located in the narrow karstic canyon of Chitas stream, an affluent of the River Lis (central Portugal) that links the inland mountains and the Atlantic coast. This makes it a particularly rich and leafy ecotone. This occupation was identified in ash, scattered charcoal, and shellfish deposits in the rockshelter and testifies activities of gathering of both marine and woodland resources and use of fire. Charcoal analyses were carried out to characterize the firewood exploitation modalities of these hunter-gatherer populations. The results allow the identification of *Olea europaea*, *Quercus deciduous*, *Quercus* sp., *Pinus* sp., *Arbutus unedo*, Ericaceae, Monocotyledonous, and indeterminate angiosperm. The refuge areas such as the example of this valley might have contributed to the resilience of thermophilous species even in colder periods of the Holocene, also suggesting that Chitas valley, more than a corridor between the coast and the inland mountains, might also have provided important daily resources for hunter-gatherer communities such as firewood.

## 2 SEASONALITY AND SUBSISTENCE OF THE LAST MESOLITHIC HUNTER-GATHERERS – THE ICHTHYOLOGICAL REMAINS OF THE CABEÇO DA AMOREIRA SHELLMIDDEN (MUGE, PORTUGAL)

**Abstract author(s):** Dias, Rita (Era - Arqueologia, Conservação e Restauro; ICArEHB - Interdisciplinary Center for Archeology and Evolution of Human Behavior) - Bicho, Nuno (ICArEHB - Interdisciplinary Center for Archeology and Evolution of Human Behavior) - Detry, Cleia (Uniarq/FLUL)

**Abstract format:** Oral

The study of Subsistence patterns, occupation and mobility of Mesolithic human communities is a central theme in the context of evolution and changes in human behaviour and adaptation processes during the environmental alterations characteristic of the Holocene period. One of the phenomena associated to these alterations is the appearance of a particular kind of anthropic deposit known as shell midden, and characteristic of Mesolithic occupation in the Atlantic facade of the Iberian Peninsula.

Here, we present high-resolution data from fish remains recovered through the 2008-2014 excavations at Cabeço da Amoreira. A tentative reconstruction of the role of fish in subsistence e technological reality is made.

Taking into account the abovementioned issues, this work aims to contribute to the discussion about occupation models (e.g. seasonality), type of occupation, subsistence strategies and exploitation of locally and regionally available species and, to confirm the existing models that propose a sedentary or semi-sedentary occupation, throughout the year and, that do not exclude a relatively high individual mobility. Simultaneously, we seek to integrate the Cabeço da Amoreira shell midden on the Mesolithic geographical and paleoenvironmental setting, through the ichthyological remains.

We also seek to present data from sclerochronological analysis and  $\delta^{18}\text{O}$  stable isotopes, of 15 Meagre (*Argyrosomus regius*) otoliths from the last Mesolithic occupation of the Cabeço da Amoreira shell midden. The carbonate samples, collected on the several growth rings, were analysed to obtain the values of  $\delta^{18}\text{O}$  stable isotopes, to determine a predominant season of capture and, seasonally frame the site's occupation, paleoenvironmental setting and origin of resources (locally vs regionally). Potential diagenetic alterations were tested through  $\mu$ -Raman and LA-ICPMS.

The obtained results reveal clear seasonal values and a seasonal estimation consistent with periods of higher temperature (Spring-Summer-beginning of Autumn) for the last Mesolithic occupation of Cabeço da Amoreira.

## 3 INFLUENCE OF EARLY HOLOCENE KARSTIC SPRING REACTIVATION ON HUNTER-GATHERERS' SETTLEMENT STRATEGIES AND SHELL MIDDEN FORMATION IN ASTURIAS, SPAIN

**Abstract author(s):** Simões, Carlos (ICArEHB, Universidade do Algarve) - Iriarte, Eneko (Universidad de Burgos) - Arias, Pablo (Universidad de Cantabria)

**Abstract format:** Oral

The littoral platform of eastern Asturias (N. Spain) is a coastal karst heavily shaped by action of the sea. During the Early Holocene, this karstic landscape was exploited by a dense hunter-gatherer population with a successful coastal-adapted lifestyle, during five millennia until the consolidation of food-producing economies. The hunter-gatherer activity resulted in an elevated density of shell midden deposits in cave entrances. In the 1920's, the Count Vega del Sella established the post-Palaeolithic age of the Asturian shell middens, characterized by being carbonate-cemented and adhered and even hanging from the walls of karstic cavities. He argued that such remains were all that's left from past shelly accumulations completely obturating the cavities, which worked as trash disposal places, while the occupations occurred mostly outside.

Our geoarchaeological approach tested this long-lasting model, based on micromorphology and carbonate microfacies analysis of two sites: El Alloru and El Mazo. Novel outcomes are: 1) the carbonate cements correspond to calcareous tufa likely resulting from spring activity; 2) the deposits preserve internal stratigraphy, related to different human occupation phases; 3) tufa formation and accumulation of anthropogenic debris are syn-depositional; 4) the

deposits were cemented during higher water-table fluctuations that periodically submerged the deposits, cementing them under phreatic conditions, which contradicts a priori expectations from Vega del Sella's model.

These data suggest a hydrological regime marked by higher water-table base level than today, due to more intense rainfall that kept the karst saturated, despite today most caves show no signs of recent spring activity. Micromorphological observations suggest that occupation debris were likely produced inside the rockshelters, and thus these might have been used as occupation spaces as well. The Mesolithic foragers exploited the karstic network, alternating between many cavities, as their hydrological conditions fluctuated.

#### 4 SEASONALITY OF SHELLFISH COLLECTION IN THE CANTABRIAN MESOLITHIC DEDUCED FROM STABLE OXYGEN ISOTOPE RATIOS

**Abstract author(s):** Arniz Mateos, Rosa (Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria, Gobierno de Cantabria, Grupo Santander) - García Escárzaga, Asier (Universidad de la Rioja, Departamento de Ciencias Humanas, Logroño; Max Planck Institute for the Science of Human History, Department of Archaeology, Jena) - González Morales, Manuel R. (Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria, Gobierno de Cantabria, Grupo Santander) - Gutiérrez Zugasti, Igor (Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria, Gobierno de Cantabria, Grupo Santander)

**Abstract format:** Oral

Oxygen isotope values ( $\delta^{18}O$ ) of shell calcium carbonates can be used to determine seawater temperatures and the seasonality of mollusc collection at archaeological sites. Previous studies using both modern and archaeological specimens have confirmed the potential of oxygen isotopes-based techniques to provide relevant information about subsistence strategies and coastal settlement patterns adopted by the last groups of hunter-fisher-gatherers after the arrival of the Holocene. In the present study, we used shells from the topshell *Phorcus lineatus* (Da Costa, 1778) and the limpet *Patella vulgata* (Linnaeus, 1758) from the Mesolithic site of El Toral III (Llanes, Asturias, Spain), dated between ca 10 and 7.3 ka, in order to find out seasonality of shell collection. Results showed two different patterns depending on the species: the topshells were collected during autumn/winter, while the limpets were collected during a longer period of the annual cycle. These results were compared with those from other sites in the region, such as El Mazo, La Chora, La Riera, Mazaculos II and El Penicil to have a wider overview of the seasonal use patterns.

#### 5 STRATEGIES FOR THE COLLECTION OF MARINE MOLLUSCS BETWEEN 12,000-5,000 CAL BC IN NERJA-MINA (MÁLAGA)

**Abstract author(s):** Aguirre, Amaia - Colonese, Andre Carlo (University Autonomous of Barcelona) - Jordá, Jesus (National University of Distance Education) - Aura, Emili (University of Valencia) - Valledor de Lozoya, Arturo (Expert) - Saña, María (University Autonomous of Barcelona) - Álvarez-Fernández, Esteban (University of Salamanca)

**Abstract format:** Oral

In the Nerja Cave, located on the coast of the Alboran Sea, one of the few stratigraphic sequences of the transition from the Upper Pleistocene to the Early Holocene of the Western Mediterranean has been documented. The archaeological interventions carried out by Professor Francisco Jordá Cerdá, between 1979 and 1987, in the Sala de la Mina, provided 16 levels with abundant malacological remains. The chronology correspond to the final Upper Magdalenian between 12,400 and 11,700 cal BC (levels XVI, XV and XIV), Epipaleolithic (Level XIII), the Geometric Mesolithic between 6300 and 6000 cal BC (Levels XII and XI), the Early Neolithic between 5300 and 5100 cal BC (Levels X, IX, VIII, VII and VI) and the Final Early Neolithic between 5100 and 4500 cal BC (level V). This communication presents, on one hand, the biometric study, through the geometric morphology, of *Patella caerulea* individuals and, on the other, the study of seasonality from the analysis of stable oxygen and carbon isotopes of the shells of the same species, documented in the different occupations of Nerja-Mina. The objective is to determine the management of marine molluscs by the last hunter-gatherer societies and the first Neolithic societies, and whether there was a change in the intertidal gathering areas and the annual or seasonal acquisition of this resource between ca. 12,000 and 5,000 cal BC in the Western Mediterranean.

## STABLE OXYGEN ISOTOPE APPROACHES TO STUDYING SHELLFISH EXPLOITATION AND ECONOMIC CHANGE ACROSS THE MESOLITHIC-NEOLITHIC TRANSITION IN N IBERIA

**Abstract author(s):** García-Escárzaga, Asier (Department of Human Sciences, University of La Rioja, Logroño; Department of Archaeology, Max Planck Institute for the Science of Human History, Jena) - Fano, Miguel (Department of Human Sciences, University of La Rioja, Logroño) - Ontañón-Peredo, Roberto (Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria, Gobierno de Cantabria, Grupo Santander; Museo de Prehistoria y Arqueología de Cantabria - MUPAC) - Gutiérrez-Zugasti, Igor - Gonzalez-Morales, Manuel (Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria, Gobierno de Cantabria, Grupo Santander) - Ilgner, Jana - Lucas, Mary (Department of Archaeology, Max Planck Institute for the Science of Human History, Jena) - Roberts, Patrick (Department of Archaeology, Max Planck Institute for the Science of Human History, Jena; School of Social Sciences, University of Queensland)

**Abstract format:** Oral

The Mesolithic-Neolithic transition involved high implications for past human groups, provoking deep changes in societies and economies around the world. During the last few decades, the N Iberian Peninsula has been revealed as a key area to better understand the neolithization process along the Atlantic Façade of Europe, where the previous Mesolithic populations generated an archaeological assemblage with characteristic features. Although multidisciplinary investigations recently carried out in N Iberia have allowed us to notably increase our knowledge on the Mesolithic-Neolithic transition, more studies are still required to better comprehend the complexity of this process in this region. To achieve this objective, the application of new methodological approaches to investigate hidden aspects of this transitional period is required, such as changes in littoral resource exploitation strategies by Early Neolithic human groups.

Marine resources had a very important role for the forager subsistence strategies during the Mesolithic. Stable oxygen isotope ratios analyses conducted on the topshell *Phorcus lineatus* (da Costa, 1778) have highlighted that seasonal shellfish collection patterns during the Mesolithic were probably driven by cost-benefit principles. However, there remains debate, in N Iberia and elsewhere, as to the degree to which marine resources continued to play a role following the dawn of the Neolithic. Here, we apply stable oxygen isotope analyses to *P. lineatus* shells recovered from two stratigraphic units (A4 and A3: ca. 5,200-4,000 BC) of Los Gitanos site (Cantabria, Spain) to determine how the role of mollusc and seasonal shellfish exploitation patterns changed across the Mesolithic-Neolithic transition. Preliminary results obtained so far have revealed that this topshell species was mainly collected from late autumn to early spring during the Early Neolithic. This seasonal pattern coincides with that previously deduced for the Mesolithic period, suggesting a continuity in human-littoral relationships through the Early and Middle Holocene.

## BETWEEN COAST AND INLAND: POTTERY USE IN THE ERTEBOELLE-CULTURE AND ITS IMPACT ON SETTLEMENT PATTERNS, RESOURCE EXPLOITATION AND SOCIAL COMPLEXITY

**Abstract author(s):** Meyer, Ann-Katrin (University of Hamburg)

**Abstract format:** Oral

The Erteboelle culture (ca. 5100-4000/3900 cal BC) belongs to the final Mesolithic of Northern Germany and Southern Scandinavia and is understood as a primarily coastal phenomenon. Furthermore, due to its aquatic subsistence preferences, a (seasonal) settlement permanence and other traits such as hierarchies, food storage and pottery use it is classified as a complex hunter-gatherer society.

Within this context, the (recently completed) PhD project "Early pottery in the Baltic" focusses on the origins of ceramic technology and its impact on Erteboelle lifestyle and settlement patterns as well as on the Neolithisation process.

Through the analysis of previously neglected inland find assemblages and an extensive comparison to the coastal materials the project developed a new perspective on settlement cycles and subsistence patterns, which identifies the Southern Erteboelle regions as a main corridor for the spread of innovations such as ceramic technology from 4700 BC onwards. A further analysis of the Erteboelle material culture centering around this new technology was able to show that ceramics played a central role in the final Mesolithic and significantly influenced various activities of daily life.

The use of ceramic vessels thus led to an intensification of existing subsistence and resource preferences which stabilised formerly established patterns and helped anchor the typical material signature and (coastal) settlement focus of the Erteboelle Culture. In this sense, ceramics are involved in forming complex social structures rather than resulting from them and facilitate the gradual establishment of Neolithic modes of subsistence by replacing more "traditional" Late Mesolithic structures.

- 8**      **ARCHAEOZOOLOGICAL APPROACHES TO MAMMAL HUNTING AND ECONOMIC CHANGE ACROSS THE MESOLITHIC-NEOLITHIC TRANSITION ON THE CANTABRIAN COAST (N IBERIA)**
- Abstract author(s):** Sierra, Alejandro (AASPE «Archéozoologie, Archéobotanique: Sociétés, Pratiques, Environnements» UMR 7209 CNRS MNHN) - Fano, Miguel Ángel (Department of Human Sciences, University of La Rioja, Logroño)
- Abstract format:** Oral
- The study of the neolithisation process in northern Iberia has been little studied until the last few decades. This lack of studies has prevented a good understanding of the dynamics of the adoption of farming practices in this area. Information obtained so far has shown that the Cantabrian region was occupied during the Mesolithic by forager groups whose subsistence relied heavily on marine resources. The ways of exploiting those resources have been extensively studied in recent years, while terrestrial resources have attracted less attention in research. Nevertheless, we know mammal hunting was a very important subsistence activity for the last hunter-gatherers. In fact, later hunting was also practiced by coastal Early Neolithic groups in N Iberia.
- The archaeological record corresponding to the Mesolithic-Neolithic transition (from ca. 5000 cal BC) in northern Iberia is heterogeneous in terms of the quantity and quality of the data available. A few archaeological sequences like El Mirón or Los Gitanos in Cantabria have provided detailed information while other sites have hardly been studied to date. The aim of this paper is to study hunting practices through the Mesolithic-Neolithic transition in Cantabrian Spain. Specifically, we study the fauna in the shell midden at Arenillas (Level 0) (Islares, Cantabria). This shell midden has provided dates corresponding to the Mesolithic and the beginning of the Neolithic, but further multidisciplinary research is needed to verify its cultural attribution. In this paper, we study the mammal fauna in this archaeological deposit and contextualize it with other Mesolithic and Early Neolithic sites in the region in order to identify dynamics in the forms of exploitation of these resources.
- 9**      **THE MESOLITHIC-NEOLITHIC TRANSITION IN THE MUGE SHELLMIDDENS (CENTRAL PORTUGAL): PRELIMINARY RESULTS**
- Abstract author(s):** Gonçalves, Célia - Cascalheira, João - Barbieri, Alvisé (ICArEHB, Universidade do Algarve) - García Rivero, Daniel (Universidad de Sevilla) - Umbelino, Cláudia (CIAS, Universidade de Coimbra; ICArEHB, Universidade do Algarve) - Godinho, Ricardo - Bicho, Nuno (ICArEHB, Universidade do Algarve)
- Abstract format:** Oral
- The transition from the Mesolithic to the Neolithic is a period of major economic, technological, and social change, marking the end of the last hunter-gatherers in Western Europe and the appearance of food-producing societies.
- The Muge shellmiddens, located in the Tagus Valley (Central Portugal), are among the most important sites to study this transition. Published genetic and archaeological data showed that the Neolithization of this region emerged from the admixture of the endemic Mesolithic foragers with immigrant Neolithic groups. The Mesolithic people that inhabited the Muge region were characterized by a different behavioral spectrum in comparison with previous forager communities of Portugal. Estuarine resources seem to have played a very important role for the subsistence of these Mesolithic humans, indicating their adaptation to the pulse(s) of cold freshwater from the North-West Atlantic towards the coast of Portugal, which characterized the 8.2 K cold event. This highly productive environment made possible the consolidation of a complex economic and social system of hunter-gatherers in the Muge area, as seen in the archaeological record uncovered by recent projects funded by Fundação para a Ciência e Tecnologia.
- With this contribution, we present our results from the last excavations at Cabeço da Amoreira and pilot investigations at Cabeço dos Ossos. At these sites, we discovered so far unreferenced "shell-free" archaeological loci, including Neolithic occupations, located in peripheral areas of the middens.
- 10**      **POPULATING THE COAST. THE RESILIENCE OF THE FIRST NEOLITHIC GROUPS IN THE IBERIAN PENINSULA**
- Abstract author(s):** Cortell-Nicolau, Alfredo (University of Cambridge)
- Abstract format:** Oral
- Currently, the maritime character of the Neolithic expansion through the Mediterranean is widely accepted. Nevertheless, while the debate is turning to questions relating to the mode of the spread, such as its uniform or arrhythmic character, there are still unresolved issues regarding to the expansion itself. More in particular the way how these groups of early farmers continued their way inland, and how this affected their relationship with previous hunter-gatherer populations.
- In this work, we will concentrate on the shores of the Eastern Mediterranean of the Iberian Peninsula, where the oldest radiocarbon dates attributed to the Early farmers so far are not in coastal sites, despite our knowledge that coastal expansion was the main route of arrival to this area. The focus will be on the analysis of one specific area, the mouth of the Serpis river (Valencian Country). This area constitutes one of the natural paths of entrance to the sites of Mas

d'Is and Cova d'en Pardo (inland sites with some of the oldest Neolithic dates for the Valencian region). In addition, it presents a particular concentration of sites, with at least 6 attested sites with cardial pottery in an area of ca 25 Km<sup>2</sup>. All of this provides a perfect ground for the study of the Neolithic pioneers in the coasts of the Western Mediterranean. Did these sites belong to the same, or similar groups? Where these groups related to the inland sites? How did they thrive? Did they have sea support from other groups? By studying the cultural transmission processes affecting this area, as well as the spatial relationships of these sites, this work will be a first approach to answer these questions.

## 11 **MARINE AND TERESTRIAL INVERTEBRATES AT ZACATÍN ROCKSHELTER (GRANADA, SOUTHEASTERN SPAIN): FIRST RESULTS**

**Abstract author(s):** Aguirre, Amaia (University Autonomous of Barcelona) - Álvarez-Fernández, Esteban (University of Salamanca) - Aparicio-Alonso, María Teresa (National Museum of Natural Sciences of Madrid) - Gutiérrez-Frías, Ismael (University of Granada) - Martínez-Sánchez, Rafael (University of Cordoba)

**Abstract format:** Oral

The Zacatín shelter, located on the Granada coast in the Alborán Sea, preserves one of the few stratigraphic sequences in the Andalusian Mediterranean, where the transition from the Mesolithic to the Neolithic is recorded. The proximity of the site to the coastline places it as a key settlement in the study of the management of marine resources by past societies. The interventions carried out in 2019, under the direction of Dr. Rafael Martínez-Sánchez, have provided abundant remains of marine and terrestrial molluscs, as well as crustaceans and echinoderms. This communication presents the taxonomic and quantitative analysis of the remains of marine and terrestrial invertebrates from the Mesolithic and Early Neolithic levels of the site. Likewise, the biometric study of the most abundant specimens of the *Patella* genus is exposed: *P. caerulea*, *P. ulyssiponensis* and *P. rustica*, as well as the terrestrial gastropod *Iberus alonensis*. The objective is to determine the exploitation strategies of invertebrates, both marine and terrestrial, and whether there was a change in the management of these resources during the transition from the Mesolithic to the Neolithic.

## 12 **THE EXPLOITATION OF MARINE RESOURCES DURING THE LATE NEOLITHIC IN THE ISLAND SETTLEMENT OF CARTAGENERAS (SAN FERNANDO, CÁDIZ, SPAIN)**

**Abstract author(s):** Vijande, Eduardo - Corona Borrego, José (Universidad de Cádiz) - Sánchez Aragón, María (Freelance archaeologist) - Cabrera Castro, Remedios (Universidad de Cádiz) - Carmona Gil, María (Freelance archaeologist) - Becerra Martín, Serafín - Cantillo Duarte, Juan - Ramos Muñoz, José (Universidad de Cádiz)

**Abstract format:** Oral

We present the preliminary results of the study of the exploitation of marine resources by a Neolithic community in the late 4th millennium BCE. This site, excavated in 2021, is situated in the former island of San Fernando (Bay of Gibraltar, Spain) barely 150 m from the ancient shoreline and approximately 15 m.a.s.l. A total of five silo-shaped structures were excavated, in which numerous marine remains were found: malacofauna, ichthyofauna, and corals. Terrestrial animal remains have also been found, but in much smaller numbers. The ceramic and lithic material is dated to the late 4th and early 3rd millennium BCE, when agricultural and stockbreeding practices intensified in the Iberian Peninsula, as reflected by the proliferation of silo-fields. We present a first set of radiocarbon dates, and the identification of malacological and ichthyological remains. These data allow us to argue that this community had a comprehensive understanding of the marine environment, and that they collected molluscs from different ecological niches (sandy, silty and rocky environments), and captured different fish species using a wide variety of fishing tackle. The presence of foreign materials (axes, necklace beads, etc.), also suggest that, at the very least, basic navigation techniques were known.

## 13 **THE DAR ES SOLTAN I CAVE IN IT'S GEOMORPHOLOGICAL AND PALEOECOLOGICAL CONTEXT**

**Abstract author(s):** Shaymae, Iken (UDC University) - Bouzouggar, Abdeljalil (INSAP) - Grandal D'Anglade, Aurora María (UDC University)

**Abstract format:** Oral

The coastal area of Rabat (between Oued Bouragrag and Oued Ikem) is one of the richest regions from a geological, geomorphological and archaeological point of view; as a result, it presents fertile ground to study the Quaternary as a whole.

The behavior of prehistoric humans towards animals, in a paleogeographic context, interest several researchers (Ouchaou 2000, Aouraghe 2001, Campmas 2012 and among others) which gives us general idea about the ecosystem of such population in a spatio-temporal structure.

The reconstruction of the paleoenvironments and lifestyles of prehistorical humans requires the use of paleontological and archaeozoological study, but in their natural context, which requires a geological and geomorphological study of the space concerned. All of these mechanisms make it possible to tie up the operating chain of a given popula-

tion and to have an idea of the vulnerability or invulnerability of their living environment, all within the framework of the paleo-ecosystem.

The documentation of the North African fossil faunas during the Upper Pleistocene and the Holocene, particularly in archaeological context, remains incomplete. This study aims to improve our knowledge of the subsistence behaviors of prehistoric, Aterian and Neolithic populations, and to have an updated vision of their lifestyles.

For this reason, our study consists in contributing on the knowledge of the subsistence of the Aterian and Neolithic populations, and the part of responsibility of the Humans and / or other accumulators (Carnivores, Rodents, natural accumulation) in the deposits and in the modifications of the surfaces bones as well as their adaptation to climate change at Dar Es Soltan I cave.

## 14 WHERE CITIZEN SCIENCE AND ARCHAEOLOGICAL SCIENCE MEET: AN INTERDISCIPLINARY APPROACH TO COASTAL SHELL MIDDENS IN COUNTY SLIGO (NW IRELAND)

**Abstract author(s):** Connolly, Rory (School of Archaeology, University College Dublin)

**Abstract format:** Oral

The role and significance of marine resource use has been the focus of much debate in European Neolithic studies. Although the precise nature, magnitude, and geographic extent of post-agricultural prehistoric marine exploitation in Europe is not well understood, the continued accumulation of shell middens in regions such as Sligo in the northwest of Ireland following the introduction of agriculture demonstrates noteworthy social and economic interest in littoral resources among coastal farming communities. Here, substantial oyster-dominated middens, up to 3-metres thick in places, are exposed in eroding section for hundreds of metres along the coast. In light of recent isotopic evidence which appears to show that these communities subsisted on a predominantly terrestrial diet, the deposition of these middens requires explanation. Unresolved questions remain as to whether the exploitation of coastal resources at this time represents a local and sporadic response to climate change, evidence of intermittent crop failure, or ought to be considered part of a long-term strategy to mitigate environmental constraints in remote Atlantic coastal settings.

Many of these shell midden sites are, however, vanishing due to both natural (sea-level rise, coastal erosion, increasingly frequent storm surges) and anthropogenic factors (visitor footfall, removal of shells, agricultural practices, and encroaching development). The NeoMarE project (Neolithic Marine Resource Exploitation in Atlantic Europe) aims to mitigate the loss of these valuable archives by developing a citizen science programme of participatory mapping to identify and record threatened sites. This is allowing us to isolate those sites most severely endangered and target them for radiocarbon dating, archaeological soil micromorphology, and lipid biomarker sampling for palaeoenvironmental reconstruction. The project is integrating new approaches to citizen participation in research with cutting-edge archaeological science to offer fresh evidence for critically re-evaluating competing hypotheses about Neolithic marine resource use.

## 15 PRESENTATION OF THE SURVEY PROTOCOL FOR THE COASTLINE PROJECT (COASTAL ANCIENT SICILY' LINE)

**Abstract author(s):** Forgia, Vincenza (Dipartimento Culture e Società, Università di Palermo) - Antonioli, Fabrizio (CNR, IGAG, Roma)

**Abstract format:** Oral

The peculiar paleo-geographic evolution of Sicily, the main Mediterranean island, makes it a perfect environment to study the relationship among early peopling, marine environment and coastal changes through the last millennia. One of the main issue debated from topographers and archaeologists dealing with human mobility, ancient viability and paleo environmental studies is the actual morphology of the coastline depending from relative sea level-change that deeply changed from 15 ka cal BP (-101 m), 11 ka cal BP (-56.6) and 7 ka cal BP (-10.3 m) (Lambeck et al., 2011) directly influencing palaeocostlines.

Our research aims at filling this gap, in some key sites in Sicily, offering valid variables to territorial models eventually combining archaeological survey with the actual ancient coastal morphology and the related distance from archaeological sites: all decisive factors for a precise palaeoenvironmental contextualization of the archaeological data and the reconstruction of littoral resource exploitation patterns, human occupation, and mobility patterns along the coasts.

In order to achieve our scope we have georeferenced some archeological sites along the modern coastline of Sicily with a chronology spanning from the documented early peopling of the island (~ 17 ka cal BP) to the Neolithic. Then we take into consideration morphobathymetric, lithological and sea level change (both isostatic and tectonic), in order to reconstruct the ancient coastal morphology, the distance and altitude of sites from and on the sea and, in some cases, the eventual existence of submerged archeological deposits or features at five specific case study: Grotta del Tuono and Cala del Genovese (Egadi, Trapani), Baia dell'Uzzo (San Vito Lo Capo, Trapani), Grotta dell'Arco di Capo Zafferano (Bagheria, Palermo) and Riparo del Castello (Termini Imerese, Palermo).

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Nilsson Stutz, Liv (Linnaeus University) - Mickleburgh, Hayley (Linnaeus University; Forensic Anthropology Center Texas State University) - Tarlow, Sarah (University of Leicester)

**Format:** Regular session

Research on human remains is a part of a long scientific tradition. Today museums are the custodians of extensive collections of both skeletal remains and soft tissues. In the Humanities and Social Sciences (archaeology, biological anthropology, history of medicine) research on human remains provide valuable information on the lived experience of people in the past. At the same time, reservations are made against research on the remains of people who were never able to consent. Laws and guidelines have been developed to regulate the issue, but these have for the most part been developed to handle the remains from indigenous peoples/minorities, and do not include provisions for all remains. Similarly, medical laws and regulations do not consider older remains. Researchers who work on these collections therefore find themselves in a relatively unregulated area, which risks undermining the legitimacy of the research.

With the rise of the Third Science Revolution in archaeology, museums are feeling the increased pressure to make biological specimens available for research which sometimes includes destructive analysis. At the same time, public and cultural debate about social inequality and racism has led to increased scrutiny of museums, archaeology and biological anthropology, in their handling of these remains.

This session seeks to go beyond presentations of best practices and recommendations and start to theorize the ethics of the research on human remains and their role in museums and archaeological research in a European context. Can we formulate a new ethics for the handling of human remains in archaeology that is informed by critical social theory? Can new ethical practices contribute to more sustainable collections, research and communities? We are looking for papers from across the EAA community and look forward to an intellectual discussion enriched by diverse perspectives.

## ABSTRACTS

### 1 HANDLE WITH CARE. THEORET(H)ICAL ISSUES ON HUMAN REMAINS

**Abstract author(s):** Nicolis, Franco (Archaeological Heritage Office Trento)

**Abstract format:** Oral

Human remains are polysemic objects and/or subjects, representing dead biological systems and/or parts of human complexity. Polysemic means that they spread different meanings, and therefore they also carry different interests. But they have just one value, or at least a prevailing one, their humanness, their human nature that goes beyond any other secondary interest or meaning. The legitimacy of research is out of discussion in ethical dilemmas: legitimacy is given by a law (latin *lex/legis*) or by a rule, while ethics is not driven by the law, it is the "domain of Obedience to the Unenforceable" which stands between the "domain of the Positive Law and the domain of the Absolute Freedom". On the other side ethics can only be scientific, and as such it can only be secular. Science is not faith but the continuous construction of truths: scientific truth is an act, not a fact, is a process, not a Code.

Usually the search for an ethical code for human remains is the search for behaviours to be adopted; actually what we need in the process of coding is to learn to critically choose between alternative attitudes; every ethical dilemma always ends with an ethical failure, which always implies the fall of a primary interest, but not of the primary value, that, in the case of human remains, is their humanness, a definitive ontological value which is not negotiable,

We need to move from behaviour, a simple conduct based on rules, to attitude, a style of conduct adopted by those who understand why it is right to apply those rules and share them. In this context we need to rethink basic concepts like respect and dignity of human remains: dignity is constitutive of life, and human remains are what remains of it.

### 2 CARING FOR THE DEAD: COULD ETHICAL CONSIDERATIONS FROM MEDICOLEGAL CONTEXTS HELP ELUCIDATE THE ETHICS OF RESEARCH ON ARCHAEOLOGICAL HUMAN REMAINS?

**Abstract author(s):** Nilsson Stutz, Liv (Linnaeus University) - Mickleburgh, Hayley (Department of Cultural Sciences, Linnaeus University; Forensic Anthropology Center, Texas State University)

**Abstract format:** Oral

Recent public and academic debate on the ethics of scientific research on human remains in research/teaching collections and museums provides new stimulus and important opportunities to re-examine the ethics of research on human remains and develop new ethical practices informed by diverse perspectives. In this presentation, we will explore the norms and practices of caring for the dead in case studies from the fields of forensic anthropology and



medical autopsy/thanatopraxy. We argue that the ethical considerations of forensic scientists and thanatopractors working closely with human remains are relevant to the study of archaeological human remains, and can provide valuable interdisciplinary perspectives on shared topics such as informed consent, postmortem privacy, and bodily dignity of human remains. We will explore how these concepts are defined, regulated, and handled in practice in these fields, and how the transfer of knowledge between disciplines can support the development of a strong research ethic regarding human remains.

We will also consider how the Ethics of Care theoretical framework (EoC) –which considers ethical practice to be context-bound, rather than informed by generalized and rationalist principles of what is moral– enables us to delve into the contextuality of what is considered an appropriate manner for treatment of human remains. EoC prioritizes caring over logic and reason, and centers moral action around individual relationships, thereby explicitly recognizing that ethical practice is relational and situational, and allowing distinct norms and frameworks regulating human remains in different contexts to be brought together

### 3 WHOSE ETHICS? ARCHAEOLOGISTS, THE DEAD AND THE DIFFERENT ARCHAEOLOGICAL MENTALITIES

**Abstract author(s):** Rajala, Ulla (Stockholm University)

**Abstract format:** Oral

In this paper I will return to the ethno-archaeological study I carried out in 2003 among central Italian archaeologists who were involved in funerary archaeology (Rajala 2016). In that study I interviewed 20 practitioners and used a pre-prepared set of questions to get comparable answers on questions related to different archaeological mentalities, the attitudes towards archaeological theory and method, ancestors and the dead. I compared my results to those achieved by Mary Leighton (2003; 2010) among a set of archaeologists and osteologists excavating funerary remains in Britain. One of my results was that there was a difference between the attitudes towards the dead among the British and the Italian practitioners.

Recent years have brought about sometimes heated discussions on the respectful handling of human remains in archaeology. In these discussions it is often taken as a given fact that there is a shared universal ethical code in relation to handling human remains, when it is clear that there have been and there are multiple different attitudes and beliefs. In this paper I will naturally not be questioning the need for ethical codes or respectful handling, but I am questioning the unresearched way the discussion often requires archaeologists to regard one ethical code over another.

Leighton, M. 2003. The meaning of death: the archaeologist's perspective. An unpublished BA dissertation. Department of Archaeology, University of Cambridge.

Leighton, M. 2010. Personifying Objects/Objectifying People: Handling Questions of Mortality and Materiality through the Archaeological Body. *Ethnos* 75(1): 78-101.

Rajala, U., 2016. Separating the Emotions: Archaeological Mentalities in Central Italian Funerary Archaeology. In H. Williams and M. Giles (eds.), *Archaeologists and the Dead: Mortuary Archaeology in Contemporary Society*, 68-96. Oxford.

### 4 THE NAMES OF THE DEAD: IDENTITY, INDIVIDUALISATION AND THE ETHICS OF ANONYMITY IN EXHIBITING THE DEAD BODY

**Abstract author(s):** Tarlow, Sarah (School of Archaeology and Ancient History)

**Abstract format:** Oral

One of the foundational principles of modern medical ethics is the maintenance of anonymity in the case of researching human material and in disseminating that research. This principle safeguards the privacy of living human subjects, and minimises the prejudicial effect that personal knowledge might have on the researcher. Many of the human remains displayed in museum or other institutional contexts are necessarily anonymous. However, some institutions display the remains of historically identified individuals, often famous (royalty, senior clerics, saints and celebrities) or infamous people (criminals). What are the ethical implications of exhibiting the remains of known individuals? This paper argues that human remains are situated on a continuum between person and thing. Anonymity is one of the strategies used to move the remains further towards the universal body as an object of enquiry (thing) and away from a biographied and personalised self (person). By decentering the post-colonial context in which much of the debate about the archaeological and museological treatment of human remains has taken place, I hope to tease apart some of the broader ethical issues around the power relations between the living and the dead.

### 5 CHALLENGES OF STUDYING POST-MEDIEVAL HUMAN REMAINS IN FINLAND

**Abstract author(s):** Moilanen, Ulla - Paasikivi, Sofia (University of Turku)

**Abstract format:** Oral

This paper discusses the challenges in research of Post-Medieval human remains in Finnish churches, namely in the church of Seili and the Cathedral of Turku. Both sites are located in South-Western Finland, but one is a small con-

gregational burial place, while the other includes prominent, stately graves and monuments. Due to the conflicting legislation, it is currently difficult to get permissions to study the human remains in the Turku Cathedral, and at the moment, it is unclear who can decide if and how these remains can be part of research. The questions are tied to several ethical issues as well as religious sensitivities. How does the known identity of buried individuals affect the research, and are anonymous burials and burials in prominent and less-prominent sites valued differently? Do archaeologists have a right to study these burials? On the other hand, why is there (and is there) a presumption among the non-archaeologists that research can be wrong and unethical?

## 6 ANCIENT DNA, ETHICAL PRACTICES, AND THE ROLES OF INSTITUTIONS THAT HOLD HUMAN REMAINS: SOME COMMENTS FROM A BRAZILIAN PERSPECTIVE

**Abstract author(s):** Martinez Okumura, Maria Mercedes - Raimundo, Gabriel (University of Sao Paulo)

**Abstract format:** Oral

In the last decades, studies on ancient DNA (aDNA) have been important to either propose new hypothesis or support previous models regarding human origins and dispersals. Most of the discussion regarding the ethical research made on aDNA and human remains have been on the (very important) relationship between researchers and the present-day indigenous groups and the usually observed power imbalance between them. However, we point to two relationships where such imbalance can also be observed and that have been disregarded so far. The first might involve aDNA researchers and staff in charge of the collections of human remains. Whereas in North America and Europe most museums and collections present policies on the use (including destruction) of human remains for scientific purposes, many institutions from Central and South America (including Brazil) lack personnel with such expertise. In such contexts, aDNA researchers that are striving for an ethical approach must also be involved in engaging employees of museums and collections and discuss future guidelines and ethical practices involving aDNA. The other relationship which might be unequal refers to researchers from the Global North who are interested in ancient DNA research involving human remains from developing countries. In the case of Brazil, such remains can be either curated in the country or in European museums and collections. Regardless of the location of such remains, Global North researchers should aim to establish a better dialogue with Brazilian colleagues, in order to benefit from their expertise, as well as to avoid perpetuating colonialist practices in science. Given that aDNA studies are increasing globally at an unprecedented rate, time is ripe for a discussion on how to deal with a diversity of realities and hopefully our view from the Brazilian context can contribute towards such debate.

## 7 "BUT, YOU WILL STILL SHOW THE GRAVE IN THE NEW EXHIBITION, RIGHT?"

**Abstract author(s):** Nilsson, Per (The County Museum of Östergötland)

**Abstract format:** Oral

In the 1950s, a well preserved grave from the Scandinavian Battle Axe Culture (BAC) was found in the small town of Linköping, in the southeastern part of Sweden. A man, a woman, a small child and a dog had been buried together with rich grave goods. Since then, the grave (known as Bergsgraven in Swedish) has been regarded as a prime example of a grave from the BAC. With the arrival of new scientific methods, especially DNA-analyses, the grave has also come to play an important role within the paradigm known as The Third Scientific Revolution. In recent years, new DNA-studies have shown that the individuals in the grave had genealogical connections to migrations associated with the Yamnaya-culture. The results were widely discussed by archaeologists and scientists alike, and they were also picked up by Swedish and international media.

But from a museum perspective, there is more to this story than the amazing results of new archaeological research. The grave has been exhibited in the county museum of Östergötland for almost 70 years and thousands of visitors, including several generations of school children, have been fascinated and quite often scared, by the skeletal remains. Thus, the grave has become both a symbol for the museum and a marker of local identity. The title of this paper is, in fact, one of the most common questions we've received during our work with the new permanent exhibition where the grave will once again be exhibited. In this paper, I will use the different roles and functions the grave has played since its excavation as a starting point for a discussion on research and ethics from a museological, archaeological and pedagogical perspective.

## 8 A MODERN-DAY „MEMENTO MORI” OR MANIFESTATIONS OF IGNORANCE – ARCHAEOLOGICAL HUMAN REMAINS ON DISPLAY

**Abstract author(s):** Jastrzebska, Emilia (University of Warsaw)

**Abstract format:** Oral

Excavation and research on human remains raise a considerable number of ethical questions, especially when destructive methods are employed in the analysis. My reflections on the topic, however, focus on making archaeological human remains public, which is sometimes found disrespectful and even more unethical. As a result of this perception, a lot of stress has been placed on how the display of human remains should be limited based on ethical

considerations and lack of consent of the deceased. Consequently, museums lean towards the withdrawal of human remains from exhibitions.

Curators, however, have obligations not only to museum objects, which human remains essentially are but also to the recipients of the museum's offer. Intuitively we think about not making visitors uncomfortable by the presence of a dead body in a showcase, but one should not forget about the positive impact such an encounter may have. Mortality salience (MS) is currently the main topic of terror management theory (TMT), which unfortunately more often than not proves negative effects of provoking death-related thoughts, such as aggression, derogation, or racism. However, MS has served many different purposes in the past, including, what can be compared to „anti-consumerism" in the middle ages or encouragement to live your life to the fullest in antiquity.

With death as a social event and the dead body as a social actor being practically removed from our lives, museums offer unique opportunities to look the Dead in the face. Perhaps archaeological museums then, instead of withdrawing authentic human remains from exhibitions, should change the way they interpret them to live up to the role of genuine mortality awareness agents and by applying a considerate manner of exposition take on the role of positive „memento mori" enforcers.

## 9 HUMAN REMAINS IN SWEDISH MUSEUMS. A STUDY OF PRACTICES, DECISION MAKING AND THE VALUES THAT UNDERLIE THEM

**Abstract author(s):** Nilsson Stutz, Liv (Linnaeus University)

**Abstract format:** Oral

This paper presents the preliminary results of a large-scale study of the practical handling of human remains in Swedish museums. The study maps and analyses the attitudes, rationales and arguments, implicit and explicit, informing choices made in Swedish museums curating human remains. The category "human remains" is defined broadly and includes all remains originating from the human body, including skeletal remains, cremains, mummified soft tissue, hair, nails, skin, wet specimens of bodies, body parts, organs and other human tissue, and body fluids. The study encompasses human remains from different types of collections including materials from archaeological, medical and ethnographic contexts, which results in an interdisciplinary approach to the topic. The purpose of the study is to identify conscious and unconscious value systems underlying the decision making in the care of these remains. The results are discussed drawing on a theoretical framework including a consideration of the dualistic life of the corpse, the symbolic and cultural roles of the body and its parts as both subject and object, ethics of care, and socially responsible scientific practice.

By recognizing the complexity of the challenge, the study seeks to lay a foundation for a more reflexive discussion of the ethics of handling human remains in museums, and to make an inventory of needs in museums as they face competing demands from different stakeholders.

---

269

## MORE THAN WALLS AND FENCES - THE IMPORTANCE OF SPACE AND BOUNDARIES IN SYSTEMS OF VIOLENCE AND OPPRESSION

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Theune, Claudia (University of Vienna) - Rass, Christoph - Wolff, Frank (University of Osnabrück) - Hintendorfer, Peter (University of Vienna) - Bobe, Christin (University of Osnabrück)

**Format:** Regular session

The intentional organization of physical and social space, which is also manifested in material forms, can be geared to contribute to practices of violence and oppression. This becomes clearly visible in various types of secluded spaces, from attempts to seal state borders against unwanted mobility to more confined versions of immobilization in camps, prisons, or other forms of internment.

These forms of containment include both a culture of restrictions to foster acceptance of these boundaries from legislature to public discourse, and stigmatization and defined spatial zones of material fortification. The latter contains architectures to combine maximized ability (up to impunity) for guards to act, secured confinement of persons, and limited access and visibility for outsiders. These normative, discursive and material elements are connected through sets of measures and practices to mutually secure each other. The result is a far-reaching and boundary-based stratification of both space and human agency. In other words, its exploration requires integrated interdisciplinary efforts.

This session brings together contributions on questions about how the structuring of space was (or is) used to enable and/or consolidate the exercise of physical, psychological, and symbolic violence and oppression and how it influences the social organization of space and the agency of different groups of people, for example regarding forced camps, prisons or, on a large scale, national and transnational borders. By inviting archaeological, historical, social science, remote sensing and geophysical expertise, we aim to inspire interdisciplinary exchange and to enhance the mutual understanding of different empirical and methodological approaches for the joint exploration of the meaning of space and boundaries in systems of oppression and violence.

**1 NEAR-SURFACE GEOPHYSICS FOR THE NON-INVASIVE LARGE-SCALE INVESTIGATION OF SITES OF VIOLENCE**

**Abstract author(s):** Bobe, Christin (Osnabrück University)

**Abstract format:** Oral

Excavating is an established method in archaeological investigations. However, excavations are usually time consuming and may destroy archaeological sites. For a few decades, near-surface geophysical methods have been successfully applied in archaeological investigations as an indirect, non-invasive alternative or complementary to excavations. Geophysical methods are relatively fast in execution, especially with the nowadays available simultaneous measurement of positioning using GNSS antennas with real-time kinematic correction, and motorized platforms for the measuring equipment.

Recently, geophysical methods were applied to archaeological sites of violence, for example battlefields, labour camps, and war cemeteries. Considering the size of such sites, the survey speed due to both real-time positioning and motorized surveying is particularly beneficial. In this contribution, we present applications focusing on electric, magnetic and electromagnetic geophysical methods. We will put a particular focus on setting up a field survey and we will compare efficiencies of different set-ups for surveying violence landscapes. Additionally, we will outline the usefulness of geophysical methods with respect to various targets and different geological contexts. We will show examples from literature as well as from our own work.

**2 LAYOUT AND CAMP STRUCTURE OF NATIONALSOCIALIST CAMPS**

**Abstract author(s):** Theune, Claudia (University of Vienna)

**Abstract format:** Oral

People imprisoned in camps are permanently exposed to physical, psychological and symbolic violence. This also happens through the structuring of the space; for example the structural arrangement and architectural construction. It can often be seen that camps located closer to central places have a different structural substance and appearance than camps located in more marginal regions. In the lecture I will focus on the camps of the National Socialist dictatorship.

So-called early concentration camps used already existing buildings. It was not until 1936 that new camps were built. It can be seen that most of the camps have a closed rectangular ground plan, while there are also a few panopticum-like camps (for example in the former concentration camp Sachsenhausen). The layout of other camps seems to be rather irregular. In addition, building materials vary. A massive stone architecture stands next to simpler wooden structures. Also different types of fencings occur.

The paper will compare the camp architecture of the National Socialist camps. Different aspects will be considered. These refer to the different types of camps (extermination sites/camps, concentration camps, forced labor camps, etc.), to the geographical location within central or more marginal areas, as well as to different time periods of the National Socialist dictatorship (1933 - 1936 / 1936/38 - 1942 / 1943-1945).

**3 VIEWSHEDS, BORDERS, ACCESSIBILITIES - THE SPATIAL STRUCTURING OF NATIONAL-SOCIALIST FORCED CAMPS ILLUSTRATED BY THE EXAMPLE OF THE CONCENTRATION CAMP MAUTHAUSEN**

**Abstract author(s):** Hinterndorfer, Peter (Universität Wien)

**Abstract format:** Oral

One of the primary functions of Nazi forced camps was to intern specific groups of people within an area surrounded by walls and fences and to isolate them from the outside world. These camps were subdivided by further fences, walls, ditches, ramparts, doors, and gates, forming a complex system of areas with different accessibilities, and serving different purposes. The spatial differentiation included the separated accommodation of the various categories of internees under hierarchically graded survival conditions as well as areas dedicated to administration, storage, or workshops. Furthermore, infrastructure associated with the camp extended beyond the perimeter, such as the sites of forced labour, buildings used for housing and entertainment of the SS or railway connections and access roads.

This complex spatial organisation, determining the possibilities for movement and visual perception for individual groups of people in and around the camp, will be illustrated using the example of the concentration camp Mauthausen. Mapping and digitally reconstructing the camps infrastructure, the terrain and selected elements of the surroundings form the basis of the detailed analysis of viewsheds, borders and accessibilities on both an architectural micro level and a topographical macro level.

#### 4 IDEOLOGY AND SPACE ON A SITE OF TERROR: THE NS-FORCED LABOUR CAMPS ON TEMPELHOF FIELD, BERLIN

**Abstract author(s):** Misterek, Kathrin (Freie Universität Berlin)

**Abstract format:** Oral

From 1939-1945, three large forced labour camps were located on the Tempelhof Field in Berlin. Here, several thousand people from all over Europe were held in order to work for the Nazi-German armaments industry. The day-to-day life of all forced labourers was subjected to the exploitative system employed by the Nazis; their region of origin, however, further determined the experiences of the people imprisoned on the Tempelhof Field.

This racist hierarchy was reflected in the treatment by the German overseers and workers the forced labourers interacted with. It also determined their access to resources and also the living conditions in the barracks and areas of the camps the imprisoned labourers were forced to inhabit. Thus, the material space was a direct representation of an inhumane, criminal ideology. The way this space was organized impacted not only the freedom of movement of the different groups but also their living conditions within the barracks and, most probably, even the time available to the individuals within the groups of forced labourers.

In my presentation I will touch on how the material space of the forced labour camps on Tempelhof Field in Berlin a) was a physical manifestation of the Nazi-ideology, b) structured the lives of those people forced to live in it beyond a purely spatial structuring and c) how the interdisciplinary approaches of a Historical Archaeology can help to unlock areas of knowledge hitherto unknown.

#### 5 THE BORDER AS A CONFLICT LANDSCAPE: HOME, MEMORY, AND COMPETING PASTS AT THE "GREEN BELT"

**Abstract author(s):** Wolff, Frank (Osnabrück University)

**Abstract format:** Oral

In a Bundestag-debate in 2020 about the recognition of the "Green Belt" as a "National Natural Monument", the AfD-delegate Andreas Bleck conjured stories of expulsion and violence at the intra-German border. Without mentioning history, he saw a question of "Heimatkunde", a home now threatened by the ecological project of the "Green Belt". His stance was radical but by no means exceptional. The "Green Belt" is a monumental ecological project which turned the 1393km-long former "death strip" at the intra-German border into a protected biotope. It is carried out and supported by local groups, various ecological organizations and foundations, and increasingly high-level politicians. Yet, the project is also heavily contested. Officially the Thuringian State Commissioner for the Examination of the SED-Dictatorship even spoke of a new "Green Wall".

While it stands uncontested that the former intra-German border constitutes "historical ground", both parties rely on history not as a discipline, but as perception, defined by a blurred terminology of memory and home. For one side it is a "memory landscape", for the other a "Green Wall". In their difference, both views remain strongly shaped by totalitarianism theory – either by evoking fear of a once "red" and now "green" totalitarianism or by overcoming the effects of totalitarianism by "healing" landscape and nation all the same.

This paper inquires the dynamics behind this debate. It examines how the intensified talk about home and memory is an evasion of grappling with the past everyone pretends to be talking about. It approaches the "Green Belt", in all its beauty, as a showcase of the effectual emptiness of a streamlined national narrative of the meaning of division and unification. By confusing history with memory and memory with politics, the debate displays how Germany keeps struggling with its history and the results of its former division.

#### 6 ISOLATION AND SEGREGATION LANDSCAPE. THE IMPORTANCE OF SPACE AND BOUNDARIES IN THE QUARANTINE INSTITUTIONS

**Abstract author(s):** Cianciosi, Alessandra (University of Amsterdam; Stanford University)

**Abstract format:** Oral

The practice of quarantine, traditionally seen as a simple mechanism to prevent epidemics, over the centuries spread across Europe and further into the colonial worlds, becoming a recurrent issue of political and economic debate, as well as a source of abuse, still observed in the present day.

During the colonial period, this practice of enforced isolation, conceptually and as a system, serves as a lens on changing views of the labor diaspora. Indeed, between the eighteenth and nineteenth centuries, human impact on the new lands and migrations, first of enslaved people and then of indentured laborers, led to large-scale debilitating epidemics. In response, European powers often resorted to the installation of new institutions, such as quarantine stations, in most of the colonies, adhering to their way of perceiving epidemic disease and its control.

This contribution aims to present the results of the research conducted in the quarantine system established by the British Empire in the Indian Ocean colonies during the nineteenth century. The exceptional preservation of most of the

structures at some of the sites in the Mascarene Islands made it possible to conduct an archaeological survey, outlining a systematic spatial organization and functional diversification of quarters and structures within the quarantine stations. In addition, archival and material documentation attested to how medical theory and the epidemic emergency of the time influenced the design of the built environment and the functional configuration of the quarantine landscape, legitimizing the segregation of certain social groups and the unbalanced sanitary measures applied towards them.

Finally, the comparison with earlier and contemporary sites triggers a reflection on how imperial quarantine became a discriminating mechanism of biopower against unhealthy immigrant ships rather than a universal system to prevent epidemics.

271

## THE SOCIAL ROLE OF POTTERY AND POTTERS IN NEOLITHIC AND COPPER AGE SOCIETIES OF THE BALKANS AND CENTRAL EUROPE

**Theme: 3. The Carpathian Basin: Integration, Mobility and Diversity**

**Organisers:** Marton, Tibor - Jakucs, János (Eötvös Loránd Research Network, Research Centre for the Humanities, Institute of Archaeology) - Spataro, Michela (Department of Scientific Research, The British Museum) - Gomart, Louise (French National Centre for Scientific Research) - Kreiter, Attila (Hungarian National Museum Laboratory of Applied Natural Sciences)

**Format:** Regular session

The study of ceramic inventory is traditionally one of the key fields in research on Neolithic and Copper Age communities. The ceramic repertoire of the Balkans and Central Europe includes a great diversity of styles, which are chronologically and geographically clustered usually based on the variety of shapes and decorations. To date, however, only a few examples of analyses could be listed from the region that identifies pottery chaîne opératoire and integrates experimental- and ethnoarchaeological observations into interpretations, aiming specifically to assess the social embeddedness of pottery and the craftspeople's social identity within the social web of their community network.

The session aims to integrate researchers who approach Neolithic and Copper Age societies through pottery, either through craft- or consumption analyses. Given that we may justifiably assume that technological behaviour, style, and function were influenced by partially differing social factors, a distinction between the potential range of meanings within the social context of production and consumption is particularly important. On one hand, presentations may certainly involve statistical analysis or mapping of morphology and decorations, possibly redrawing or reinterpret static boundaries anchored by the traditional typological method. On the other hand, the incorporation of complex technological analysis of pottery is essential to understand underlying patterns in material culture production. Such analyses 'operate independently' from the conventional archaeological categories such as „culture" or „phase" and provide a more fine-grained understanding on the social relationships of craftspeople and their social role within their local or cross-cultural social networks or even throughout generations. Questions regarding the functional evaluation of vessels, their secondary use, symbolic actions, fragmentation and deposition are also crucial both in terms of everyday practices and/or conveying messages on social status. Comprehensive presentation covering all of these aspects are also welcome.

### ABSTRACTS

#### 1 SCIENTIFIC APPROACHES TO THE ANALYSIS AND UNDERSTANDING OF PREHISTORIC POTTERY: OPPORTUNITIES AND LIMITATIONS

**Abstract author(s):** Spataro, Michela (British Museum)

**Abstract format:** Oral

Prehistoric ceramic assemblages have long been the object of stylistic and morphometric research, often in order to develop cultural and chronological taxonomies, rather than to understand the production or use of the pots themselves. In recent decades, however, archaeometric analyses of pots and their contents have become increasingly popular. Organic residue analyses, using microscopic, isotopic and biomolecular techniques, address pottery function. Techniques commonly used in earth sciences, such as petrography and geochemistry, instead support research on where and how pottery was made.

Recording the chaîne opératoire, and recognising the exchange of artefacts or ideas, help us to address a variety of deeper questions, from cultural identity, cultural transmission and hybridisation, innovation and change, and the role of the potters in prehistoric societies. Increasing technical complexity in pottery production, including raw material selection, implies increasing investment in training and equipment, which would generally coincide with increasing social differentiation and craft specialisation. More expedient technological choices, by contrast, would normally coincide with decreasing social and economic complexity.

In this paper, a variety of case-studies, e.g. early ceramics made in south-eastern Europe, early specialised pottery production in the Middle East, hunter-gatherers ceramics in the Baltic, imports of imitation vessels to Sudan, will be used to discuss the possibilities of an ideal approach, and the limits and the inherent limitations of working with archaeological ceramics.

## 2 **BLACK IS ALWAYS IN FASHION: EARLY PRODUCTION OF DARK BURNISHED WARE IN THE NEOLITHIC OF UPPER THRACE**

**Abstract author(s): Tsurev, Atanas (National Institute of Archaeology & Museum, Bulgarian Academy of Sciences)**

**Abstract format: Oral**

This paper will re-evaluate the diagnostic significance of the Dark Burnished Ware (DBW) in the Thracian early Neolithic (first half of the 6th millennium BC). It focuses on the dark surface burnished ware produced in the southeast of Thrace and particularly in the Middle Maritsa Valley. There is a noticeable difference between the dark surface ware produced in the different parts of Upper Thrace. In the west and north parts of the region, it is characterized by dark brown and dark grayish surfaces respectively and by conservative non-painted decoration techniques. The assemblages in the Middle Maritsa Valley include mostly black burnished ware whereas the black-brown and dark brown burnished surfaces appear only occasionally. Multiple decoration techniques were used in the latter part of Thrace, some of which can only be associated with the DBW. It is important to note that the DBW production in the Middle Maritsa Valley in amounts close to or even greater than the red slipped ware has been attested since the very beginning of the Neolithic, which contradicts the currently accepted theory. The role of the Maritsa Valley as a communication route is of particular interest in regards to the origins and distribution of the DBW production, as it most probably facilitated the early contacts between Upper Thrace and the neighboring areas to the south.

## 3 **CHANGES IN THE TECHNOLOGICAL PROCESS OF POTTERY PRODUCTION. THE CASE OF STARČEVO-CRIȘ POTTERY FROM OARDA-LIMBA DE JOS (ROMANIA)**

**Abstract author(s): Tudorie, Anamaria - Ciută, Marius (Lucian Blaga University of Sibiu)**

**Abstract format: Oral**

During the archaeological rescue excavations occasioned by the construction of the Lot no. 1 of the Highway no. 10, Sebes-Turda (Romania), undertaken between 2017 and 2018, on the site of Limba-Oarda de Jos (Alba County), a dwelling belonging to Starčevo-Criș culture was discovered.

The ceramic materials identified here were macroscopically analysed, considering three aspects: the fabrication methods analysis (which included framings for category, identifying the exterior and interior colour, the temper used for producing the pottery, the analysis of surface treatment and firing), the typological analysis and ornamentation.

The results of our investigation, correlated with older discoveries, clearly indicated the fact that the technology of fabrication developed by the Starčevo-Criș, III B community from Limba-Oarda de Jos presented some noticeable changes, comparative with what it is known as being specific for this moment of evolution in the Early Neolithic period. Also, the technological and statistical analysis provided new information on the complex processes specific to the final phases of the Early Neolithic and the transition to the Middle Neolithic.

## 4 **A STARČEVO POTTING KOINE: INVESTIGATING POTTING CHOICES AND PRACTICES AT SVINJARIČKA ČUKA**

**Abstract author(s): Burke, Clare (Austrian Archaeological Institute)**

**Abstract format: Oral**

In the early years of Neolithic research, Starčevo pottery assemblages were traditionally used to denote cultural boundaries based on the striking degree of similarity between forms and decorative styles at different sites. Within the last 10-20 years increased investigation of raw materials and the technology used to produce a number Starčevo assemblages, has begun to uncover an interesting mix of shared and nuanced techniques used to make Starčevo pottery, suggestive of different technological trajectories and adaptations operating within an overarching Starčevo koine.

To add to this growing body of data this paper will present results of raw materials and technological analysis of Starčevo pottery from Svinjarička Čuka in Serbian with a brief comment on potential pottery use. Through the combination of macroscopic and lab-based methods, it has been possible to identify a narrow range of raw materials and different techniques used to make pottery at the site which suggest the presence of multiple practices and learnt ways of doing within particular elements of the chaîne opératoire, alongside evidence for a range of pottery uses. That said, it is clear that these choices lie within shared technological concepts around suitable base clays, and consumption choices related to what pottery should look like and potentially how it could be used, that fit well with other Starčevo assemblages.

## 5 POTTERY PRODUCTION AT VIROVITICA-BREKINJA AND THE DYNAMICS OF TRANSFORMATIONS IN THE 6TH MILLENNIUM CAL BC DRAVA REGION

**Abstract author(s):** Botić, Katarina (Institute of Archaeology, Zagreb) - Oross, Krisztián (Institute of Archaeology, Research Centre for the Humanities, ELRN, Budapest) - Balen, Jacqueline (Archaeological Museum in Zagreb)

**Abstract format:** Oral

Traditionally, the earliest Neolithic pottery production along the Drava river is classified as part of the great Early Neolithic realm of south-east Europe, namely the Starčevo culture. However, only a handful of sites were excavated to some extent, and very little data have been published. Recent research suggests profound changes in the material culture of settlements following this initial Neolithic development. Transformations are particularly spectacular in pottery production, both in style and morphology, as well as concerning technology.

Our beliefs on spatio-temporal patterns of canonized 6th millennium cal BC pottery styles (Starčevo, Vinča, Ražišće, LBK) became more fluid as a consequence of current achievements. Hence, a comprehensive analysis of the related cultural processes cannot be performed without an accurate regional-scale absolute chronology. Some Croatian sites have been dated with AMS measurements recently, and the results of extended dating programmes in neighbouring southern Transdanubia can also serve as a comparable chronological framework. Nonetheless, the number of available data sets is still very limited for decisive contributions to issues such as cultural dynamics and large-scale developments. Particular focus of the research is the period broadly between 5500 and 5300 cal BC, more precisely around 5400 cal BC and during the subsequent two to four human generations.

The paper provides a site-based analysis of the Virovitica-Brekinja assemblage and a regional survey of mid-6th millennium cal BC transformations in pottery production. Regarding absolute chronology, it aims to discuss the current state of research, weaknesses and perspectives in a larger area that encompasses continental Croatia and the western Carpathian basin. The proposed complex, multi-scale approach is essential for any future model building on the emergence and spread of new practices and their impacts towards and from central Europe.

## 6 TRANSFORMING TRADITIONS: AN INTEGRATED MULTIDISCIPLINARY RESEARCH PROJECT ON POTTERY PRACTICES OF 6TH MILLENNIUM CAL BC EASTERN TRANSDANUBIA

**Abstract author(s):** Marón, Tibor (Institute of Archeology, Research Centre for the Humanities, Eötvös Loránd Research Network) - Kreiter, Attila (Hungarian National Museum, Laboratory of Applied Natural Sciences) - Oross, Krisztián (Institute of Archeology, Research Centre for the Humanities, Eötvös Loránd Research Network) - Gomart, Louise (Centre National de la Recherche Scientifique) - M. Virág, Zsuzsanna (Budapest History Museum) - Füzesi, András (Hungarian National Museum) - Pető, Ákos (Szent István University, Department of Nature Conservation & Landscape Ecology) - Gorlva, Gergely (Hungarian National Museum) - Gucsi, László - Jakucs, János (Institute of Archeology, Research Centre for the Humanities, Eötvös Loránd Research Network)

**Abstract format:** Oral

Southern Transdanubia served as the westernmost distribution of Southeast European type Early Neolithic (Starčevo culture) during the early 6th millennium cal BC. Following the initial Neolithic development, diverse networks of various archaeological groups or "cultures" both with Southeast and Central European ties emerged from about 5350 cal BC. The Danube region in Eastern Transdanubia proved to be a particularly active zone of interactions. Our research in Southeast Transdanubia over the past decade has revealed a high degree of entanglement between these groups at least in terms of their pottery practice. Considering many further technological aspects of potting tradition, concepts on sharp boundaries between these "archaeological cultures" must be completely re-evaluated. Our research project focuses on key sites of the Danube region in Eastern Transdanubia between the Drava river and the Danube Bend, which have been intensively investigated during the last ten years. We addresses issues of pottery manufacture and consumption from three main aspects. The first involves the the classification of different combinations of ceramic forms and elements of decorations based on their spatial and chronological distribution. The second is a multidisciplinary study of the technology. The technology is assessed within the framework of a complex system, the "technological style", which includes aspects of raw material selection, tempering, the structure, surface treatment and firing methods. The third is the functional study of pottery, both in terms of practical usage and in terms of pottery as an expression of social roles. The integrated analysis of the main aspects of pottery production and consumption provides a potential for reconstructing the entire chaîne opératoire of pottery production and at the same time, offering new avenues in the interpretation of ceramic assemblages as a means of reconstructing social and cultural mechanisms.



7

## **(DON'T) LET IT FADE: PERSISTENT TRADITION AND CHANGING STRATEGIES OF CERAMIC PRODUCTION AMONG THE POST-STARČEVO COMMUNITIES IN SOUTH-EASTERN TRANSDANUBIA**

**Abstract author(s):** Jakucs, Janos - Marton, Tibor - Oross, Krisztián (Institute of Archeology, Research Centre for the Humanities, Eötvös Loránd Research Network) - Kreiter, Attila (Hungarian National Museum, Laboratory for Applied Research)

**Abstract format:** Oral

The earliest settlements of first pottery producing communities, attributed to the Starčevo culture, appeared in South-Eastern Transdanubia from the first half of the 6th millennium cal BC and persisted until about 5500 cal BC. In the subsequent stage of neolithization, a number of longhouse settlements characterized by early Vinča, Ražiste and early LBK-style pottery manufacture have been established around 5350 cal BC. The period between 5500 cal BC and 5350 cal BC remains enigmatic in most of western Hungary, leaving intriguing questions regarding the issues of cultural transmission and population continuity. Results published in recent years have provided a detailed picture on several aspects of ceramic technology as well as the practical use of pottery among the Starčevo communities from the wider area of its distribution. Nevertheless, research into the pottery technologies that unfolded later remained more sporadic. Our research project in South-Eastern Transdanubia, focusing on sites with well documented settlement structure and robust absolute chronological background, carried out integrated multidisciplinary analyses on the entire spectrum of the region's pottery traditions flourished during the second half of the 6th millennium cal BC. The main results of the project are to be highlighted through the pottery analysis conducted on the assemblages from the Alsónyék, Tolna-Mözs, Balatonszárszó and Szederkény sites. Our presentation seeks to show how tradition of pottery crafting and use linger on among the region's post-Starčevo communities, otherwise characterized by highly varied pottery styles. Furthermore, how new elements had been incorporated into the chaîne opératoire after the mid-54th century cal BC and what they are exactly? Moreover, looking at the increasing diversity of technological choices they made, we also put questions of how the social network of craftspeople reshaped at the time of formation the first longhouse settlements.

8

## **ANALYZING POTTERY USE-ALTERATION TRACES ON 6TH MILLENNIUM CAL BC CERAMIC ASSEMBLAGES FROM SOUTH-EASTERN TRANSDANUBIA**

**Abstract author(s):** Gucsi, László - Jakucs, János - Marton, Tibor (Institute of Archeology, Research Centre for the Humanities, Eötvös Loránd Research Network)

**Abstract format:** Oral

The last decades of large scale preventive excavations on account of motor-way constructions provided new opportunities to study many archeological subjects much deeper as previously was possible. As a result of this new boom of available information, the research of the Neolithic communities of South-Eastern Transdanubia also went through significant changes. Studies on settlement strategy, absolute chronology and more traditional classification of pottery styles set the basic framework for our understanding of the Neolithic societies in the region. Now we aim to focus on smaller details for inferring past human behavior and environmental conditions. 6th millennium cal BC ceramic assemblages of South-East Transdanubia have already been analyzed from a variety of aspects, however, traces of use-alteration are among the less studied. To move forward in this subject we analyzed large quantities of ceramics from key sites of the region, as part of the Transforming Traditions project. Our analysis aimed to answer questions such as: Is certain use-wear traces significantly occurring on certain vessel types? If yes, then what is the reason for it? Can special functions be identified in correlation to vessel types? What kind of recurring traces on the ceramics indicate repairs, intentional damage, secondary usage? What is the distribution of certain traces in the level of sites and on the region's pottery finds?

The aim of this presentation is an overview on our recent analysis of Neolithic pottery fragments with use traces, getting more insight into the complex nature of ceramic function and socioeconomic status.

9

## **TRACING THE PROVENANCE OF THE EARLIEST POTTERY WITH SR AND ND ISOTOPES**

**Abstract author(s):** Tóth, Péter (Masaryk University) - Pokutta, Dalia (Masaryk University; University of Stockholm) - Zack, Thomas (University of Gothenburg) - Belka, Zdzislaw (Adam Mickiewicz University) - Peřík, Jan (Masaryk University) - Bickle, Penny (University of York) - Slavíček, Karel - Adameková, Katarína - Petr, Libor (Masaryk University)

**Abstract format:** Oral

The essential components needed for creating a ceramic vessel are clay, water, and temper. Based on ethnographic studies, clay and temper sources are usually located no more than 20-100 minutes of walking distance from the site of creation, but was this the case in Prehistory? Our preliminary results within the NEOPOT project have shown that the first pottery in the northern parts of the Pannonian Basin appeared in the hunter-gatherers' context around 5600 cal BC followed by the pottery of the first farmers around 5500 cal BC. However, the pottery from both traditions sharply differs in terms of production technology. The origin of the pottery is usually studied through the traditional approach,

evaluating the vessel shape, decoration, or manufacturing process. This paper will demonstrate a different approach using stable isotope analysis to trace the provenance of the earliest pottery in Slovakia. Several studies have shown a successful application of  $^{87}\text{Sr}/^{86}\text{Sr}$  in solving problems of the provenance of various archaeological materials. Our approach is multiproxy, using radiogenic isotopes of strontium ( $^{87}\text{Sr}/^{86}\text{Sr}$ ) and neodymium ( $^{143}\text{Nd}/^{144}\text{Nd}$ ). The combination of two isotope systems enables us to pinpoint more precisely the origin of the earliest pottery and shed new light on the social networks during the process of Neolithisation. The work is supported by the Grant Agency of the Czech Republic under contract No. GA20-19542S (Tracing the Neolithic transition through the first pottery; NEOPOT project).

## 10 RICH OR POOR? THOUGHTS AND ANALYSES ON THE SOCIAL ROLE OF POTTERS IN NEOLITHIC AND CHALCOLITHIC SOCIETIES OF SOUTH-EASTERN EUROPE

**Abstract author(s):** Hofmann, Robert (Kiel University; CRC 1266: "Scales of Transformation - Human-Environmental Interaction in Prehistoric and Archaic Societies")

**Abstract format:** Oral

In medieval, early modern and recent local communities, pottery producers often (but not always) belonged to the poorer segments of the population, whose workshops were frequently peripherally located in settlements due to fire safety reasons, among other things. Based on case studies from South Eastern Europe, the paper aims to explore the question of the social role of potters in Neolithic and Chalcolithic societies. Sources of the study are pottery assemblages from Late Neolithic settlements in central Bosnia (Okolište) and Vojvodina (Borđoš) and a pottery workshops including pottery remains in Copper Age Tripolye settlements in central Ukraine (e. g. Maidanetske). Based on the quantification of the production remains and the contextual investigation (e.g. mapping) of stylistic and technological aspects in ceramic assemblages and workshops, the attempt is made to understand the organisation of pottery production, to estimate the intensity of production and the degree of professional specialisation and – deduced from this – the social role of potters in these communities.

## 11 CREATING TRADITIONS: THE EARLY TISZA POTTERY STYLE AND PRACTICE IN ÖCSÖD-KOVÁSHALOM (5200-4800 BC, EAST-HUNGARY)

**Abstract author(s):** Füzesi, András (Hungarian National Museum / Magyar Nemzeti Múzeum) - Bajnok, Katalin (Eötvös Loránd Research Network, Centre for Energy Research) - Raczky, Pál (Eötvös Loránd University, Institute of Archaeological Sciences)

**Abstract format:** Oral

The Late Neolithic settlement complex of Öcsöd-Kováshalom along the lower course of the Körös River is one of the most important sites of prehistoric research in Hungary. The excavations carried out between 1983-87 discovered a settlement structure characterised by remains of burnt houses and recovered a large quantity of ceramics. Recent fieldwork since 2018 has revealed a macro-structure in the 40-hectare settlement. The large triple ditch system confirmed the character of the settlement as a micro-regional centre and linked it to a series of settlements also characterised by burnt houses and large ditch systems, as well as by the ceramics of the Tisza culture.

The processing of the ceramic assemblage excavated in the 1980s has started in 2016. In addition to the formal and stylistic analysis of the ceramics, functional and technological evaluation of the pottery is also being carried out. Each of the observed steps in ceramic forming has been placed into a chaîne opératoire according to major technical and typological categories. Representative samples based on functional-stylistic groups have been selected and sampled for thin section ceramic petrographic analysis. Furthermore, local clayey raw materials from around the site have been collected and then thin-sectioned for comparative studies. The composition of the applied surface decoration has also been examined by spectroscopic methods.

The absolute chronological data available for the site date the chronological position of the assemblage to the Late Szakálhát – Early Tisza culture. Thus, our multi-proxy study of the pottery shows the emergence of the Tisza ceramic traditions. Based on our overview of the settlement, the results suggest that the community of Öcsöd-Kováshalom might have been an important catalyst in this socio-cultural process.

## 12 COMPLEX VESSELS IN SIMPLE HUTS: THE FOUR-LEGGED VESSELS FROM NEOLITHIC DISPILIO, NORTH GREECE

**Abstract author(s):** Voulgari, Evangelia (School of History and Archaeology, Aristotle University of Thessaloniki) - Sofronidou, Marina (Ephorate of Antiquities of Drama) - Kotsakis, Kostas (Prehistoric Archaeology, School of History and Archaeology, Aristotle University of Thessaloniki)

**Abstract format:** Oral

In this paper, we focus on polypod vessels from the neolithic lake settlement Dispilio in Lake Kastoria. Dispilio is the first wetland site excavated in Greece and has been systematically investigated since the 1990s' by the Aristotle University of Thessaloniki. In the last three years, the participation of Aristotle University in the ERC-funded EXPLOR Project

has given the opportunity to process the data collected in previous years. In neolithic northern Greece, polypod vessels became far more frequent in the second half of the 6th millennium and were out of use by the end of the 5th millennium. Archaeological literature usually presents these vessels either as having special or ritual functions or as intended for cooking food.

In the ceramic assemblage from Dispilio, we have restored a wide range of four-legged vessels, mainly with zoomorphic characteristics. The analysis of their morphological and technological characteristics, their use-wear, and secondary use indicates that the neolithic inhabitants used them in a variety of practices. Some types were numerous, while others were few; some types had a wide geographical dispersal from the Adriatic coast to southern Greece, while others occur only in southern Albania and northern Greece. The potters from Dispilio imitated things they saw, copying them with modifications to suit local practices and needs. Because of the multi-layered diachronic development of the settlement from the mid-6th to the early 5th mil BCE, we have noticed changes in their social role, while the large corpus of the about 1600 whole pots and profiles we have restored so far, provide us the necessary framework to compare these vessels with other types of cooking and consuming forms. It provides us with the indications to suppose that the simplicity of the neolithic dwellings contradicts the complex shades of the daily lives performed inside and outside the domestic sphere.

### 13 THE RISE AND FALL OF THE GROG-TEMPERED POTTERY IN THE SOUTHERN ROMANIA DURING THE CHALCOLITHIC PERIOD (5TH MILLENNIUM BCE)

**Abstract author(s):** Opris, Vasile (Bucharest Municipality Museum)

**Abstract format:** Oral

The technology of making fired clay vessels reached the South-western Romania area with the arrival of first Neolithic communities, about 8000 years ago. Organic-tempered pottery is considered characteristic for the early pottery assemblages in most parts of South-east Europe, including Southern Romania, and recent studies improved greatly the research of this tradition, showing its wide dispersion. Grog (crushed pottery) did not appear as an intentionally used temper in the Early Neolithic of the Middle and Lower Danube Basin, or in the contemporary and adjacent cultures in the eastern Adriatic. During the second half of the 6th millennium BCE, a buffer zone was created between Danube and the Carpathians, in which innovations spread through contact and exchange following multiple communication routes: South to North, West to East and North to South. Based on scarce published information, it appears that grog-tempered pottery began to be used in the region at the end of this period, around 5200/5000 BCE. However, little is known about the origin, dispersion and intensity of this technological practice.

The aim of this paper is to trace and explain the appearance and distribution of grog tempered pottery during the 5th millennium BCE in Southern Romania, following specific objectives, such as (i.) knowing the intensity of grog-tempered pottery employed by various Boian-Gumelnița communities; (ii.) detecting the spreading model in the selected time span and geographical area; (iii.) exploring the use of grog related to vessel characteristics and possible function; (iv.) observing and explaining variability. The information from literature will be merged with new results obtained from macroscopic and archaeometric analyses on pottery assemblages from Early and Middle Chalcolithic sites from Southern Romania.

### 14 TALES OF TECHNOLOGY: AN ARCHAEOMETRIC CHARACTERIZATION OF ENEOLITHIC POTTERY FROM THE EPONYMUS ARCHAEOLOGICAL SITE "GUMELNIȚA"

**Abstract author(s):** Manea, Bogdan (ArchaeoSciences Division, Research Institute of the University of Bucharest - ICUB) - Opris, Vasile (Bucharest Municipality Museum) - Dimache, Mădălina (Gumelnița Civilization Museum, Oltenița, Călărași County) - Mirea, Dragoș - Ignat, Theodor (Bucharest Municipality Museum) - Dimoffe, Daniela - Roban, Relu (Faculty of Geology and Geophysics, Department of Mineralogy, University of Bucharest) - Lazăr, Cătălin (ArchaeoSciences Division, Research Institute of the University of Bucharest - ICUB)

**Abstract format:** Oral

The eponymous site of the Eneolithic Gumelnița culture is located on the left bank of the Danube in South-East Romania, nearby Oltenița in Călărași County, and was part of a larger techno-cultural complex (known as Kodjadermen-Gumelnița-Karanovo VI) that inhabited the Balkans during the second half of the 5th millennium BC. Along with the archaeological sequences which belong to the Gumelnița community and fall within the Developed Eneolithic period (ca. 4600-3800 BC), excavations here also revealed the existence of an Early Eneolithic (ca. 5000-4500 BC) level which, based on the ceramic materials and radiocarbon data, was associated with a Boian (Vidra phase) occupation.

The current paper will present the results of an archaeometric investigation performed on the ceramic materials resulting from the 2017-2021 archaeological excavations carried out at Gumelnița. By involving research methods such as X-ray fluorescence (XRF), thin section petrography, microscopic and macroscopic analysis, we will discuss the general technological characteristics of both Gumelnița and Boian pottery found in this archaeological site. The in-

formation gathered will then be correlated with the archaeological record and interpreted within a broader context of the pottery belonging to the Eneolithic period from Southern Romania.

Ultimately, these new data sets will contribute to the already available ones on Eneolithic pottery from the Balkans, thus improving the overall understanding of technological changes and traditions in a well-defined spatial-temporal framework.

This work was supported by a grant from the Ministry of Research, Innovation, and Digitisation, contract number 41PFE/30.12.2021, within PNCDI III.

## 15 **CHALCOLITHIC POTTERY AND PIGMENTS: TECHNOLOGIES, TRADITIONS AND EXCHANGES. CASE STUDY: CUCUTENI POTTERY, EASTERN ROMANIA**

**Abstract author(s):** Drob, Ana ("Alexandru Ioan Cuza" University, Interdisciplinary Research Institute, Department of Exact Sciences and Natural Sciences, Arheinvest Center, Iași) - Bolohan, Neculai ("Alexandru Ioan Cuza" University, Faculty of History, Iași) - Vasilache, Viorica ("Alexandru Ioan Cuza" University, Interdisciplinary Research Institute, Department of Exact Sciences and Natural Sciences, Arheinvest Center, Iași)

**Abstract format:** Oral

In this study was used a model of interdisciplinary ceramic analysis that provides a series of data about Chalcolithic pottery and pigments. The analyzed ceramic fragments come from several newly discovered Chalcolithic settlements from Eastern Romania. For the vessels ceramic paste, interdisciplinary methods are used to obtain more information about raw materials and production technology, inclusions, finishes, firing temperatures and functionality. This research will also focus on the red, black and white pigments used while painting the pottery of these communities. Although there are a number of contributions that have focused on studying the pigments, at the regional level the topic needs to be improved in order to correlate the data with the eastern and western contemporary variants. Moreover, the results will provide a series of data about the pigment's nature, preparation methods and sources of raw materials.

The methods used in the analysis are macroscopy (shape, color, wall thickness, firing type and inclusions type, distribution, form and sorting), optical microscopy (texture of the paste, surfaces and inclusions details), SEM-EDX (elemental composition) and  $\mu$ FT-IR (chemical compounds).

Through this study we want to contribute to the expansion and completion of the existing database with new technological information about painted ceramics from Eastern Romania. Also, we are trying to highlight the role of interdisciplinary results, that led to the identification of technological features and specific ceramic traditions, as well as aspects related to the exchange of special goods.

## 16 **UNDERLYING PATTERNS: CERAMIC TECHNICAL TRADITIONS IN THE EARLY AND MIDDLE COPPER AGE ON THE GREAT HUNGARIAN PLAIN**

**Abstract author(s):** Solnay, Eszter (Eötvös Loránd University; Université Paris 1 Panthéon-Sorbonne; CNRS - UMR 8215 Trajectoires)

**Abstract format:** Oral

The Early and Middle Copper Age (4500/4450 – 4000 cal BC) on the Great Hungarian Plain is a largely debated period, when a new technological, social, and communication system emerged, which included the first appearance of the formal cemeteries, a network of small settlements, and a more mobile lifestyle. Until recently, the entire material culture of the period was defined by three distinct, consecutive cultures; the Tiszapolgár, Bodrogkeresztúr, and Hunyadhalom cultures. However, recent studies questioned their strict chronological separation which raises numerous new issues such as the real social mechanisms of the period and their relationship with the traditional typological and stylistic data.

The present study investigates this subject with the anthropological approach of ceramic assemblages which are capable to detect social networks through the analysis of pottery fashioning. Ceramic fashioning sequences appear to be resistant to change due to the learning process when the learner observes and copies the forming gestures of the tutor which become "motor habits" after the learning process is completed. In this mechanism, the tutor and a learner are always socially related, thus this methodological approach enables to identify communities of practice sharing sets of technical traditions that are transmitted over time.

Therefore, the analysis of several Early and Middle Copper Age sites can reveal the underlying patterns in the material culture of the period beyond the traditional typological and stylistic data. The similarities or differences in the ceramic production on the analyzed sites can detect the trajectories of technical traditions, thus socially based contact networks can also be identified on the Great Hungarian Plain. Furthermore, this aids to reinterpret the static typo-chronological boundaries by revealing the hidden patterns of the social embeddedness beyond the technological and stylistic data.

## 17 A STATISTICS-BASED APPROACH TO THE FUNCTIONAL RECONSTRUCTION OF MIDDLE COPPER AGE VESSELS IN EASTERN HUNGARY

**Abstract author(s):** Hegedus, Zsuzsa (Eötvös Loránd University, Institute of Archaeological Sciences)

**Abstract format:** Oral

Prehistoric settlement archaeology frequently faces the difficulties posed by the vast and highly fragmented pottery assemblages. The examination of such materials is not only resource-consuming, but also difficult from the traditional, typological perspective. A possible solution to this problem lies in the use of statistical tools that are able to handle large amounts of data and highlight the correlations between the characteristics of thousands of vessel sherds. As the result of such analyses, several different groups of pottery can be outlined, which then, with the use of ethnoarchaeological data, can be linked to primary functional categories. These categories, although have limitations in reconstructing the full complexity of pottery use, can provide a more detailed picture of vessel usage from a mainly practical viewpoint.

Through a case study of the analysis of fragmented pottery assemblages from the Great Hungarian Plain, dating to 3900–3700 cal BC, I present how this statistics-based approach can be used for functional reconstruction. Here, it proved to be possible to distinguish three main functional categories: cooking, serving and storage vessels. With further investigations based on the results, it is feasible to better understand the internal processes of Middle Copper Age Hunyadhalom settlements through the communities' pottery use and the behaviours linked to disposal.

## 18 DOMESTIC POTTERY AS A PART OF THE EVERYDAY ACTIVITY: EVALUATING SOME LATE COPPER AGE SETTLEMENTS

**Abstract author(s):** Fábíán, Szilvia - Berente, Zoltán - Klinga, Flóra (Hungarian National Museum) - Marton, Tibor (Institute of Archaeology, Research Centre for the Humanities of Eötvös Lorand Research Network)

**Abstract format:** Oral

"The changing horizons of material culture" research project supported by the National Research Fund was developed to provide a deeper understanding of the use of space and activity areas in Late Copper Age Baden settlements. The current project analyzes domestic pottery and other material remains that form an organic part of everyday life (ceramic sets, utensils, tools) according to qualitative, quantitative and semiotic aspects, prioritizing the distribution and mutual relationships of the given find materials.

During this investigation, we assume that the assessment of the vessel sets may shed light on the size, complexity, and wealth of a given household and the community. Questions regarding the functional evaluation of vessels, their secondary use, symbolic actions, fragmentation, and deposition are also crucial both in terms of everyday practices and/or conveying messages on social status.

We attempt to infer the function of the vessels from their shape, size, and technology through statistical analyses rather than from archaeometric analysis bearing in mind the formation of archaeological contexts and wider theoretical and methodological tools.

Manufacture consists of the fashioning of a vessel for some intended function from raw materials obtained from the environment; this is followed by the utilization of the vessel for either food storage, preparation, or consumption, in some cases followed by its use for some other purposes.

Based on integrated methods, such as multivariate statistical analysis on the spatial distribution of the individual ceramic types corresponding with its quality categories, it becomes possible to interpret the patterns within each settlement from a socio-archaeological point of view.

## 19 LATE COPPER AGE POTTERY FROM SOUTH-EASTERN ALPINE REGION: A MULTIDISCIPLINARY ARCHEOMETRICAL APPROACH IN THE STUDY OF LJUBLJANA CULTURE

**Abstract author(s):** Leghissa, Elena (ZRC SAZU, Institute of Archaeology, Ljubljana) - Bernardini, Federico (University Ca'Foscari Venezia; Multidisciplinary Laboratory, The "Abdus Salam" International Centre for Theoretical Physics) - Montagnari Kokelj, Manuela (Department of Humanities, University of Trieste) - De Min, Angelo (Department of Mathematics and Geosciences, University of Trieste) - Velicogna, Matteo (Department of Land, Environment, Agriculture and Forestry, University of Padova)

**Abstract format:** Oral

The material culture of the Late Copper Age in the south-eastern Alpine region is well known in archaeological typological studies. So far, the ceramic finds have been treated mainly from a typological-chronological point of view. However, in the last ten years an international team from Italy, Slovenia and Hungary has carried out several traditional and innovative scientific analyses of a large number of samples from various sites in the Ljubljansko barje (central Slovenia) and in the Trieste Karst (NE Italy), as well as of some samples from Hungary (about 100 samples). We have used various destructive and non-destructive methods: X-ray diffraction, optical microscopy, X-ray computed microtomography and PGAA.

Our recent research focuses mainly on pottery from the middle of the third millennium BC attributed to the Ljubljana culture, which was widespread in the Ljubljansko barje and in the Adriatic region (Leghissa 2021). According to the newly-defined Ljubljana culture, it includes mainly decorated fine ceramics, on the one hand, and common ware, coarser vessels that mainly reflects contact with the Somogyvár-Vinkovci culture, on the other. The redefinition has raised many new questions, especially concerning the relationship between the individual contemporaneous pile-dwellings in the Ljubljansko barje. Through archaeometric analysis, we have tried to determine whether we can detect similarities and/or differences in pottery between the contemporary sites, especially in the manufacture of vessels and the recipes used for their preparation. Are such similarities/differences a reflection of contact and exchange, and can they also reflect the status of individual sites in this small area?

At the EAA conference, we will present the preliminary results of optical microscopy analyses. We will also consider the results of analyses conducted in other neighbouring areas that will be used to identify possible imports.

## 20 IN SEARCH OF LOST SYMBOLISM. NEW DIRECTIONS IN THE INTERPRETATION OF PREHISTORIC ANTHROPOMORPHIC VESSELS

**Abstract author(s):** Turcanu, Senica ("Moldova" National Museum Complex of Iasi Romania)

**Abstract format:** Oral

For all historical periods and in all cultures, the metaphor of the vessel as a representation of the human body is recognized and documented by numerous ethnological and anthropological references. Taking this axiomatic statement into consideration, one can say about anthropomorphic vessels that they have a dual character, with a special value. On the one hand, these are containers, on the other hand, they have a human or partially human form.

Present as early as the Neolithic and well into the Bronze Age, and spread from the Orient to Central Europe, relatively rare in all cultural areas, the anthropomorphic vessels are regarded as an important category of sacred objects. Beyond their utilitarian function, the symbolic potential embodied by their particular form had multiple avenues of meaning.

There exist several classifications, some extremely elaborate, that systematize these pieces. Some of the symbols encoded in their shapes and decorations seem to indicate a complex, superregional coded communication system, most probably employed in religious and social contexts.

In this particular scope, I will focus the core of the presentation on a species of representation of the anthropomorphic vessels that is quite particular, little noticed or – more correctly – never analyzed or discussed per se. This peculiarity is connected, in my opinion, to the existence, since the 5th-4th millennia BC, of a double-faced deity in the imaginary universe of Neolithic and Chalcolithic communities in Central and Southeastern Europe, most likely possessing attributes similar to the god Janus Bifrons of classical Roman mythology.

The hermeneutic potential embedded in these special artifacts will be highlighted both by analyzing some containers that have long been circulating in the literature, as well as some pieces that are not published yet.

---

## 273 FAIRLY FRONT-LOADING THE ARCHIVE: MOVING BEYOND FINDABLE, ACCESSIBLE AND INTEROPERABLE TO REUSE OF ARCHAEOLOGICAL DATA

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Aspoeck, Edeltraud (Austrian Centre for Digital Humanities and Cultural Heritage, Austrian Academy of Sciences) - May, Keith (Historic England) - Wright, Holly (Archaeology Data Service, Department of Archaeology, University of York)

**Format:** Regular session

Archaeologists and digital practitioners have been working for over 20 years to make archaeological data Findable and Accessible, and in the last 10 years, much has been accomplished to also make more of this data Interoperable. The advent of the FAIR Principles (<https://www.go-fair.org/fair-principles/>) in 2016 set out that data must also be Reusable. Making archaeological data Findable, Accessible and Interoperable does not necessarily mean it will be Reusable however, or available in the most reusable form.

Initiatives such as the ARIADNE infrastructure, currently funded under the Horizon 2020 programme of the EC (<https://ariadne-infrastructure.eu/>) and the SEADDA COST Action, funded by the Horizon 2020 Framework Programme of the EU (<https://www.seadda.eu/>) are working to ensure Reuse is considered equally with the rest of the FAIR Principles.

This session addresses the reuse of data in archaeology from multiple perspectives including presentations of results from the aforementioned projects along with contributions from the wider archaeological community. We invite papers that explore key questions such as:

- How can we optimise archaeological data and research interfaces for re-use?
- How can we better understand qualitative re-use of archaeological data and what facilitates new knowledge creation?

- How do we reflect differences in records of scientific data and interpretive or deductive reasoning?
- How can access to archaeological data by the wider public gain greater benefits for society?

We also invite papers illustrating the above using specific case studies or projects. These may involve the reuse of archaeological fieldwork data from excavation or post-excavation analysis and synthesis work (e.g. reuse of stratigraphic data, or related finds, environmental, or scientific dating data, either from multiple interventions on a particular site, or re-using other peoples related data from multiple sites). We are particularly interested in case studies that can discuss challenges and opportunities encountered with the reuse of such data.

## ABSTRACTS

### 1 THE URGENT NEED FOR CONSENSUS FOR FAIRY ROCK ART DATA

**Abstract author(s):** **Bofica, Natalia (Lab2PT; Unidade de Arqueologia da Universidade do Minho) - Luís, Luís (Fundação Côa Parque) - Silva2, José (Lab2PT; Fundação para a Ciência e Tecnologia)**

**Abstract format:** Oral

The Côa Valley, considered "the most important site with open-air Paleolithic rock art", was inscribed by UNESCO as a World Heritage Site in 1998. Although the rock art of the Côa Valley has been intensively studied in the last 23 years by the Archaeological Park of the Côa Valley (PAVC), the Iron Age is a chronological period where there is a greater deficit of study and knowledge.

The work we will present was developed under the RARAA project, funded by the Fundação para a Ciência e Tecnologia (FCT) "COA / OVD / 0097 / 2019- Rock Art Open Access Repository", aiming to study the Iron Age rock art of the Côa Valley and the accessibility of data in an open access repository, describing the methodology used and seeking to implement best practices for organization, recording, storage and sharing of data.

In this presentation we will give particular emphasis to the FAIR principles adopted, seeking consensus, both in the structure and in the attributes and vocabularies used, serving not only the purpose of safeguarding the data, but also its management, study and sharing. The study and interpretation of archaeological sites and rock art depend heavily on access to existing data, namely to seek parallels and cross-reference data for more comprehensive studies. Thus, we will present the RARAA project as a case study, making available in an open-access online data repository, metadata and paradata, 3D models, photos, vector drawings and maps of Iron Age rock art in the Côa valley.

### 2 WHITHER GIS? – SOME CHALLENGES OF USING AND REUSING SPATIAL DATA FROM ARCHAEOLOGICAL FIELDWORK

**Abstract author(s):** **McKeague, Peter (Historic Environment Scotland)**

**Abstract format:** Oral

Spatial data is fundamental to documenting our past, underpinning research questions and informing the decision we – and others – take in the protection and stewardship of the historic environment.

Through the INSPIRE Directive, National Agencies are required to publish metadata, view and download services for Protected Sites datasets within a European framework. In contrast to these 'curated' datasets, there is neither the mandate, nor the mechanisms to coordinate, curate and share data created through archaeological fieldwork and research. The degree of standardisation in documenting fieldwork recording and archival deposition varies considerably across Europe posing considerable challenges to the reuse of data. Both are key factors in not realising the potential of 'collated data' from multiple sources. The challenges of stewardship of the data have been highlighted through SEADDA COST Action Work Group 1, but assuming the data has reached an archive, how easy is it to retrieve that data? Earlier this year, SEADDA Work Group IV ran an online survey to evaluate the quality and usefulness of online portals for information discovery and retrieval. For spatial data, the questionnaire explored three questions

- How easy is it to find GIS data in an archive?
- Can I view and download GIS data in a portal?
- Can I find and use a View or Download service in my own system?

Informed by the survey results and through the lens of a Scottish context, this presentation will discuss some of the challenges presented in reusing GIS data from primary sources.

### 3 PEPADB: PUTTING THE FAIR PRINCIPLES INTO PRACTICE

**Abstract author(s):** Romero García, Galo - Garrido-Cordero, José Angel (Department of Prehistory and Archaeology - Universidad de Sevilla) - Odriozola, Carlos P. (Department of Prehistory and Archaeology - Universidad de Sevilla; UNIARQ - University of Lisbon)

**Abstract format:** Oral

The main interest in the publication of spatial indexed archaeological data is to offer users the possibility of querying, downloading and/or accessing them in external applications. These apps are aimed to model, analyze, display or generate new geospatial data, information and value-added resources, both in the social and economic spheres.

Given the extremely high cost of generating geographic information, the reuse of this data by users is highly expected. As the result of not complying with the FAIR EU policy, the already existing spatial indexed archaeological data are not easily accessible and therefore reusable, neither to the public, nor to the academia (Sobotkova, 2018).

PEPAdb (Prehistoric Europe's Personal Adornment) is a multidisciplinary and open research project which has materialized in an SDI (Spatial Data Infrastructure) and a web-app for the online publication of georeferenced archaeological scientific data referring to personal adornment in European Recent Prehistory. It accounts for thousands of records on Prehistoric Personal Adornment from over 900 archaeological sites on the Iberian Peninsula, giving access not only to thematic cartographies, but also to raw data and empirical data sets through an online cartographic viewer, and a database query app.

This initiative aims to comply with the FAIR principles, placing special emphasis on data reusability. Data repositories (such as Dataverse, among others) can generate a formal citation for each piece of data according to specific standards, in addition to automatically assigning the DOI (Document Object Identifier) and the so-called persistent identifiers, providing a greater accessibility to (meta)data (Wilkinson, 2016).

Referenced cites:

- Sobotkova, A. (2018). Sociotechnical Obstacles to Archaeological Data Reuse. *Advances in Archaeological Practice*, 6(02):1-8. DOI: 10.1017/aap.2017.37.
- Wilkinson, M.D. et al. (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data*, 3, 160018. DOI: <https://doi.org/10.1038/sdata.2016.18>

### 4 FAIRLY DATA, FURTHER KNOWLEDGE: THE 2ARCHIS DATABASE AND POTTERY ANALYSIS

**Abstract author(s):** Machado, Diego (Unidade de Arqueologia da Universidade do Minho; Laboratório de Paisagens, Património e Território; Fundação para a Ciência e Tecnologia) - Bofica, Natália - Fernandes, Lara - Martins, Maria Manuela - Magalhães, Fernanda - Sousa, Rui (Unidade de Arqueologia da Universidade do Minho; Laboratório de Paisagens, Património e Território)

**Abstract format:** Oral

The Archaeology Unit of the University of Minho (UAUM) has carried out systematic archaeological activities in the northern region of Portugal since 1977, which has provided a significant set of data, where we highlight the enormous collections of spoils. Since the 1990s, however, it was decided to focus on more effective instruments for the storage and management of these data, whose accumulation in physical media was unviable both because of the space it occupied and the obstacles it offered to consultation. The database has evolved over the past two decades, both in the incorporation of new modules for recording archaeological data, but also in the standardization of attributes and the vocabulary used. Currently, the 2ArchIS information system, in addition to the objective of safeguarding and internally managing the data through the various ways of visualization and obtaining quantitative and qualitative analysis of an increasingly large set of data, also aims to make its data visible and shareable by the entire community through its publication in a repository.

Thus, we propose for this work to present the results of the application of FAIR principles to the registration of data and metadata of ceramic material from archaeological excavations conducted by UAUM in very diverse contexts and chronologies, a phenomenon that is at the same time challenging, due to the technological, formal and decorative variety of the materials, however, for the same reasons, enriching from the methodological point of view. We will also present some studies carried out, where the access and interoperability of data from different excavations is fundamental to enable their cross-referencing and visualization in more comprehensive studies.



## 5 MONITORING THE CONSERVATION OF OPEN-AIR MESOLITHIC SITES USING SPATIAL DATA INFRASTRUCTURES: IMPLICATIONS FOR CULTURAL HERITAGE STUDIES

**Abstract author(s):** Gómez-Puche, Magdalena - Fernández-López de Pablo, Javier (Research Institute of Archaeology and Historic Heritage - INAPH. University of Alicante)

**Abstract format:** Oral

The integration of SDI technologies and the reuse of archaeological fieldwork data allow to assess the impact of urbanistic and infrastructure development on open-air Mesolithic site's preservation and provide precise information needed to develop CRM policies at local, regional, and national action levels.

In this paper we present two case studies located in Eastern Spain: The Mesolithic open-air sites of Casa Corona (Vilena, Alicante province) and El Collado (Oliva, Valencia Province). Both sites, were excavated in rescue operations in 2008 and 1987-1989 respectively, providing Mesolithic burials and human remains of major cultural and bioanthropological scientific significance. However, unexcavated adjacent archaeological areas of both sites have been partially destroyed afterwards.

Here, we show how the combination of accurate imagery and LIDAR elevation data provided by public (free access) data repositories, primary archaeological spatial data acquired during excavations and published information digitized, can be effectively integrated using Geographic Information Systems to monitor the impact of urbanistic and infrastructure development on both sites and perform risk assessment for future planning.

We believe this case study exemplifies the benefits of applying the FAIR principles to Mesolithic archaeological data. We hope that this example will encourage similar actions from fellow professional archaeologists and will foster efficient conservation strategies from public and private stakeholders.

## 6 PLEASE RECYCLE: ARCHAEOLOGICAL LEGACY DATA AND REUSE IN SWEDEN

**Abstract author(s):** Kaiser, Jessica - Friberg, Zanna (Uppsala University)

**Abstract format:** Oral

Archaeology is a messy business. This messiness extends from the heterogeneity of the material uncovered and the often cross-disciplinary teams of specialists who employ diverse methods to analyze them, to the destructiveness of the excavation process itself and the often unruly nature of the archives generated to preserve data that can only be collected once. In only one generation, project archives have gone from being predominantly analog to mainly digital, and deposition of reports and datasets in repositories such as ADS (UK), tDAR (US), and Forn dok/HER (Sweden) has become increasingly common.

This growing reliance on digital storage and the increase of born-digital data has prompted concerns about sustainability, initially focused mainly on stability and forward compatibility. Recently, discussion has shifted to interoperability and reuse, concluding that legacy data require an additional layer of contextual data that describes the data itself (metadata) as well as the collection process (paradata).

But what, exactly, do we mean by "re-use"? Archaeological archives are themselves as heterogeneous as the discipline from which they derive, and the re-usability of a dataset may vary depending on who is reusing it and for what purpose. Further, previous studies suggest that legacy datasets are only infrequently accessed by scholars. It may serve us well to investigate whether this truly depends on the lack of contextual data.

To better understand how archaeological legacy data is reused in practice, data was harvested from three different repositories in Sweden: research applications registered with the Swedish History Museum, download-counts of archaeological datasets and reports through the Swedish National Heritage Boards' search interface (Forn dok/Arkivsök), and web search statistics from the Swedish National Data service. Initial results suggest that the relationship between contextual data, access, and reuse is more complicated than previously thought.

## 7 SHARING AND REUSE OF OPEN AND FAIR DATA: INSIGHTS FROM THE ARIADNE SURVEYS

**Abstract author(s):** Geser, Guntram (Salzburg Research Institute)

**Abstract format:** Oral

In recent years the principles of open and FAIR data have been adopted by ever more research funders with the goal that data collected or generated by projects become publicly accessible and reuseable. In this endeavour data reuse is seen as a key indicator for a return on investment in research projects, data repositories and networking infrastructure. The impact of this expectation is increasingly felt also in the archaeological research and data management community.

This contribution to the session will focus on what is known about the sharing, access to and reuse of archaeological data from the largest available surveys of the ARIADNE data infrastructure initiative. Surveys have been carried out in 2013 and 2019 with participation of researchers, directors of research organisations and project and repository data

managers. A survey in 2021 also specifically investigated how well archaeological repositories comply with the FAIR principles.

From this rich record of surveys results concerning requirements for open and FAIR archaeological data and emerging practices will be presented, for example, identified patterns in researchers' sharing and reuse of different data resources or what would help repositories most to support open data access and reuse (e.g., in terms of policies and standards). The presentation will provide insights into the landscape of archaeological data sharing and reuse as a background for examples of specific cases.

## 8 DATA DISCOVERY AND DATA RE-USE IN ARIADNE

**Abstract author(s):** Richards, Julian (Archaeology Data Service, University of York)

**Abstract format:** Oral

The ARIADNE European research e-infrastructure has created a portal that allows interoperable resource discovery across 20 countries and over 2m digital resources. However, the portal's value is not just in finding data, as it also a powerful research tool for data visualisation in its own right. Its timeline and map-based search permit the exploration of data trends, highlighting national and regional differences in the archaeological record. Some of these relate to differences in national archaeological recording traditions, whilst others reflect real differences in the past - both are valid areas for future research. The project has now created the ARIADNE Lab, a suite of tools that allow the more advanced user to directly interrogate the ARIADNE Knowledge Base – the triplestore that underpins the portal. This paper will demonstrate how the Portal and Lab can facilitate Big Data research and data-reuse. It will also show how they can be adapted for specific sub-domains, introducing their use in the study of marine heritage.

## 9 THE ROCEEH OUT OF AFRICA DATABASE: A CASE STUDY IN REUSING ARCHAEOLOGICAL DATA SENSIBLY

**Abstract author(s):** Kandel, Andrew - Kanaeva, Zara - Sommer, Christian - Haidle, Miriam (Heidelberg Academy of Sciences and Humanities)

**Abstract format:** Oral

In this talk, we discuss our experience in aggregating archaeological data from the past 150 years into the ROCEEH Out of Africa Database (ROAD). We offer ROAD as a case study for learning how to reuse previously published information and integrating its content into a robust digital framework. By assimilating data written in many languages from sites in Africa and Eurasia spanning from three million years until 20,000 years ago, we add value and also preserve information for future generations to use and reuse. By linking ROAD with ARIADNEplus, we made the data more findable. The data are digitally accessible to scholars and the public through an open license and user interface. The data can be linked and downloaded in several formats, making them interoperable with other systems. Finally, the data have been both reused through their integration into ROAD, and are now ready to be reused by others.

To reuse the data, we first developed a method to distill the elements that we thought would be most informative based on the collective experience of our team consisting of archaeologists, paleoanthropologists, paleontologists, paleobotanists and geographers, as well as data scientists. To overcome vast differences in research traditions, we had to decide upon a least common denominator that would be available regardless of when and where data were collected and published. We also needed to harmonize the data to ensure that their entry into the database would flow smoothly. We learned to standardize data formats, wrote detailed specifications, and developed vocabularies to ensure as much consistency as possible. In the end, we discovered the perils and pitfalls of data reuse and applied what we learned in real time to optimize their entry into ROAD. Through this process, we feel that we created a database that is robust, sustainable and multidisciplinary.

## 10 DEALING WITH DIGITALLY BORN LEGACY DATA AND LESSONS FOR THE FUTURE – PROJECT URDAR AND SWEDISH CONTRACT ARCHAEOLOGY

**Abstract author(s):** Larsson, Asa (Swedish National Heritage Board) - Löwenborg, Daniel (Department of Archaeology and Ancient History, Uppsala University) - Jonsson, Maria - Nordinge, Johan (Swedish National Heritage Board) - Páls-son, Gísli (3GIMBALS) - Smith, Marcus (Swedish National Heritage Board)

**Abstract format:** Oral

Project Urdar is a collaboration between Uppsala University and the Swedish National Heritage Board. It was initiated in 2020 with the aim of ensuring that thousands of georeferenced field documentation databases are transformed from proprietary formats into open and reusable ones. Preservation is only part of the goal, as the data also needs to be made accessible and interoperable, useful for further analysis and knowledge production. Dealing with legacy data which is still only 5-20 years old has brought the team a lot of insight into the challenges facing 21st C archaeology. The professionalisation and adoption of digital methods will paradoxically result in worse preservation of knowledge from excavations undertaken in the previous centuries, unless major changes are implemented. The

challenges are only partly technical, mostly it is a question of human practice and incentive, from field archaeologists to government agencies.

We will present the ongoing work FAIRifying digitally born field documentation from Swedish contract archaeology, and the technical and human issues that have to be dealt with, as well as some uses that are possible. The data should still be considered as raw field documentation and needs to be complemented with information available in the reports. Attempting to reuse the data, and to recreate the interpretive process of the excavation serves to illustrate some of the challenges of reuse of documentation out of context.

We will also present the steps taken by the project to engage stakeholders from both public and private sectors in the process, in order to bring about wider systematic changes. We will highlight how this work will become part of the new national research infrastructure for digital archaeology – SweDigArch – which was recently approved by the Swedish Research Council.

## 11 CREATING FAIR ARCHAEOLOGICAL DATA IN NORWAY

**Abstract author(s):** Uleberg, Espen (Museum of Cultural History University of Oslo) - Ore, Christian-Emil (Department of Linguistics and Scandinavian Studies, University of Oslo) - Dell'Unto, Nicolo (Museum of Cultural History, University of Oslo) - Callieri, Marco (Institute of Science and Technologies of Information - National Research Council) - Matsumoto, Mieko - Bonelli, Letizia - Kimball, Justin - Pantos, Alexis - Kristensen, Steinar - Samdal, Magne (Museum of Cultural History, University of Oslo)

**Abstract format:** Oral

This paper presents recent achievements in creating archaeological FAIR data in Norway and making it accessible nationally and internationally. The Norwegian university museums have cooperated since the 1990s to create infrastructures for the collections and photographic archives. The latest infrastructure project is ADED (Archaeological Digital Excavation Documentation).

The ADED project has created a national infrastructure for detailed archaeological excavation data. The Norwegian university museums have used 2D Intrasis for field documentation since 2011. ADED has converted these projects to Postgres and published them at [aded.unimus.no](http://aded.unimus.no) with artefacts and photo documentation from each site viewable through links to the artefact database and the digital photo archive. This repository is mapped to CIDOC-CRM to facilitate integration into ARIADNEplus.

Data can be queried, accessed and downloaded from any individual project, as well as across multiple projects.

The ADED website has links to [kulturminnesok.no](http://kulturminnesok.no) — the public version of the National Heritage and Environment Register, Askeladden — and will also have links to excavation reports archived at the university museums.

ADED has made years of archaeological results available for researchers and the general public, and the open publishing contributes to a democratisation of knowledge through a single website that gives access to measurements, photo documentation, and artefacts from all excavations undertaken in Norway over the last 10 years.

A future extension of ADED will be the integration of 3D data. KHM and the other Norwegian university museums will use more 3D documentation of excavations. KHM addresses this through BltFROST, where one of the goals is to refine methodology and encourage re-use. To achieve this, we have chosen to use 3DHOP to give online access to the 3D models. The BltFROST interface, built on 3DHOP, enables annotation and sharing of models, thus facilitating the active exchange of ideas in research, teaching and outreach.

## 12 DATA FRAGMENTATION, COMPLEXITY, AND THE CASE OF SWEDISH ARCHAEOLOGY IN THE MEDITERRANEAN. THE COMMON GROUNDS PROJECT

**Abstract author(s):** Nenova, Denitsa (Norwegian Institute at Athens; Takin.solutions) - Bruseker, George (Takin.solutions) - Wallenstein, Jenny (Swedish Institute at Athens) - Hansson, Ulf (Swedish Institute in Rome) - Frejman, Axel (Uppsala University)

**Abstract format:** Oral

In contemporary archaeological practice, archaeological data suffers from three main conditions: 1. the accumulation of vast amounts of data, 2. considerable fragmentation of data, and 3. the fast technological progress resulting in a constant need of new or upgraded data solutions to ensure sustainability and accessibility. Moreover, as data multiplies, so does data complexity. As a result, rather than a growing network of connected knowledge, researchers are faced with a growing set of disconnected data pools.

The 'Common Grounds' semantic data project aims to bring together tested work in semantic data representation of archaeological datasets for providing a consistent conceptual model and create an integrated semantic data management platform for the Swedish Research Institutes in Rome, Athens, and Istanbul. Given a number of base datasets the data will be transformed using CIDOC-CRM ontological framework and loaded into an instance of the open source platform 'Arches'. The datasets will thus be accessible and open for research to data owners and their collaborators from different locations in the world. Initially inter-institutional, this will allow the potential connection

with external data sources in the future. The semantic nature of the transformed data will ensure its sustainability and independence from a specific data platform for decades to come and will facilitate not only the integration of other relevant datasets but also the creation of semantically-born data.

### 13 ARGENTINIAN DIGITAL ARCHAEOLOGICAL DATA GOING FAIR. OPPORTUNITIES, STRENGTHS AND CHALLENGES FOR THE REUSE OF INFORMATION AVAILABLE IN OPEN ACCESS

**Abstract author(s):** Izeta, Andres - Cattáneo, Roxana (CONICET; Universidad Nacional de Córdoba)

**Abstract format:** Oral

Argentina's national archaeological data is public information. However, its access is unequal, as much information remains in analogue format. Considering this context, since 2010 we have been working on the digitization of various types of archaeological information to allow a more democratic access to the data such as published material to raw data. In this context, the FAIR, TRUST and CARE principles are of vital importance as a framework for an ethical and democratic management of information. The Suquía Repository and the IDACORDIG platform, dedicated to the custody of digital information of archaeological origin, as the oldest repository dedicated to archaeological data, have incorporated several tools that allow the use and re-use of the information deposited there. The principal products on the repository are the database of archaeological sites of the Province of Córdoba (BADACOR) and a virtual library that compiles over 6000 objects (published and grey literature) generated from the 1880s to the present (BIBARQARG). BADACOR is the most comprehensive curated tool since it has standardized its metadata and allows linking the information of each archaeological site to the publications and databases available in the Repository and with IDACORDIG. The BIBARQARG database provides not only links and full text files in open access format but also provides a set of metadata that allows better information retrieval. The latter has been carried out as an action by the Argentine Digital Archeology Network. In short, standardizing data and metadata, adding a greater number of descriptors to each digital object, attaching a set of para-data in each case, and monitoring the metrics of visits and use of the information becomes an important asset to guarantee a FAIR use of archaeological data on a national scale.

### 14 THE MATRIX: CONNECTING AND RE-USING DIGITAL RECORDS OF ARCHAEOLOGICAL INVESTIGATIONS

**Abstract author(s):** May, Keith (Historic England; University of South Wales) - Taylor, James (University of York) - Binding, Ceri (University of South Wales)

**Abstract format:** Oral

Stratigraphic laws, principles (Harris 1989), and data underpin the archaeological records from excavated sites and are essential for integrated analysis, wider synthesis and accessible digital archiving of the growing body of archaeological data and reports generated through the commercial archaeological sector in the UK and internationally. On most excavated sites, the stratigraphic record, commonly visualized and to a degree quantifiable, in the form of a stratigraphic matrix, acts as the primary piece of evidence for how, and in what order, the site was excavated. As such the stratigraphic record is the key mechanism that enables anyone less familiar with the site, to re-visit the excavation records, understand what data is most relevant and re-usable for any research questions, or problems encountered, and piece together the underlying details of how the interpretations by the excavator(s) were arrived at. However, such primary records are often only held on paper or scanned copies of matrix diagrams that cannot easily be re-used with associated data. Often the key phasing data needed for re-use in synthesis work and interpretive understanding, let alone Bayesian Chronological modelling of scientific dating evidence, is not consistently documented, if at all, in archives. This results in key records being unsearchable or remaining unconnected, unused, and lacking interoperability with other data (unFAIR).

The focus of digital archives and museums is switching from simply providing better access to digital archives, to how users in commercial units, curatorial organizations and academia, along with the wider public, can make best use of this growing body of digital information and data.

This paper will discuss the re-use issues and present latest work undertaken by The Matrix project [AH/T002093/1] to address some of the current problems caused by the lack of standardized approaches to analysis and digital archives of archaeological stratigraphic and phasing data.

- 15 IMPROVING THE REUSABILITY OF RELATIVE AND ABSOLUTE CHRONOLOGICAL INFORMATION BY AUTOMATING AND ARCHIVING THE BAYESIAN CHRONOLOGY CONSTRUCTION PROCESS**
- Abstract author(s):** Moody, Bryony - Buck, Caitlin (University of Sheffield) - Wright, Holly (Archaeology Data Service) - Dye, Thomas (University of Honolulu) - May, Keith (Historic England)
- Abstract format:** Oral
- Archaeological excavations produce a wealth of data. Due to the unrepeatable nature of this fieldwork, once the site is fully excavated, digital records must be archived in a manner that best facilitates reuse. However, in our experience, despite the best efforts of digital repositories such as ADS, archiving data does not ensure reusability. In this talk, we discuss attempts to reuse data for chronological modelling. We focus on three case studies where the user wished to reuse digital chronological data and ran into problems.
- Following this, we will outline a prototype software we are developing for handling the relative and absolute dating evidence. This software focuses on evidence obtained during single context excavations, as carried out in many European countries such as the UK. This software uses mathematical graph theory to manage stratigraphic and chronological information during Bayesian chronology construction.
- We provide an overview of the process that the software follows. Following this, we will focus on managing data during this process. Such management includes: at which points in the process we save data from the software; what format should our data be in; and which data to archive. Finally, we provide recommendations specific to chronological data that seek to improve the reusability of such data for future users.
- 16 BRINGING EXCAVATION DATA TOGETHER. ARE WE THERE YET AND WHERE IS THAT?**
- Abstract author(s):** Nenova, Denitsa (Takin.solutions Ltd.; Norwegian Institute at Athens) - Bruseker, George (Takin.solutions Ltd.) - Derudas, Paola (Lund University) - Hiebel, Gerald (University of Innsbruck) - Hivert, Florian (Centre national de la recherche scientifique - CNRS) - Katsianis, Markos (University of Patras) - Marlet, Olivier (Centre national de la recherche scientifique - CNRS) - Opitz, Rachel (University of Glasgow) - Ore, Christian-Emil - Uleberg, Espen (University of Oslo)
- Abstract format:** Oral
- Archaeological data repositories usually integrate excavation data archives as single data collections with restricted capacities to accommodate excavation data interoperability at the sub-collection level. This is largely due to the complexity of excavation data archives that are compiled with different tools and methodologies, use distinct conceptual descriptions at variable granularities, can often be unfinished or open-ended and may be linked to all sorts of digital data types, each with its own complicated production workflow. In the past decades, several attempts to adapt CIDOC-CRM in order to provide more explicit descriptions of the excavation domain have resulted in several model extensions (e.g. CRMarchaeo, CRMsc, CRMba). Each focuses on corresponding aspects of the excavation research process, while their combined usage holds an already demonstrated potential to support expressive data mappings at the sub-collection level. As part of the ongoing ARIADNEplus project, several CIDOC-CRM developers and domain experts have been working as a group and engaging in conceptual mapping exercises to address the practicalities of bringing excavation data descriptions together. In this presentation we will consider several issues that may be affecting the applicability of existing solutions and link these to our overall expectations/aspirations in terms of excavation data discoverability and reusability.
- 17 REUSE OF RESEARCH DATA FOR GIS-ANALYSES. USE CASE OF BRONZE AGE MINING IN THE LOWER INN VALLEY AND PINZGAU (AUSTRIA)**
- Abstract author(s):** Danthine, Brigit - Hiebel, Gerald - Scherer-Windisch, Manuel (University of Innsbruck)
- Abstract format:** Oral
- Within the Research Center HiMAT (History of Mining Activities in Tyrol and Adjacent Areas) different projects were conducted aiming to investigate mining activities in Tyrol and Salzburg from Prehistory to Middle Ages. Within them not only existing research data, freely available information or material from previous publications were reused, but the research data of the projects in return flowed e.g. into the ongoing project "Information Integration for Prehistoric Mining Archaeology".
- One goal of this project is to investigate more closely the regions Brixental (Tyrol) and Mitterpinzgau (Salzburg), located between the well-studied mining areas of Unterinntal and Mitterberg. One method used for this purpose are GIS-analyses, with which potential regions for unknown sites are determined based on known sites. This analysis included processed research data from previous projects, as well as various freely available geodata, such as availability of water or geographic features extracted from surface models, e.g. slope or exposure.
- The data from previous research projects come e.g. from "Open Research Data for Mining Archaeology", which objective was to process the generated research data from surveys and excavations conducted in the project "Prehistoric copper production in the Eastern and Central Alps" as FAIR [<https://www.go-fair.org/fair-principles/>] data and

integrate them into the ARIADNEplus-portal [<https://ariadne-infrastructure.eu/portal/>]. Other projects like "Text Mining Medieval Mining Texts" aimed to transcribe medieval manuscripts, annotate them and extract and model their information. The historical sites were localized by reusing old map data [e.g. <https://hik.tirol.gv.at/>], gazetteers from previous projects [<http://onomastik.at/content/flurnamendokumentation-im-bundesland-tirol>] or published works [like Pirkl (1961): *Geologie des Trias-Streifens und des Schwazer Dolomits südlich des Inn zwischen Schwaz und Wörgl* (Tirol), in: *Jahrbuch der Geologischen Bundesanstalt* 104.].

All data were interoperably processed using the event-based CIDOC CRM [<https://www.cidoc-crm.org/Version/version-7.2>] and uploaded to the LOD-cloud. Through interfaces like the Sparqling-Unicorn-plugin for QGIS [<https://github.com/sparqlunicorn/sparqlunicornGoesGIS>], this data can be specifically queried for the analyses.

## 18 MAKING OLD DATA NEW – OBSTACLES AND OPPORTUNITIES IN THE RE-USE OF DATA FOR CONSTRUCTING A BOG BUTTER DATABASE

**Abstract author(s):** O'Toole, Karen (University College Dublin)

**Abstract format:** Oral

The FAIR Principles are the foundation of data management for present-day researchers in any discipline. However, the application of these principles is relatively new and as archaeologists we often rely on data created prior to their implementation. Reusing such data poses a number of obstacles that can be time-consuming and difficult to tackle. However, particularly in the light of the COVID-19 pandemic, the reuse of data has come to the forefront as an approach researchers can use to mitigate or substitute for data that is inaccessible either temporarily or permanently. While challenges such as the interoperability, standardisation and original purpose of such data continue to exist, the opportunities presented to us by the reuse of data are becoming increasingly clear.

Using the construction of an Irish bog butter database as a case study, this presentation will explore why I chose to reuse data; the challenges associated with this; and the opportunities this has presented. It will also look at how applying modern techniques to old data can create new knowledge and revolutionise our understanding of previously poorly understood phenomena – how we can make old data new again.

## 19 WORK DIGITAL, THINK ARCHIVE, CREATE ACCESS - CREATING RESOURCES TO SUPPORT DIGITAL DATA MANAGEMENT AND ARCHIVES

**Abstract author(s):** Parker Wooding, Jen (Chartered Institute for Archaeologists) - Forster, Manda (DigVentures)

**Abstract format:** Oral

The question of how to manage digital archives has been a hot topic for archaeology for years. Digital technologies have transformed the way archaeologists work, providing innovative research tools, improving how we investigate sites and giving new life to knowledge about the past. As with all parts of an archaeological archive, digital data contributes to the long-term preservation of sites by providing key information which can be accessed by researchers and the public alike. How that information can be used in the future is an important consideration and, as innovative technologies become the norm, we must be sure that our archive processes adapt to incorporate new methods, tools, and data. FAIR Principles are central to the resource and the creation of archives which are designed with reuse in mind has been an important consideration of the project - but the development of Standards, guidance and resources only responds to part of the problem. Through a combined effort involving training and regulation, our aim at the Chartered Institute for Archaeologists (CIfA) is to support consistent implementation of good practice guidance across the archaeological sector within the UK and further afield. The Dig Digital project is an Archaeological Archives Forum (AAF) initiative which has focused on these issues for the past two years. Managed and delivered by DigVentures, in partnership with CIfA and funded by Historic England, the project concluded in February 2022 and the online resource is now available and hosted by CIfA as part of their digital Toolkit series ([www.archaeologists.net/digdigital](http://www.archaeologists.net/digdigital)).

## 20 RETAINING ROOTS WHILE HARD PRUNING DATA: CONTEXT AND COLLABORATION IN DIGITISATION AND DATA MODELLING IN SOUTH ASIA

**Abstract author(s):** Vafadari, Azadeh - Abdul Jabbar, Junaid - Khan, Afifa - C. Roberts, Rebecca - Campbell, Rosie - Gerrits, Petrus (McDonald Institute for Archaeological Research, University of Cambridge) - Gregorio, Jonas (Universitat Pompeu Fabra) - Suarez Moreno, Maria - Tomaney, Jack - A. Petrie, Cameron (McDonald Institute for Archaeological Research, University of Cambridge)

**Abstract format:** Oral

There are large numbers of published (and unpublished) archaeological sites and monuments in South Asia, but much of the available documentation is not available in a digital format, and paper publication remains the default. Information about archaeological heritage varies in detail, and there is considerable variation in how archaeological sites are documented. This paper explores the work and challenges of the Mapping Archaeological Heritage in South

Asia (MAHSA) project in digitising, modelling, re-interpreting, linking, and re-using non-digital archaeological data into a structured and standardised digital format using a common and unique controlled vocabulary, so that it may become findable, accessible, interoperable, and reusable data.

Working with partners in South Asia, the MAHSA project is compiling existing and published data (from published documents, reports, and surveys) to be published in an Open Access database (Arches platform), which can be used for research and preservation. New and previously undocumented sites identified through the analysis of historic maps, remote sensing, automated site detection methods, and field documentation will also follow the same data standards and recording methodology.

Retaining context while delivering 'cleaned' usable data is a key challenge to this type of data modelling, and the meanings of the original source and context are inevitably subject to re-interpretation during this process. The project is working collaboratively between South Asian and international stakeholders, each bringing their own expectations of data use, management, and accessibility, in addition to navigating the post-colonial space in which the project operates. To ensure usability, different use cases scenarios have been identified and are being developed with collaborators and database end-users. We argue that through linking archaeological data to their original sources and following best practices in modelling techniques, we can remain faithful to the original context while incorporating any change and enhancements where data needs to be verified and updated.

## 21 WHAT DOES USABILITY MEAN AND HOW CAN IT BE ACHIEVED? ONLINE CELTIC COINAGE (OCC) AS A CASE STUDY

**Abstract author(s):** Wigg-Wolf, David - Brand, Mirko (Römisch-Germanische Kommission des Deutschen Archäologischen Instituts - RGK) - Deligio, Chrisowalandis (Goethe-University Frankfurt, Big Data Lab) - Hofmann, Kerstin - Möller, Markus - von Nicolai, Caroline - Tietz, Julia (Römisch-Germanische Kommission des Deutschen Archäologischen Instituts - RGK) - Tolle, Karsten (Goethe-University Frankfurt, Big Data Lab)

**Abstract format:** Oral

The transformation from analogue to digital data is the core principle of the digital turn in the sciences and humanities. Within numismatics, this is visible in projects to digitise coin collections and publish them in online catalogues (e. g. IKMK and KENOM), or in coin find databases (e. g. AFE-RGK).

The project nomisma.org was founded to promote and support the application of LOD within numismatics, and is now firmly established internationally as the primary resource for the domain. Drawing on the vocabulary and ontology of nomisma.org, a range of web-based resources, such as OCRE for the Roman Imperial coinage, now translate individual coins from instances in collection or find databases to exemplars of standard typologies or classifications,.

However, in contrast to the coinages of much of the Graeco-Roman world, for which well established classifications exist, the lack of a single, universal classification for Celtic coinages presents a range of challenges. Instead there are a number of classifications for individual coinages and regions, many of which cannot be mutually reconciled.

To address this, the BMBF cooperative project ClaReNet is developing a nomisma-conform virtual union catalogue, Online Celtic Coinage (OCC) to provide both a human-user friendly resource and machine-readable, re-usable data for the semantic web (LOUD and FAIR). This presents not only a unique opportunity to attain interconnectivity between the disparate classifications of analogue publications, but also to incorporate contextual, in particular the archaeological information (distribution, findspot) that is essential for establishing the chronology of Celtic coinages and understanding their use.

Taking OCC as an example, this paper aims to explain how we would define LOD usability for Celtic coins and how data from different contexts of collection can be brought together in a virtual union catalogue.

## 22 A MULTIDISCIPLINARY RESEARCH PROJECT USING DIGITAL HUMANITIES FOR STUDYING ARCHAEOLOGICAL ARCHIVES: FIRST RESULTS IN PROGRESS AND OUTLOOKS

**Abstract author(s):** Tuffery, Christophe (INRAP - National Institute for Preventive Archaeological Research)

**Abstract format:** Oral

As part of an ongoing PhD since 2019 on the study of the effects of digital devices on archaeology and archaeologists' practices, particularly for field recording, we digitized field notebooks from the 1970s and 1980s from an excavation in which we participated between 1980 and 1988.

For the digital transcription of the contents of the digitized field notebooks, we have developed an application that makes it possible to place each of the contents of the notebooks in their archaeological context: excavation squares, stratigraphic units, archaeological structures, etc. But these notebooks also make it possible to reconstitute other contexts than just archaeological ones. This can be the sociological context of the excavation team, the scientific context of other archaeological sites of the same chronological period and/or geographically close by, the context of other researchers specializing in a subject and working on the site from time to time, the context of the period during which the site was carried out, etc. During the twenty years or so that this work site lasted, important upheavals

in the historical and epistemological context of archaeology occurred, notably with the appearance of personal micro-computing from the middle of the 1980s onwards and the place of preventive archaeology especially from the 1990s in France. On this site, we developed in 1985 a computer program which allowed us to record the field data from which we were able to recover the data and exploit them with recent software (GIS). The treatments that we carried out on these data make it possible to reconstitute precise illustrations of a part of the structures carried out on this building site, in particular in the form of plans of the archaeological structures found and the archaeological findings. From this example, a return of experience and perspectives are proposed.

#### **A. USING SEMANTIC MODELING TO CREATE FAIR OPEN DATA FOR ARCHAEOLOGICAL FIELD SURVEY: A SHOWCASE AND TOOLKIT (SEMAFORA)**

**Abstract author(s):** van Leusen, Martijn (Groningen Institute of Archaeology) - Bruseker, George - Nenova, Denitsa (takin.solutions) - de Haas, Tymon (Groningen Institute of Archaeology) - Siebinga, Sjoerd (Delving.eu)

**Abstract format:** Poster

This poster will present the background, aims, goals, deliverables, potential for wider applicability, and partners of the SEMAFORA project. This is a Netherlands Foundation for Scientific Research (NWO) funded Open Science project running from March 2022 to March 2023, in which survey specialists from the Groningen Institute of Archaeology will collaborate with two SME's with expertise in semantic modeling. Field surveys have, since about 1970, been the main method by which archaeologists discover and record findspots and individual finds at the earth's surface. Whilst for the Mediterranean area alone the documented finds already run in the millions, the lack of documentation standards effectively prevents researchers and heritage managers from conducting large-scale analyses. The SEMAFORA project seeks to build and showcase a software toolkit that will allow them to share and query this fundamental and irreplaceable resource in a distributed, online form, taking advantage of existing work in semantic data modelling in the cultural heritage sector.

#### **B. REUSING FIELD SURVEY DATA FOR NEW QUESTIONS: A CASE STUDY FROM THE SIBARITIDE REGION (CALABRIA, ITALY)**

**Abstract author(s):** Parini, Martina (University of Groningen)

**Abstract format:** Poster

This contribution presents a case study about the reuse of archaeological field survey data from my ongoing PhD research, focused on the analysis of Southern Italy's rural landscapes during the Hellenistic and Roman periods. The primary goal of the project is to identify and explain large-scale diachronic patterns in the organisation of the countryside by comparing regional variations and similarities, based on pedestrian survey data.

In this poster, I look at the characteristics and significance of low-density pottery scatters, which are classified as 'off-site': these surface distributions are generally interpreted as important traces of long-term agricultural practices, temporal activities, or post-depositional actions. Therefore, they can contribute to reconstructing land-use strategies and contextualising the sites.

The two datasets analysed were collected between 2000 and 2014 in the Sibaritide region (northern Calabria, Italy) within the framework of different projects, one by the University of Groningen (Raganello Archaeological Project) and one by the University of Calabria (Castrovillari municipality). Each project used different methodologies, regarding for example sampling strategies and the definition of survey units. Having the possibility to access and query the primary databases of the projects, data selection and different approaches are utilised to answer the research questions. In addition, this project plans to merge the datasets by applying the mapping tools and standards developed by the Roman Hinterland Database Project, which created an integrated database for the suburbium of Rome.

---

### **274 APPROACHES TO COMMUNITIES IN THE PAST AND THE PRESENT**

**Theme:** 2. [Re]integration

**Organisers:** Borake, Trine (Museum Vestsjælland) - Beck, Anna (Museum Sydøstdanmark) - Heitz, Caroline (University of Oxford) - Austvoll, Knut (University of Oslo)

**Format:** Regular session

Community studies rooted in sociology are traditionally defined as a dichotomy between *Gemeinschaft* and *Gesellschaft* (Tönnies 1964). *Gemeinschaft* refers to community defined by personal relations such as family, ethnicity, religion or rank, whilst *Gesellschaft* refer to society characterised by rationality, formalised conventions, and contractual relationships mediated by money, benefit or advantages. An evolutionistic development from an immature *Gemeinschaft* to a mature *Gesellschaft* is often presupposed (Brint 2001). These definitions, however, have proven inadequate in recent studies, and new concepts introduced, viewing communities as a set of variable properties of interactions at multiple scales (Harris 2014). These interactions, it is suggested, can evolve around specific locations such as a village or town; grow from individual identities such as ethnicity or religion; or they can be based on struc-



tures such as family, clans or profession. They can be morally or imaginably described, multi-scalar and emotional, and defined by things, landscapes, animals and plants.

The aim of the session is to explore the concept of communities as a dynamic phenomenon. We wish to target discussions on the processes that form, maintain and dissolve communities in the past and how we investigate these archaeologically. We are specifically interested in the discussion of how these processes can be defined and identified in the archaeological record. Based on these discussions, we would like to explore how studies of past communities can give new perspectives on - maybe even pose critical questions to - how communities form, are maintained and dissolve today.

On that note, we invite contributions that discuss the dynamic processes of communities with a starting point in either case studies from the archaeological record of any period; more general theoretical reflections; or studies that reflect on how theories of past communities can inform present day sense of community.

## ABSTRACTS

### 1 SHARING SLAVES- RURAL COMMUNITIES SEEN THROUGH SLAVE DISPERSAL IN HIGH MEDIEVAL SWEDEN

**Abstract author(s): Roslund, Mats (Institute of Archaeology and Ancient History)**

**Abstract format: Oral**

One aspect of approaches to past communities lies in marrying the study of households to that of a wider rural region. The extent of such provinces can be pursued to better understand social organisation, economic integration and shared mental landscapes.

Communities organised into "provision provinces" (Sw. "bygd") are difficult to delimit. Just as rural villages depend on close everyday cooperation, wider circles of interaction are upheld by social content, created by close contacts among people in and between nearby farms. Since these communities carry both geographic and emotional connotations, mere distribution patterns of artefacts will not suffice for an interpretation. Theories and methods addressing shared stylistic traditions are vital.

This contribution focus on provision provinces distinguished by the exchange of slaves in High Medieval Sweden. Shared ceramic traditions are assumed to be transferred between groups of multi-generational female *ambátts*. By using stylistic traits in household pottery, communities where un-free individuals were shared and settled emerge. The distribution of pottery producing slaves can be interpreted as a social geography of interacting communities. The emerging pattern show smaller "provision provinces" where similar styles on pots were shared among the un-free. They could indicate spheres of political interest or kinship relations expressing community affiliations among the free population. Another outcome is an interpretation of how intensely slavery was used in the region, as well as the cultural identities of the thralls. A slow hybridisation process took place among local potters, with low acceptance of foreign styles and stable use of local Viking Age ware, indicating that the slaves were few and born within the households.

### 2 BUILDING COMMUNITY

**Abstract author(s): Villumsen, Sune (Museum Sydøstdanmark)**

**Abstract format: Oral**

A sense of belonging, group identity and shared values, in other words a community can be expressed in many forms in the material culture, including architecture and building traditions. As an example, I will present a case study from the Roman Iron Age on Zealand, Denmark.

The presentation will focus on a specific house type: the Ragnesminde-type, which is endemic to the eastern and southern parts of Zealand. The Ragnesminde-type, although limited in its geographical distribution, has great significance for our understanding of the development of Iron Age societies in the Roman Period in South Scandinavia. Traditionally dated to the Late Roman and Migration Period, the introduction of the Ragnesminde-type is linked to the first dynastic lineage controlling the import and distribution of Roman luxury goods in the region and as such, they are interpreted as elite residences. However, in recent years a systematic approach to radiocarbon dating has forced us to revise the chronology of the Ragnesminde-type. On that basis, it is suggested that it is a very short-lived phenomenon.

However brief, easy distinguishable architectural traits make the house stand out from both prior and later building traditions, which in turn share many similarities. This raises the question of the role of the house as a symbol of coherency and identification as a community or as an expression of a specific social stratum in Roman Iron Age society.

### 3 **SETTLING WITH THE NORM? USING NORM AND VARIATION IN MATERIAL CULTURE TO STUDY (ROMAN) IRON AGE COMMUNITIES IN THE NETHERLANDS**

**Abstract author(s):** de Vries, Karen (ADC ArcheoProjecten)

**Abstract format:** Oral

When studying later prehistoric societies in the Netherlands, it becomes evident that shared practices, as well as variations, exist in the settlement record. Traditionally, the shared elements on large scales are stressed, what we consider to be shared norms. Variations in material culture have received considerable less attention. This is regrettable, because through the study of both norm and variation in material culture, it is possible to understand how people synchronously can be part of larger communities and express their affiliation to smaller social groups.

In this contribution, the results of the author's PhD research on this topic are presented, through the analysis of house-building practices, general deposition practices and special deposition practices from (Roman) Iron Age (800 BC-AD 300) settlement sites in the northern Netherlands. Based on the analyses, that were performed on different spatial and social scales, normativity and variation in material can be understood in different ways. First of all, practices are best studied and understood as nested practices, in which some aspects of the practices were always shared and other aspects less frequently. The studied spatial and social scales played different roles in this throughout the period under study. Secondly, it has become evident that the degree of normativity, and thus of variation, varied not just between the subperiods but also between the practices within one subperiod. This means that the (Roman) Iron Age inhabitants of the northern Netherlands had different means at their disposal to stress both large-scale and small-scale affiliations. This contribution therefore stresses the importance of a multi-scalar and multi-practice approach.

More than just searching for a better understanding of the (Roman) Iron Age societies of the northern Netherlands, this contribution also aims to understand how the use of typochronologies in archaeology and the choices researchers make influence our understanding to the past.

### 4 **FROM ARCHAEOLOGICAL RECORD TO SOCIAL DYNAMICS: A NEW APPROACH TO INVESTIGATE SOCIAL ORGANISATION OF NURAGIC COMMUNITIES OVER THE BRONZE AGE**

**Abstract author(s):** Pisanu, Laura (University of Melbourne)

**Abstract format:** Oral

Human groups settled in Sardinia over the Bronze and Iron Age (1650 – 900 BC) are known as being part of the Nuragic civilization (Lilliu 1988) due to the stone-towers, which are called nuraghi. These monuments are supposed to have been built as power manifestations of rank-layered communities, whose leading or secondary role might have affected the management of supplies and social relations in terms of hierarchical organisation. In this light, earlier scholarship supposed that the most monumental buildings might have been on the top of Nuragic pyramidal-structured civilization. However, archaeological data may suggest more complex relationships among Nuragic societies including leadership-sharing, mutual and complementary interactions to achieve common goals. In this paper, critical questions on Nuragic social organisation will be raised through the analysis of archaeological record at Montiferru and Campidano regions (western Sardinia) which are part of a still in progress PhD project. Indeed, studies on landscape, architectural and artefacts of these areas may contribute to define different theoretical approaches for the better understanding of social dynamics that form and transform Nuragic communities and their multi-scalar interactions across Sardinia and the Mediterranean Sea.

### 5 **BUILDING EARLY VILLAGER COMMUNITIES: SOME REFLECTIONS FROM A NORTHWEST ARGENTINA FORMATIVE LANDSCAPE**

**Abstract author(s):** López Lillo, Jordi A. (Institute of Heritage Sciences, National Research Council - Incipit-CSIC) - Franco Salvi, Valeria (National University of Córdoba - UNC); National Scientific and Technical Research Council - CONICET) - Salazar, Julián (National University of Córdoba - UNC; National Scientific and Technical Research Council - CONICET)

**Abstract format:** Oral

The traditional narratives about the Neolithic or Formative way of life assume the existence of a monolithic community pooling labour to carry out the tasks required by newly developed agriculture and herding. Rooted indeed in a merely (but not always explicit) economic comprehension of the social bond, this idea tends to overlook the political dynamics and inner tensions of assemblages whose scale and historical novelty necessarily inform of some degree of experimentality; of expectable processes of formation, growth, and dissolution. In the present communication, we analyse the case of La Ciénega, a closed ravine in South Andes with an extraordinarily well preserved and surface-visible formative landscape made of clustered and scattered house compounds, an earthen mound, and multiple productive structures. This enabled a multiscalar approach that combines open area excavations with extensive surveys, UAV mapping, and high-resolution satellite imagery processed in a GIS model in order to discuss in greater detail the trends characterizing this early villager experience. Considering the articulation of inhabited

spaces, the monumentality and duration of house compounds as well as the detection of an earth mound interpreted as some kind of ritual space located in an "empty center", we will argue that such a community operated as a fragmented and heterogeneous assemblage of equals. From our point of view, this scenario stresses at once the potential autonomy of households, which could nevertheless share some degree of resources and work, and their willingness to live together in the always provisional equilibrium of a dynamic, non-authoritarian framework of relations.

## 6 WOMEN'S GRAVE COSTUMES FROM THE CRYPTS OF THE BIAŁOWĄS POST-EVANGELICAL CHURCH

**Abstract author(s):** Dobek, Mikołaj (Nicolaus Copernicus University in Toruń) - Majewski, Marcin (University of Szczecin)

**Abstract format:** Oral

Białowąs is a village located in north-western Poland, a couple of kilometres away from Barwice, a country town located in West Pomerania, Szczecinek district. The church and the vault were built in 1689-1693 by Otto Casimir von Glasenapp and his successive wives: Agnes de domo von Carnitz and Sophia Elisabeth de domo von Galbrecht. The tomb, the area of which is 75 sq.m., currently houses the remains of 32 wooden sarcophagi. The oldest one dates back to c. 1665 while the youngest ones go back to the first half of the 19th century. Buried there are members of the Pomeranian nobility of the von Glasenapp family. Necessary maintenance works and inventory carried out in autumn 2020 enabled a partial verification of people buried in the tomb, recording sarcophagi, coffins and tomb's objects.

During the archaeological work, a number of interesting objects, evidence of funeral behavior functioning among the aristocratic families of Western Pomerania were obtained. Among them, two grave dresses are distinguished significantly, which after the completion of field research were subjected to detailed analysis, conservation and reconstruction. They are made of silk fabrics. They are a perfect reflection of the 18th-century costume design and the functioning of aristocratic families in the areas under the influences characteristic of Western European court fashion. This is due to the fact that the analyzed costumes were not only clothes sewn to the grave, but also served as their owner during their lives. Such a state of affairs may contribute to the discussion on the importance of differences in clothing in the context of the social stratification, and also cultural influences flowing from neighboring areas.

## 7 COMMUNITIES OF THE LIVING AND THE DEAD

**Abstract author(s):** Sloth, Pernille (Museum Southeast Denmark)

**Abstract format:** Oral

This paper presents a case study, which highlights the link between the living and dead in the creation of a community. Excavations surrounding Ølsemagle Village on eastern Zealand, Denmark has uncovered extensive traces of settlements from the Bronze and Iron Age. Over time, these settlements go through several profound changes, both in size and in structure, reflecting changes in the organisation of society. The world of the dead play a significant role in this process, and gives insight to the dynamics of formation and renegotiation of communities.

Surrounding Ølsemagle, a linear formation of Bronze Age barrows stand as significant monuments in the otherwise flat and uniform terrain. The placement of the barrows forms a line, both through the landscape, and through time. Along the axis of the barrows, multiple burials have been excavated, indicating that the barrows stand as a focal point through many centuries. They act as links to past generations forming a bond with the land and additionally strengthening the community among the living.

However, in the Roman Iron Age a new burial practice emerges which no longer centres on the barrows. Instead, the burials, often wealthy, are now found within the confines of the settlement itself in close linkage with the largest farmsteads. The question is why this explicit break with old traditions and past communities? Are the changes in practice perhaps a reflection of the establishment of a new genesis for the community in the area?

## 8 TO BE FED IN THE AFTERLIFE: AN ANALYSIS OF MATERIAL CULTURE OF CHILDREN IN PREDYNASTIC EGYPT AT BADARI AND MOSTAGEDDA

**Abstract author(s):** Crawford, Courtney (American University in Cairo)

**Abstract format:** Oral

The funerary cult was an important aspect in ancient Egyptian society because it highlights the death of community members in this life and their rebirth in the afterlife. In these cults, the deceased's family would make food offerings to the dead in order for them to eat and flourish after their rebirth. Although early ideas of feeding and caring for family members in the afterlife have been noted from prior periods, the concept of the funerary cult began to take shape in the Old Kingdom. However, most of the research focusing on funerary cults is not directing interest in burials involving children. Two Predynastic sites in Upper Egypt yielded not only numerous child burials, but also children who were buried with bowls, cups, or spoons placed directly in front of their faces. A few of these vessels even contained organic

material, such as burnt calf bones and bread. The concept of burying a child with a food vessel implies early community beliefs of eternal feeding and the desire to ensure one's child will be cared for in the afterlife. This research attempts to not only understand early ancient Egyptian culture through funerary archaeology, but also in relation to childhood studies and community relationships. I will examine the context of child burials from Badari and Mostagedda through their archeological site reports and compare these burials with ones containing feeding vessels to better understand early funerary practices. I will also illustrate the cultural significance of children in Predynastic Egypt and the community's relationships to the dead using the archaeological theory of childhood and funerary studies.

## 9 **MEDIEVAL CHURCHYARDS AS COMMUNITIES – A SOCIAL PERSPECTIVE ON URBAN CHURCHYARDS FROM COPENHAGEN, DENMARK**

**Abstract author(s): Dahlström, Hanna (Museum of Copenhagen)**

**Abstract format: Oral**

The people buried at a specific churchyard are often seen as a group which is somehow connected – socially or geographically. After 1200CE, the parish system linking people together in congregations was fully established in Scandinavia, but before that, it is more uncertain what tied people buried at a churchyard together. Sometimes it is said that social ties to a nobleman's family were decisive to which church, and churchyard one belonged to, but due to a lack of written sources little is known for certain.

In this paper the burial practices from two medieval churchyards in Copenhagen, Denmark, will be explored as material traces of the communities they once were parts of. Initial studies of the two churchyards have yielded information about cultural and ritual practices embraced by the people using the churchyards. Even though they were located only 150 meters from each other, substantial differences in practices between them raise questions about the social structure of early medieval Copenhagen.

By using the concept of communities in the analysis of the two churchyards, focus is placed on social dimensions of the urban environment. This opens for new perspectives of understanding life in the early town and adds to the contextualisation of medieval graves as source material. Questions to discuss relate to social heterogeneity, social stratification and gender inequality as seen in burials, social topography of the churchyard as well as in the osteological evidence. By seeing how these aspects change over time, social changes of the urban community – or communities - may be studied.

## 10 **ARCHAEOLOGY OF A RURAL COMMUNITY IN THE NORTH OF THE IBERIAN PENINSULA**

**Abstract author(s): Rebolgar Flecha, Luis (University of Oviedo) - López Gómez, Pablo (University of Leon) - Carballido González, Elías - Fernández Mier, Margarita - Fernández Fernández, Jesús (University of Oviedo)**

**Abstract format: Oral**

In the last decade the group "LLABOR" (Laboratorio rural de historia y patrimonio; Laboratory of Rural History and Heritage) has carried out complex research on the formation of rural communities in the Northwestern Iberian Peninsula. We chose the mountain village of Vigaña as an example and converted it into a laboratory to apply a methodology that combines historical, anthropological, and archaeological sources.

The large amount of information obtained allows to approach the changes and continuities in the models of territorial organization from a diachronic perspective. We focus on the processes that began in the Early Middle Ages and reach the present, a period where can be seen how the community is defined and redefined through the constant relations of vicinity/conflict with other communities or diverse multiscalar agents. We have recently started a new research line concerning gender issues and the construction of difference to analyze these rural settlements.

The forms of collective governance and the management of its own territory are two of the possible clues to understand the sense of identity and belonging to the community, represented through the processes of defense. The prevalence of the collective forms of management in the community derives in a stronger identity sense in the present.

This communities have developed their own ways to codify their landscape and heritage. The celebration of festivities on places with relevant Prehistoric remains and the construction of small chapels and necropolis over former settlements are an example of this. Our own research and public archaeology activities have produced a new codification of the past by this community. In 2019, during the celebration of Carnival, one of the most representative findings was used as its central motif: a 7th century burial with grave goods and clothing remains.

## PAST AND PRESENT OF A MOBILE INDIGENOUS COMMUNITY IN THE MOUNTAINS OF SOUTH CHILE

**Abstract author(s):** Toro, Oscar (University College London; Universidad Alberto Hurtado)

**Abstract format:** Oral

This research focuses on the changing role of mobility within a current Pehuenche community in southern Chile, from a historical perspective. A defining characteristic of the Pehuenche, an indigenous people of Andean South America, is that some families divide their annual residence between lower valleys in colder seasons, and highland pastures in summer, where they take their livestock and collect pinenuts from the Araucaria trees. This research aims to reveal how socio-political organisation, economy, state policies and people's perception of the landscape and their own past influence the material culture arrangements and their functions within and between settlements, considering the multi-temporality of those material characteristics. This generates a landscape in which present and past material culture co-exist and can be explained from and through their mobility cycle and the sense of identity embedded in this aspect of Pehuenche culture. Under an interdisciplinary perspective including archaeological, ethnographic, and historical sources, this work adopts a diachronic view which allows reflecting on the process of this particular social group to becoming a current indigenous community validated by the Chilean state, as a neo-colonial way of controlling the descendant population. However, these social groups still maintain some practices, although with some differences with ancient expressions, such as rituals, seasonal movements, and all the material expressions which are part of these activities, connecting present to the past way of life of historic Pehuenches. Overall, this approach not only gives importance to the historical processes of how indigenous groups interacted with colonial societies and responded to changes through time but also current concerns over land rights and the use of material culture by these mountainous groups. It also serves to reflect on how and why these communities maintain a sense of collective belonging in a context of devaluation of community feeling in the neoliberal wider society

## BRONZE AGE MINING AND THE CONSTRUCTION OF COMMUNITY

**Abstract author(s):** Wager, Emma (Independent Researcher)

**Abstract format:** Oral

This paper investigates the practical and ideational construct of community at a distinctive site type: the prehistoric copper mine. The study of past 'mining communities' has long been a focus of attention for sociologists and social historians. Over the previous 20 years, they have been joined by archaeologists interested in understanding the role played by prehistoric mining in shaping European society during the second millennium BC (e.g., O'Brien 2015; Knapp et al. 1998). Mines were clearly significant as the starting point for the Bronze Age 'metal supply'. I argue here, however, that they were also places where people's shared participation in the mining enterprise created a 'community of labour'. This dynamic construct reproduced and reworked ideas about contemporary self and society in ways which would have been entangled with and no less significant to the transformations arising from other fields of community interaction.

These ideas are explored using the material evidence for copper ore mining in the second millennium BC at one of Europe's larger and most accessible prehistoric mines, on the Great Orme, north Wales, UK. It considers ways to overcome some of the methodological challenges involved in investigating the multi-scalar processes underlying the formation of community at this mine. It shows through examples why studying this phenomenon is relevant to mainstream narratives of Bronze Age social life.

## COMMUNITIES AS DECENTRALISATION

**Abstract author(s):** Borake, Trine (Museum Vestsjælland)

**Abstract format:** Oral

Communities are traditionally recognised to assume a number of forms: they can evolve around specific locations such as a village or town; around individual identities e.g. ethnicity or religion; or they can be based on structures like family, clan or profession. They are contextually defined and not exclusive, meaning that people can participate in multiple communities.

This presentation will explore how a common desire to decentralise unwanted power form and shape communities. It is argued that people seek independence and self-government, but that this objective depends on a community tied together through common ambitions. No man is an island.

Multidisciplinary examples of decentralisation of power through prestige objects, defence constructions, legislation and migration will be presented. Organisations, actions, and interactions behind these examples would only succeed if a unified community joint forces and consented. It follows, that communities make meaning and create a sense of belonging valuable to the individual, accordingly, generating solidarity, commitment, mutuality, and trust (Cohen 1985; Crow and Allan 1994; Frazer 2000).

However, are we merely able to detect the indicia of unified communities behind certain actions and structures, or can we through these examples understand the characters, functions, and powers of communities?

## 14 PEER POLITY INTERACTION AND CREATION OF COMMUNITY IN THE URBANIZATION OF HELLENISTIC WESTERN ANATOLIA

**Abstract author(s):** DiFabio, Christina (University of Michigan)

**Abstract format:** Oral

How do people decide to come together to urbanize, and how do the members of once disparate settlements form a sense of community among their new urban structure? This paper addresses these questions with a case study of urbanization in western Anatolia during the Hellenistic period (circa late 4th to 1st centuries BCE). The environment created during the successor kingdoms of Alexander the Great encouraged great urban formation in the region. Some development can be attributed to the political agendas of the kingdoms, but other development was instigated by the local communities themselves, particularly by the male, elite groups which existed before Alexander's conquest. I use the peer polity interaction model, which posits that comparable, independent groups encourage socio-political change among one another, to consider how these local elite groups formed a network prior to urbanization through war, trade, religion, monument building, and resource extraction. The groups then relied upon this network during major political change to urbanize so they could simultaneously gain greater recognition from the Hellenistic kings and demonstrate their self-sufficiency. In my approach, I build upon other scholars' adaptation of the peer polity interaction model for the Hellenistic period, namely John Ma, Hannelore Vanhaverbeke, and Marc Waelkens. Overall, I argue that this interaction allowed these local elite groups to form a sense of community before formal urban development, and they built upon this community when urbanizing. I explore this model with examples from the ancient regions of Karia, Pisidia, and Kabalia. I also consider the limitations of such a model that focuses on a small segment of the population. The paper closes with a critical discussion of defining community within a city and how decisions made by a certain elite community affected a broader, non-elite community that also became part of these cities.

## 15 MOVEMENT IS COMMUNITY: MOBILITY, VALUE AND CHANGE IN MORE-THAN-HUMAN PLACES.

**Abstract author(s):** Kay, Kevin (University of Leicester)

**Abstract format:** Oral

Dominant ideas of community set high price upon the local and the stable—in a word, upon place. This creates a ready-made frame for many kinds of movement: movement undermines or unsettles communities. Many archaeological narratives (top-down and bottom-up alike) reinforce this understanding, situating migration, abandonment etc. as external and often traumatic drivers of change in communities.

I want to invert this narrative. Drawing on anarchist and posthumanist approaches to change (Graeber 2001; Crellin 2020), I argue that the very thing that defines a community is the way it engages bodies and things in collaborative, transformative (and sometimes conflict-saturated) motion. Taking late Neolithic architecture in Turkey as a brief case study, I show how the structure of community at the beginning of the global Neolithic expansion derived, not from the establishment or disruption of place but the more-than-human negotiation of ways forward. The paper concludes with broader reflection on what it means to define community as a form of motion, and the ripples this may send through archaeological narratives at many scales.

## 16 DEFINING COMMUNITIES ACROSS TIME AND SPACE

**Abstract author(s):** Madsen, Mette (Museum of Southeast Denmark)

**Abstract format:** Oral

Viewing modern day communities in an archaeological perspective can arguably help understand its mechanisms and dynamics. The concept of community is the common denominator in a recently initiated archaeological research project in Køge, Denmark. Here, the results of large-scale archaeological excavations performed over the past 20 years are to help create a sense of community and identity as new industrial areas and neighborhoods are developing by mirroring present communities in the past.

However, studying past communities in archaeology proposes several challenges. One is their dynamic nature, and especially how they manifest themselves in material culture. Another is that our understanding of community is strongly influenced by modern culture, geography, language and history. Both challenges underline the necessity of clearly defining how we understand each community we choose to study. By presenting how our perception of community changes over time and across archaeological traditions, I will argue that there is not one all-encompassing definition or understanding of community but—in theory—an infinite variety. In the paper, I will discuss the challenges in identifying and comparing communities across time and space but also suggest that looking at the role each community plays in society may help defining it, not just in archaeology but also in the new neighborhood that brought about this project.

17

## NEGOTIATING TAZ SELKUP IDENTITY: ETHNO-ARCHAEOLOGICAL INSIGHTS FROM A HUNTER-FISHER-REINDEER HERDER COMMUNITY IN THE SIBERIAN TAIGA

**Abstract author(s):** Piezonka, Henny (Christian Albrechts University Kiel)

**Abstract format:** Oral

Contrasting roles of material and immaterial culture in the maintenance and expression of identity are demonstrated by the Samoyed-speaking group of the Taz Selkup in Western Siberia. As a mobile hunter-fisher-reindeer herder community, the Selkup migrated from the southern to the northern taiga in the 17th and 18th centuries. This relocation history enables us to trace socio-economic adaptations to the new region and their recursive effects on the further development of the Selkup ethnic identity within the framework of material culture, language and toponyms, and self-perception. It is especially the inter-group relations practiced e.g. through exogamy with other communities (Evenks, Kets, Khanty, Russians) that led to a distinctive multiculturalism.

In this talk, I will present new research by our team of German, Russian and Selkup partners in order to shed light onto this conundrum from an ethno-archaeological perspective. I will show that with regards to the materials and methods available to archaeologists, the territorially distinct and strongly developed ethnic self-identification of the Taz Selkup community, which is expressed, e.g., by the conscious maintenance of the language, would probably be more or less invisible archaeologically. The material culture has evolved further in the new northern homeland, adapting to the new environmental and economic conditions by adopting suitable styles and types from other northern groups. Due to the archaeological invisibility of the main field of Taz Selkup identity enactment – the language – it is questionable whether the Selkup migration and the persistence and further development of a distinct Taz Selkup ethnic identity could be recognised on the basis of archaeological evidence alone (with the possible exception of a certain persisting dwelling type). Instead, the existence of this community would most probably be largely diluted in a material continuum of regional styles, hybrid items, and adaptive solutions.

18

## TEMPORALITY AND COMMUNITY. TIMESCALES FOR SOCIAL AGGREGATION, DIFFERENTIATION AND CHANGE IN EARLY IRON AGE SETTLEMENTS OF EASTERN DENMARK

**Abstract author(s):** Søndergaard, Mathias (Museum Sydøstdanmark)

**Abstract format:** Oral

A dominating perspective in the established regional model for the Early Iron Age settlement of eastern Denmark (c. 500 BC – 150 AD) is of small village communities, generally only comprising a few households. The chronological frameworks of the model are traditional typologies of material culture, especially house types that however have a low chronological sensitivity, since the sequenced types span blocks of time several centuries long. In this default model, establishment and evolution of the village communities is frequently described as a unilinear process, characterized by social inertia, continuity and a slow pace of change. Other perspectives have received less attention. These include specific delineation and correlation of variable temporal and social scales within and across the village communities of the period.

The presentation builds on a large radiocarbon dataset from recent, development-led excavations in Eastern Denmark. Chronological modelling constrains the timings and durations of separate villages with much increased precision. The refined chronological resolution provides a framework for alternative site biographies, consistently defined by rapid processes of social coalescence and village formation, varying but generally short durations and sometimes abrupt endings. The result is more precise and detailed estimates of individual developments in the size, composition and spatial layout of village communities. This allows for the identification of dynamic social differentiation and change at varying timescales. From this position, we can consider the continual balancing of the necessities, benefits and possible strains of daily community life in Early Iron Age villages, also incorporating differing capabilities, needs and choices at a household or group level. As a result, we may gain a better understanding of the complexities of Iron Age communities.

275

## THE ROLE OF ARCHAEOLOGY (AND ARCHAEOLOGISTS) IN THE COVID-19 RECOVERY PLANS ACROSS EUROPE AND BEYOND [EAA EXB]

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Taloni, Maria (Ministry of Culture) - Chadburn, Amanda (Historic England) - Byrnes, Emmet (Forest Service Inspectorate)

**Format:** Regular session

"It is now time to get to work, to make Europe greener, more digital and more resilient": that is the key message taken from the Statement by the EU Commission President on the finalisation of national recovery plans under Next Generation EU.

The wide-ranging impacts of the pandemic crisis has affected all aspects of life, including the heritage world and archaeology: from research to conservation and protection, from outreach to training and education.

This session aims to be a moment of reflection about the role of archaeology - and archaeologists - within the national plans for recovery and resilience, looking not only at the European Union, but also other European countries, and outside Europe.

It will also be an opportunity to highlight the cases where archaeology has been forgotten, discussing possible reasons for this absence.

In addition, it will explore the expected impacts on the archaeological world from the implementation of these exceptional funding programs, and how archaeology can widen its horizons to help contribute to making our societies fairer, more sustainable and more resilient.

As underlined in the "EAA 2021 Kiel Statement on Archaeology and Climate Change", archaeologists should explore ways to translate fundamental archaeological research into actionable science to inform decision-making, as well as monitor the implementation of recovery plans: it means new challenges, but also new opportunities.

A follow-up aim will be the drafting of a Statement on Archaeology and Post-Pandemic Recovery Plans, as well as the suggested establishment of an internal EAA task force for monitoring their implementation.

Papers for this session may include but are not limited to:

- Description and discussion of "Response" and "Recovery" plans at both national and more local levels.
- Impact of Covid-19 pandemic on archaeology and archaeologists
- Challenges and opportunities in recovery plans for archaeologists and archaeological heritage.

## ABSTRACTS

### 1 RESPONDING TO THE IMPACT OF COVID-19 ON THE HERITAGE SECTOR IN ENGLAND

**Abstract author(s):** Olivier, Adrian - Francesca Benetti, Francesca - Heyworth, Mike (Historic Environment Forum) - Gale, Tess - Chadburn, Amanda (Historic England)

**Abstract format:** Oral

Within weeks of the outbreak of the Covid-19 pandemic in England, significant parts of the heritage sector in England were closed and at risk, although much pre-development archaeological work was able to continue. Weekly coordination meetings were rapidly established between sector representatives and Government officials, chaired by the Heritage Minister, to monitor the impact of the pandemic. Historic England (the Government's lead advisor for the historic environment) worked with members of the Historic Environment Forum (which brings together national organisations to work collaboratively on strategic matters) to develop a Heritage Recovery Plan (published in early 2021). The Plan set out short- and medium-term actions for the sector and for Government to ensure that the sector would survive the impact of the pandemic. Crucial to this survival was the Government's Culture Recovery Fund which supported organisations at risk of imminent failure. This paper will describe the Plan, the Government's response, and the current health of the heritage sector in England. It will also discuss the Heritage Resilience Plan (to be published in April 2022), which builds on the Recovery Plan and sets out how the heritage sector, with support from Government, can become more resilient and maximise the opportunities for the sector to play a full part in helping the country to deal with the major challenges of our times.

### 2 ARCHAEOLOGY AND COVID-19 IN SCOTLAND – RESILIENCE AND RECOVERY

**Abstract author(s):** Aitchison, Kenneth (Landward Research Ltd) - Heald, Andy (Scottish Strategic Archaeology Committee; AOC Archaeology)

**Abstract format:** Oral

In Scottish politics, Health and Culture are both devolved matters, which means that policies in these areas are the responsibility of the Scottish Government, not the United Kingdom's. Accordingly, the Scottish archaeological sector has developed a distinctive, strategic approach to archaeology, as presented in Scotland's Archaeology Strategy (2015). This paper reviews how this policy nexus and strategic approach have been tested by the Covid-19 pandemic, firstly by exploring how the commercial archaeology sector in Scotland responded from the earliest days of the pandemic in order to protect lives and livelihoods, in an environment where lockdowns and furlough had to be balanced against the needs of clients to continue to deliver crucial construction projects.

The paper will then examine the political impact and consequences of the ways that commercial archaeology has continued to work hand-in-hand with the public sector to ensure recovery through delivering Scotland's Archaeology Strategy, looking at how this model approach is matched against Scotland's National Performance Framework (which in turn is linked to the UN's Sustainable Development Goals).



### 3 RECOVERING FROM COVID-19 IN IRELAND: ARCHAEOLOGICAL HERITAGE MANAGEMENT

**Abstract author(s): Doyle, Ian (The Heritage Council of Ireland)**

**Abstract format: Oral**

Ireland experienced a relatively strict and prolonged "lockdown" compared to other countries in Europe.

In the early stages of the pandemic, in order to understand the impact of Covid-19 on the heritage sector the Heritage Council conducted a survey in April-May 2020.

The survey showed a 20% reduction in employment due to Covid-19 with traders and incorporated private sector organisations the hardest hit. At that point in 2020 the impact of Covid-19 was mainly temporary closure 51.6%; loss or postponement of work 66.4%; postponement/cancellation of planned income-generating or marketing events 50.8%, lack of revenue streams 45.6%, and staff well-being issues 20.2%. In the case of heritage visitor attractions, unsurprisingly 33% reported decreased numbers. 16.8% reported being affected by the unavailability of volunteers.

When asked 'How can the government (departments, agencies and local government) best support the heritage sector right now?', the top answers were:

- Promoting the value of heritage 79.7%
- New funding programmes for the heritage sector 79%
- Supporting heritage organisations to honour existing commitments 72.3%
- By providing flexibility around existing offers to grantees 62.3%

While this survey represented the heritage sector at a point in time early in 2020 it also included thirty-two archaeological organisations mainly in private sector practices. Notably 79% of all responders cited the need for new funding programmes. As such, the Heritage Council's #KnowYour5k, Community Grants Programme and its Heritage Capacity Fund as well as the National Monuments Service's Community Monuments Fund and the Irish National Strategic Archaeological (INSTAR+) programme have provided a direct response to this need.

This paper will describe the range of heritage responses to the pandemic in Ireland, what has changed but with a key question being whether the increased spend on heritage can be maintained?

### 4 NEXT GENERATION ITALIA: INNOVATIVE DOCTORATES FOR PUBLIC ADMINISTRATION AND CULTURAL HERITAGE

**Abstract author(s): Borgia, Elisabetta - Taloni, Maria (Ministry of Culture, Directorate-General for Education, research and cultural institutes)**

**Abstract format: Oral**

In the framework of Italian National Recovery and Resilience Plan (NRRP) an important boost to research in the cultural heritage sectors will come from the activation of cycles of national innovative doctorates for public administration and for cultural heritage, starting in the academic year 2022-2023 and continuing in 2023-2024 and 2024-2025. They are envisaged as part of reforms of doctoral programmes, where a new regulation has also been recently published, encouraging the establishment of new research courses, simplifying procedures and opening up public-private partnerships to promote the establishment of doctorates of national interest and benefiting from a budget of € 43 million.

The text of the NRRP, within the investment 4.1 'Extension of the number of research doctorates and innovative doctorates for the Public Administration and cultural heritage', states that: "The measure also envisages, in collaboration with the Ministry of Culture, the financing of PhD cycles aimed at the efficient management and development of the country's enormous cultural heritage, seizing the new opportunities offered by the digital transition. To help achieve this goal, 600 doctoral scholarships for cultural heritage are planned (200 for each academic year)."

The Directorate-General Education Research and Cultural Institutes (Ministry of Culture), which is responsible for the coordination of university and research programmes relating to the Ministry's fields of activity, in collaboration with the Ministry of University and Research and the National Council of Research, will work on the drafting of the new curricula for cultural heritage doctorates. New curricula will be a unique opportunity to balance the interests of protection and enhancement at the level of heritage management with those of research and innovation, to create a system that is able not only to feed on the results, but also to empower the skills required to meet the new challenges of and for cultural heritage.

### 5 THE PROJECTS OF THE PARCO ARCHEOLOGICO DELL'APPIA ANTICA (MINISTRY OF CULTURE, ITALY) FOR THE COMPLEMENTARY NATIONAL PLAN: CHALLENGES FOR ARCHEOLOGY

**Abstract author(s): Paolillo, Francesca Romana - Pontisso, Mara - Roascio, Stefano - Quilici, Simone - Cugno, Santino Alessandro - Reginaldi, Michele (Ministero della Cultura, Parco Archeologico dell'Appia Antica)**

**Abstract format: Oral**

The Parco Archeologico dell'Appia Antica is an autonomous institute of the Italian Ministry of Culture, providing protection and enhancement of a vast territory that extends from the city center to the Roman countryside, in which

archeology and landscape come together in an outstanding context. Following the COVID-19 pandemic, which caused a long period of difficulty, a new season of opportunities for scientific knowledge, conservation, and enhancement of the Parco Archeologico archaeological

sites begins today. In the following years, the Parco will undertake a complex series of interventions that will include acquiring new archeological sites, scientific research,

restoration as part of a general project called "Urbs. From the city to the Roman countryside".

The works will be implemented with funding from the National Plan for Complementary Investments to the National Recovery and Resilience Plan (NRRP) between 2022 and 2026, as part of the Strategic Investment Plan on cultural heritage sites, buildings, and natural areas. The NRRP includes a reform package and investments of up to € 222.1 billion: € 191.5 billion in resources being allocated through the Recovery and Resilience Facility and € 30.6 billion being funded through the Complementary Fund. The interventions will cover all the archaeological and monumental areas owned by the State in the Parco territory, located along the two main ancient roads of the region: the Via Appia and the Via Latina.

This presentation aims to emphasize the contribution of archaeological sciences to a complex system of interventions and projects aimed at increasing the public's enjoyment of an archaeological context that is unique in the world.

## 6 CARE FOR THE FUTURE – THE IMPACT OF PUBLIC ARCHAEOLOGICAL PARTICIPATION IN FOUR COUNTRIES BEFORE AND SINCE COVID-19

**Abstract author(s):** Lewis, Carenza (University of Lincoln) - van Londen, Heleen (University of Amsterdam) - Marciniak, Arkadiusz (Mickiewicz University in Poznań) - Vařeka, Pavel (University of West Bohemia) - Verspay, Johan (University of Amsterdam)

**Abstract format:** Oral

This paper will explore how archaeology can enhance people's lives and make our communities more resilient, using data, insights and reflections from the CARE project (Community Archaeology in Rural Environments Meeting Societal Challenges) before and since Covid-19.

CARE began in February 2019, aiming to explore the impact of involving rural residents in archaeological excavations investigating the long-term development of the places where they live. In the first year more than 200 people of all ages and backgrounds took part in the Netherlands, Czech Republic, Poland and UK. Participants uncovered features and recovered finds ranging in date from the Neolithic to the 20th century AD and learned with the professional archaeologists who set up and supervised the excavations what the finds could reveal about the long-term development of the places where they live.

In the second year of the project Covid-19 struck, upending expectations, attitudes and wellbeing while simultaneously confining most of those who expected to take part in the very places they were to have been excavating. Inevitably seriously affected by pandemic restrictions, the project has managed to continue, navigating numerous halts, starts, restarts and pragmatic twists and turns. Consequently, data showing the impact of participation in local community-focussed archaeological excavations on people and places in four different countries now cover the period before and since the pandemic.

This paper will distil emerging insights from CARE impact data, comparing different countries to identify key essential inputs and reflect on challenges in order to offer 'ways to translate fundamental archaeological research into actionable science to inform decision-making' which can help archaeology benefit society as we move forward since Covid-19.

## 7 IMPACT OF COVID-19 CRISIS ON ARCHAEOLOGY. CHALLENGES FOR THE FUTURE

**Abstract author(s):** Pyrgaki, Marie (Université Paris I, Panthéon-Sorbonne; Hellenic Open University)

**Abstract format:** Oral

This paper focuses on the global coronavirus (COVID-19) pandemic crisis that has had profound impacts on archaeological research activities and cultural heritage communication. We describe impacts on academic as well as contract archaeology, professionals and cultural heritage institutions.

We discuss current practices during the pandemic period and we explore challenges for the post COVID-19 era, particularly in academic archaeology.

Although universities were quick to replace face-to-face lectures with online learning, the closures affected learning and examinations on the sector of archaeology. The pandemic crisis raises questions about the value offered by a university education which includes networking opportunities as well as educational content. To remain relevant, universities will need to reinvent their learning environments so that digitalization expands and complements student-teacher and other relationships.

During the pandemic, organizations and projects provided fundings for online teaching and learning, activities such as webinars and online readings groups and other ways to stay active until a return to the normality is possible.

Many archaeologists explored new tools for improving the digital documentation and related skills to be best prepared for future field seasons. In coming years archaeologists will face many challenges. We explain why the community could adopt Open Science practices, not entirely new in archaeology, to overcome all these challenges and why creativity and openness to new ways, to new opportunities of working are needed, rather than trying to go back to business as usual.

## 8 THE CONFEDERAZIONE ITALIANA ARCHEOLOGI SOCIAL MEDIA PROJECTS DURING THE COVID-19 PANDEMIC: CHANGING THE DIGITAL COMMUNICATION APPROACH TO THE ONLINE COMMUNITY

**Abstract author(s):** Riva, Alessandra - Gusberti, Elisa - Donati, Nicoló - Magliaro, Tommaso (Confederazione Italiana Archeologi)

**Abstract format:** Oral

With the onset of the COVID-19 pandemic, social media has rapidly become a crucial communication tool for sharing information with the public. We are going to present two media projects: #CIAndremo and Una Domenica al Museo launched on the social media pages of the Confederazione Italiana Archeologi (CIA) following the lockdown stages in Italy in 2020. #CIAndremo is the first original project that our association released on Facebook, Instagram IGTV and YouTube during the pandemic, responding to the social campaign #iorestoacasa (I stay at home) as a measure to contain the epidemic outbreak. The second project was the enhancement of Una Domenica al Museo (Sunday at the Museum), a weekly column born on the CIA Instagram profile, which is advertised with the hashtag #unadomenicamuseo. We are presenting the adaptation of the format that followed the Italian government lockdown restrictions and how it also changed the interaction with the public. From a Public Archaeology perspective, these projects were an important means of communication for the CIA to contact new users and reconnect with old ones, while also conveying to the public the importance of heritage and informing them of cultural events and archaeology news. The COVID-19 pandemic showed the importance of the digital approach in the heritage sector, in line with the technological innovation defined in the National Recovery and Resilience Plan (NRRP). The usage of digital tools in archaeology should be extended and enhanced even further concurrently with the already existing practice of cultural promotion. The CIA started to open up several new possibilities for publicity and engagement with people and this new vision, where archaeology embraces technology, offers endless opportunities for highly personal interaction with the past in a future perspective.

## 9 NEW SOLUTIONS TO AGE OLD ISSUES? EXPLORING THE POTENTIAL FOR INNOVATION WITH SKILLS AND PROFESSIONAL DEVELOPMENT IN ARCHAEOLOGY

**Abstract author(s):** Jones, Cara (Chartered Institute for Archaeologists)

**Abstract format:** Oral

Within the UK, the past 18 months have seen unprecedented pressure to meet the demand for archaeological services – through the combined factors of Covid, Brexit and pressures felt by some higher education departments delivering archaeology. These

factors have also served to highlight and exacerbate existing skills issues and question how we develop and retain archaeologists within sector. Alongside this, we have also seen rapid adaptation to new ways of working within the sector. All this hints at the resilience of the archaeology sector, and the potential for innovative responses to existing ways of practice. It is likely that some Covid adaptations are here to stay. We ask, is this a unique time to start considering new solutions to age old issues regarding skills in archaeology?

This paper will seek to explore these factors in detail and highlight the observed issues and potential long term impacts these issues may have if no action is taken. Presenting case studies, the paper will look at how some organisations have started to adapt and change how they train, develop and retain archaeologists. The paper will also tentatively suggest how some of these innovations could be adopted within other areas of the profession.

**Abstract author(s):** Polymeropoulou, Panagiota (DAISSy research group - Hellenic Open University; Department of Management Science and Technology, University of Patras) - Kameas, Achilles (Hellenic Open University; DAISSy research group - Hellenic Open University) - Papadatos, Ioannis - Kalara, Antigoni (Department of History and Archaeology, National and Kapodistrian University of Athens) - Sogliani, Francesca (University of Basilicata; Post-graduate School of Archaeological Heritage, Department of European and Mediterranean Cultures. Architecture, Environment and Cultural Heritage, Matera) - Roubis, Dimitris (University of Basilicata, Department of European and Mediterranean Cultures. Architecture, Environment and Cultural Heritage; ISPC CNR, Matera) - Tóth, Peter - Malíšková, Johana - Hons, David (Department of Archaeology and Museology, Masaryk University, Brno)

**Abstract format:** Oral

The COVID-19 pandemic disrupted education provision at an unprecedented scale. The impact of limited use of digital educational tools and skills became more apparent during the pandemic, which created serious problems in conducting face-to-face excavation training in both the classroom and on excavation sites. Within this context, the integration of these two physical spaces through the digital "space" of online training is the main objective of project DELTA (Digital Excavation through Learning and Training in Archaeology), a transnational project funded in the context of Erasmus+/KA2 EU programme (2019-2022) with the coordination of the Hellenic Open University (DAISSy research group) and participants the relevant departments of archaeology of National and Kapodistrian University of Athens (Greece), University of Basilicata (Matera, Italy), and Masaryk University (Brno, Czech Republic).

The results of the first phase of the project included desk research aiming at recording the existing situation in the three countries concerning: the use of digital applications in archaeological excavations, courses on excavation practices, methods/techniques, and the use of digital educational tools.

The survey recorded the most recent trends in the university curricula, existing digital skills and level of expertise of students - professionals, their needs and desires concerning the use of digital applications in excavation and archaeological education. The results proved to be particularly revealing, especially when comparing the situation between the three countries. DELTA project aimed to design and develop a course through which, students of Archaeology were able to improve their knowledge and develop digital and 21st century skills. The online piloting allowed participating Universities to discuss the level of integration of digital applications, tools and methods in teaching and learning in Archaeology online, necessary digital skills and make suggestions for the future. Particularly within the context of the recent pandemic and the problems it created in students' excavation training.

## POTTERY AND IDENTITY IN THE EUROPEAN NEOLITHIC: THE INTERPRETATIVE PATH BETWEEN ARCHAEOLOGICAL FEATURES AND (PRE)HISTORICAL NARRATIVES

**Theme:** 2. [Re]integration

**Organisers:** García-Martínez De Lagrán, Íñigo (UNED - National Distance Education University) - Molina Balaguer, Lluís (Universidad de Valencia) - Manen, Claire (CNRS) - Carvalho, Antonio F. (Universidade do Algarve) - Gomart, Louise (CNRS)

**Format:** Regular session

During the Neolithic, the most numerous archaeological remains and one of those of greatest interpretative value is pottery. Not for nothing, the main archaeological entities of the Old continent are defined on the basis of some characteristics of their ceramics: Cardial, LBK, TRBK, SBK, Chasséen, etc. In this session we want to explore the ways that lead us from the recovery and recording of a pot to the interpretation we make of the Style of the pottery collections. This process, that usually implies the description of pottery manufacture, morphology, decoration layout and techniques, results in the identification of "ceramic traditions" classically used as the basis on which human group identities are constructed in Archaeology. Mainly, we want to focus on the underlying principles to the characterisation of these identities, that is, on the definition of differentiated human groups or communities based on the attributes of their pottery assemblages and beyond: what theoretical foundations do we use for the identification of these identities? What analytical procedures do we use to make these interpretations? Are "ceramic traditions" always superimposed with the traditionally defined "cultural groups"? If not, what exactly do these traditions encompass? What taphonomic data do we choose or highlight for defining past identities? What other archaeological criteria are essential to define those groups: chronology, geography, "Neolithic package", ...? What is the place of systemic studies in the definition of human group identities? And finally, how do we articulate our (pre)historical narratives from the study of pottery? To discuss these challenges, presentations in the realm of Neolithic ceramic studies (e.g. morphology, decoration, raw materials, forming/finishing, uses) carried out in an anthropological perspective, as well as papers integrating pottery analyses with other material, taphonomic or environmental data are welcome.

## 1 POTTERY IN THE CONTEXT: RAKUSHECHNY YAR EARLY NEOLITHIC CERAMIC ASSEMBLAGE (LOWER DON BASIN)

**Abstract author(s):** Dolbunova, Ekaterina (-) - Mazurkevich, Andrey (-) - Kulkova, Marianna (-) - Bondetti, Manon (BioArCh, Department of Archaeology, University of York) - Meadows, John (Centre for Baltic and Scandinavian Archaeology - ZBSA, Schleswig-Holstein State Museums Foundation) - Lucquin, Alexandre (BioArCh, Department of Archaeology, University of York) - Craig, Oliver E. (BioArCh, Department of Archaeology, University of York) - Heron, Carl P. (Department of Scientific Research, The British Museum)

**Abstract format:** Oral

The existence of Early Neolithic pottery at Rakushechny Yar settlement, judging by a series of recent dates, refers to an interval spanning no more than a few decades, centered around c.5600 cal BC. The highly specialized nature of the site, focused around the exploitation of seasonal aquatic resources, produced a range of functionally and typologically limited categories of bone and flint artifacts, a particular set of faunal remains, and the remains of constructions. The ceramic complex is distinct - the vessels were made on the site from shore sediments; several 'chaînes opératoires', the presence of a certain recurrent set of ceramic forms of varying volumes were highlighted. The pottery was used mainly to process aquatic products, and in keeping with the site's specialized context. The uniqueness of the site, which is the only known settlement with an Early Neolithic ceramic complex in this region so far, raises questions about the origin of the human groups that settled here. The marked similarity of certain features of the ceramic assemblage with other regions raises the question regarding the cultural mechanisms of ceramic acquisition: whether the tradition is transmitted as a whole 'package' with human groups or only as individual components in the context of skills transfer or copying. Local technological choices, or even functional choices determined by the specificity of the site could have played a role in this process. The study of this complex raises the question of the extent to which different synchronous regional ceramic traditions for the Early Neolithic of Eastern Europe mark distinct human groups with their own identities, and to what extent this world was open or closed - through the prism of ceramic production.

## 2 SURFACE TREATMENT: A REVIEW OF THE CONCEPT AND ITS IMPLICATIONS FOR THE PRODUCTION PROCESS OF PREHISTORIC POTTERY

**Abstract author(s):** Díaz-Bonilla, Sara (Universitat Autònoma de Barcelona) - Clemente-Conte, Ignacio (IMF-CSIC) - Gassiot-Ballbè, Ermengol (Universitat Autònoma de Barcelona) - Rey-Lanaspa, Javier (Gobierno de Aragón) - Clop-García, Xavier (Universitat Autònoma de Barcelona)

**Abstract format:** Oral

The surface treatment of handmade is often described in ceramological studies of archaeological assemblages as a residual, unremarkable question; it has rarely been approached from a global, theoretical, and conceptual perspective. The different types of surface treatment are explained in different ways, but without using uniform terminology regarding their production and purpose. However, the finishing actions of a ceramic vessel or the surface treatment provide crucial information when reconstructing the operational chain of ceramic production: it allows identifying the state of the clay in which a vessel is worked, how much labour is invested, and the pottery toolkit involved. Moreover, the characterisation of surface treatment opens up the possibility of characterising different craft traditions and the evaluation of whether specific production practices can be associated with the knowledge and know-how of specific groups.

In this contribution, we summarise the different theoretical and analytical contributions that have been made about the final phases of the pottery manufacturing process. This will allow us to reflect on the different aspects related to surface treatment and the "ways of making". Subsequently, we will suggest a traceological methodology of analysis applicable to any archaeological site as well as a theoretical proposal on concepts. All this will be described by applying the theoretical and methodological proposal to the study of a high mountain archaeological context: Coro Trasito, located in the Aragonesse Pyrenees.

## 3 MODELLING THE CLAY: POTTERY TECHNOLOGY DURING THE NEOLITHIC AT ELS TROCS CAVE (HUESCA, SPANISH PYRENEES)

**Abstract author(s):** Quevedo-Semperena, Izaro - Tejedor-Rodríguez, Cristina (Universidad de Valladolid) - Cubas Morera, Miriam (Universidad de Alcalá; Sociedad de Ciencias Aranzadi) - García Martínez de Lagrán, Íñigo (UNED, Universidad Nacional de Educación a Distancia) - Royo-Guillén, José Ignacio (Gobierno de Aragón) - Garrido Pena, Rafael (Universidad Autónoma de Madrid) - Arcusa Magallón, Héctor (Independent researcher) - Rojo-Guerra, Manuel Ángel (Universidad de Valladolid)

**Abstract format:** Oral

Pottery is traditionally linked to the spread of the Neolithic in South Europe, although different scenarios for the emergence and consolidation of this technology have been observed. Identification of raw materials, technological

choices, morphological and decorative approaches and determination of use of pottery are relevant aspects to address a complete study of these assemblages and, thus, to establish their role for Neolithic communities.

In this contribution, we present the exceptional case study of the pottery assemblage from Els Trocs Cave (Bisaurri, Huesca, Spanish Pyrenees) dated from ca. 5315 to 2915 cal BCE. Located in a mountain landscape, the site has revealed particular characteristics of exploitation of the environment. Pottery analysis has implemented an approach combining macroscopic and technological analyses in order to explore social organization of pottery production and its role for these farming communities, within a diachronic perspective linked to different uses of the cave during this time period. The choice of pottery manufacture has a social meaning, as it is transmitted between and within groups. This may indicate that the type of manufacture, the choice of raw materials etc. has a social meaning, and therefore allows us to define certain social groups.

Technological choices have been explored through mineralogical analysis of 50 thin sections obtained from the same number of vessels. A systematic petrographic description focused on the clay matrix, mineralogical fraction and textural features is able to propose different groups of manufacture. The data suggest that the raw materials used were available in the surroundings, which allows us to propose a local technology. Different sources and ways to prepare the clay were used in the manufacturing of the vessels. Exploring the correlation between technology and morpho-decorative features will allow us to test with previous work whether or not morphological features can be used to define these groups.

#### 4 TECHNOLOGICAL INNOVATIONS IN THE MOUNTAINS: NEOLITHIC POTTERY IN THE WESTERN PYRENEES

**Abstract author(s):** Santamaria, Urko (University of the Basque Country) - Gehres, Benjamin (UMR 6566 CReAAH - CNRS - Université de Rennes 1) - Cava, Ana - Barandiaran, Ignacio - Mujika-Alustiza, José Antonio (University of the Basque Country) - Cubas, Miriam (Universidad de Alcalá. Sociedad de Ciencias Aranzadi)

**Abstract format:** Oral

The spread of technological innovations is clearly related to the environment, which can influence local responses by prehistoric communities. In this sense, mountain environments are interesting scenarios to explore the local response and dynamics of adoption. The expansion of the Neolithic in Iberia has been linked to the introduction and consolidation of some technological innovations, i.e. pottery and polished lithic tools. However, its introduction in these mountainous environments is far from being well-understood.

The main aim has been to explore the processes of technological transmission that accompanied the introduction of ceramics in the Western Pyrenees. In order to do so, we present the main pottery assemblages recorded in the Western Pyrenees, focused on their technological, morphological and decorative characteristics. Aizpea, Berroberria and Zatoya have yielded the earliest pottery assemblages recorded in the area. Macroscopic and mineralogical analyses (thin section analysis) offer an integrative and systematic approach to these assemblages, so that they can be compared with those recorded in the surrounding areas. Our research shows some similarities in pottery manufacture with the Cantabrian region and the Ebro valley, but also some differences. A high variability is observed in the procurement of raw materials and the election of temper.

Technological choices offer the possibility to explore the contacts with other geographical regions, proposing some hypothesis focused on mobility patterns or contact with other groups.

#### 5 TECHNOLOGICAL RECIPES DURING THE NEOLITHIC: THE POTTERY ASSEMBLAGE FROM EL PORTALÓN DE CUEVA MAYOR (ATAPUERCA, SPAIN)

**Abstract author(s):** Francés, Marta (Laboratorio Evolución Humana, Universidad de Burgos; Área de Prehistoria, Universidad de Alcalá) - Iriarte, Eneko - Pérez-Romero, Amalia (Laboratorio Evolución Humana, Universidad de Burgos) - Cubas, Miriam (Área de Prehistoria, Universidad de Alcalá) - Carrancho, Ángel (Área de Prehistoria, Universidad de Burgos) - Arsuaga, Juan Luis (Centro Mixto UCM-ISCI) - Universidad Complutense de Madrid) - Carretero, José Miguel (Laboratorio Evolución Humana, Universidad de Burgos)

**Abstract format:** Oral

El Portalón de Cueva Mayor (Atapuerca, Spain) is an interesting archaeological site with a Holocene stratigraphic sequence attributed from the Neolithic (ca. 5320-3670 cal. BCE) to the Roman period. During the Neolithic, this site was used for habitational purposes given the high density of archaeological remains: pottery, lithics and faunal remains. Archaeological assemblage shows a mixed economy with similar roles of farming, hunting and gathering strategies.

In this contribution, we present new data about raw material procurement and technological choices observed in the pottery assemblage. To address this research question, 736 Neolithic pottery sherds were studied. Macroscopic characterization was the main criteria for the selection of 23 samples for further analyses. Thin section and geochemical analyses (XRF) were performed to identify clay composition and coarse mineralogical fraction. Our results pointed out the presence of three different manufacturing groups: i) MG1 (n=20) characterized by crystalline calcite

clasts tempers; ii) MG2 (n=2) characterized by siliceous clasts tempers, and, iii) MG3 (n=1) characterized by limestone clasts tempers.

To test the potential sources of raw material, an experimental work was performed trying to emulate the Neolithic pottery production. Experimental vessels (n=10) were recreated with local raw material recovered from surrounding areas from the site (ca. 7 km) using the same technological recipes. By applying the same analytical protocol, we obtained identical results for those MG2 and 3, although the origin of crystalline calcite is still under analysis. Comparison of archaeological and experimental data allows us to propose a local raw material procurement for the Neolithic pottery recorded at El Portalón site with further implications for pottery production by these farming communities.

Different technological choices, such as the use specific tempers or similar clay preparation, allow proposing interesting interpretations focused on the emergence of specialised crafts or technological influences from other geographical areas.

## 6 "CHOOSING MY TEMPER": NEOLITHIC POTTERY TECHNOLOGY IN THE SOUTHEAST OF THE CENTRAL PLATEAU (SPAIN)

**Abstract author(s):** Lozano-López, Néstor (Universidad Nacional de Educación a Distancia - UNED) - Sánchez Carro, Miguel Ángel (Universidad de Cantabria - IIPC) - Mingo, Alberto (Universidad Nacional de Educación a Distancia - UNED) - Cubas, Miriam (Universidad de Alcalá; Sociedad de Ciencias Aranzadi)

**Abstract format:** Oral

The southeast of the Central Plateau (Spain) is a strategic region to explore the connections between the Mediterranean coast and the inland Iberian Peninsula. Neolithic archaeological sites on the east coast of Iberia are well-known, mainly in Valencia and Alicante; however, the spread of domesticated plants and animals to the interior is still a highly debated question. In this contribution, we present a summary of the archaeological sites available to address this research topic, focused on one of the emblematic technologies linked to this phenomenon: pottery.

In this context, Pico Tienda III (Hellín, Albacete), dated in the Early Neolithic, is crucial for understanding this process. Macroscopic and mineralogical analysis of the pottery assemblage allowed it to be compared with other well-known ceramics in the surrounding area. Technological choices have been explored through mineralogical and textural analysis of twenty-one thin sections. Different technological choices have been identified regarding the selection of the temper. Grog was used as temper in most of the manufactures while, in a smaller number of samples, quartz sand and other rock fragments were also detected and had probably been added as temper. We explore a quantitative method for distinguishing natural non-plastic inclusions from temper based on the statistical analysis of the distributions of the grain size. The abundance and different types of grog are evidence of a technological tradition consisting in the systematic recycling of pottery for the manufacture of new vessels. Coiling as a building technique has been identified in at least one sherd. Few sherds are decorated with Cardial impressions. Technological choices, such as the use of a specific temper, might be related to influences from different regions, showing a relationship between different farming communities.

## 7 THE DEMISE OF THE LBK AS A TRANSFORMATION. A LOOK FROM THE PERSPECTIVE OF POTTERY. THE EXAMPLE OF LESSER POLAND

**Abstract author(s):** Czerniak, Lech - Michalak, Katarzyna - Połczyński, Łukasz (University of Gdańsk) - Zastawny, Albert (Archaeological Museum in Kraków)

**Abstract format:** Oral

The demise of LBK can be described as a phenomenon of abandoning a specific pattern of pottery production, which (through knowledge, skills and habits) shaped the sizes, forms as well as the manner of usage, manufacture and decoration of vessels. However, recognizing this pattern is not obvious. Firstly, due to the numerous modifications and differentiation that occurred during the 500 years of LBK's history. Secondly, due to the influence of the research tradition with its arbitrary prejudices regarding the criteria for distinguishing LBK. Lastly, ceramics has the ability to express ethnicity, which affects research results differently depending on whether we want to study local distinctiveness, the formation of interregional networks, or the inheritance of specific traditions.

We will compare the LBK and Malice culture pottery production patterns. The aim is to answer the question of whether – despite the far-reaching changes in the form of houses, funeral rites and discontinuation in the style of pottery – the descendant communities followed the older patterns of pottery making and what the changes consisted of. We will focus on the pottery coiling and forming processes with particular attention to the method of rims finishing. We assume that these features (as opposed to the ethnically affected style and the symbolically marked technology of grog temper) were transmitted between generations in the form of habits that were repeated unconsciously. Contextualization will be provided by the analysis of ceramics from one settlement complex located in the Tusznicza river valley consisting of six LBK villages. Later, on four of them, villages of Malice culture were founded. We assume that the complex of villages can better illustrate the intricate and dynamic history of settlement development of the

same local community. This paper is an output from the NSC Poland, project OPUS20 (2020/39/B/HS3/02529), hosted by the University of Gdańsk.

## 8 FIRST INSIGHTS INTO POTTERY FORMING DURING THE EARLY NEOLITHIC IN THE IBERIAN PENINSULA: NEW DATA FROM EL TORO AND FRARE CAVES

**Abstract author(s):** Cámara Manzaneda, Javier - Clop García, Xavier (ARCHAEOM, Department of Prehistory, Universitat Autònoma de Barcelona) - García Rosselló, Jaume (ArqueoUIB, Department of Historical Sciences and Art Theory, Universitat de les Illes Balears) - Camalich Massieu, María Dolores (Department of Geography and History, Universidad de La Laguna) - Marín Cóllica, Araceli (Servei d'Arqueologia i Paleontologia, Generalitat de Catalunya) - Marín-Socas, Dimas (Department of Geography and History, Universidad de La Laguna)

**Abstract format:** Oral

Ceramic productions represent one of the most characteristic elements of the Early Neolithic sites in the Western Mediterranean since their introduction with the spread of the Neolithisation process (6th millennium BCE). The production of such artifacts required the development of different manufacturing phases and work processes before obtaining the desired products. One of these phases that reflects in detail how the first farmers produced their ceramic wares concerns the forming techniques, which are strongly associated with the ways of doing and technical know-how of their producers.

Forming processes have recently emerged as a proxy in the context of the Early Neolithic to explore which were the technical practices used by the first communities of farmers. Indeed, current technological studies focused on the first ceramic productions revealed two completely different technical traditions (the patchwork technology and the coiling techniques) in separate areas of the Western Mediterranean (Gomart et al., 2017). However, other areas such as the coast of the Iberian Peninsula have not been yet integrated into the discussions on the distribution of these technical practices and traditions.

This paper presents new insights into the pot-forming processes from the Early Neolithic occupations of Frare (NE Iberia, 5200-4800 BCE) and El Toro (S Iberia, 5280-4780 BCE, Cámara et al., 2021) caves. The systematic analysis of technological traces allowed us to recognise the use of circular juxtaposed patches and coiling techniques in both sites, but also some differences between them on the use of moulding processes or discs. These results present clear parallels with the technical traditions from other Mediterranean areas and illustrate how these technical practices were possibly maintained over time and transmitted to NE and S Iberia. Furthermore, the identification of some differences might also reflect that these techniques were possibly combined or varied with the advance of the Neolithisation process.

## 9 POTTERY AND ROCK ART IN NORTHERN PORTUGAL AND THE LOWER DOURO BASIN. CONSIDERATIONS ON COMMUNITARIAN IDENTITIES DURING THE NEOLITHIC

**Abstract author(s):** Sanches, Maria (FLUP- CITCEM)

**Abstract format:** Oral

According to the program of session 280, this contribution will approach the issue of 'identities' in the Early and the Middle Neolithic of Northern Portugal and of the lower Douro basin. It is focused on the mutual articulation of different evidence where ceramic technology (in the broad sense) and rock art play an important role. This approach aims to combine that data from technology(s) and identities' traditions with their geographical distribution, highlighting the similarities and differences between coastal and inland regions. This geographic division is partly supported by the field of Biogeography which recognizes both the Atlantic (Galician-Asturian) and Iberian-Mediterranean regions. Our argument will support the idea that the Mesolithic-Neolithic «frontier», as a socio-economic and ideological transformation, can only be understood over a reasonably long period of time in both regions, in the approximate time interval of 5200/5100 -4800/4600 BC. Data from the Epipaleolithic/ Mesolithic will be also considered in comparison to the Early Neolithic data. This will emphasize the importance of both rock art (painted or engraved) and ceramic decoration in the constitution, transformation, and maintenance of prehistoric identities. Those 'technologies' should then also be approached as continuity or change indicators during the considered long period of time.

## 10 THE NEW CLASSIFICATION OF THE NEOLITHIC CERAMICS FOR TRACING THE CROSS-CULTURAL INFLUENCE IN THE MIDDLE AND LOW DNIEPER REGION

**Abstract author(s):** Andriiovych, Marta (Institut für Archäologische Wissenschaften)

**Abstract format:** Oral

Since the middle of the XX century, the ceramics complexes from 6th-4th Millennial BC of the Neolithic – Chalcolithic periods in the Middle and Low Dnieper region in Ukraine, were under discussion and took a major role in the definition of the local cultural styles. The special interest has pottery from the cemeteries of the Mariupil type, which are a unique reflection of the changes in the funeral ritual among the other Neolithic - Chalcolithic cemeteries of the same type, which had no ceramic among the accomplished goods.



The pottery assemblage from the Lysa Hora, Mykilske, Yasynuvate, Deriivka cemeteries contains especial evidence of the cross-cultural interaction between the Azov-Dnieper, Surska, Bug-Dniester, Kyiv-Cherkasy styles in the region. The pottery presented mainly with pots, jar-pots, and bowls fully decorated with impressions, scratched lines, and imprints external surface. The burials were separated from the settlement area. The ceramics from the cemeteries, trace the links between cemeteries and settlements to which they might be related to. At the same time, the settlements have a richer variety of ceramics.

Focusing on the ceramics from Lysa Hora cemetery were created a new classification of the Neolithic ceramics which unite the morphological characteristics and ornamental properties. The previous classification models were concentrated only on morphological characteristics. But the ornamentation scheme and ornament often were a defining characteristic for known Neolithic Chalcolithic cultural styles (like Cardium pottery or Comb ceramics style). The new classification combines the most important features of Neolithic ceramics.

The new model would help to expand the understanding of the cross-influence of the 'ceramics tradition' between the Neolithic groups with different styles of ceramics in the Middle and Lower Dnieper and the Eastern European region.

## 11 GEOMETRY IN POTTERY DECORATIONS AS A CULTURAL BOUNDARY PROXY

**Abstract author(s):** **Escribá Ruiz, M<sup>a</sup> Pilar - Jiménez-Puerto, Joaquín (Universitat de València, Facultat de Geografia i Història)**

**Abstract format:** Oral

In this work a new method of analysis of prehistoric ceramic has been tested as a result of PhD research using neolithic pottery. Classical studies in ceramics are developed taking data from typology, technology and decoration of vessels, in order to understand the different societies, cultural traditions, and evolutionary processes. In our PhD research, the geometrical component in decoration has been added, in order to test its ability as a cultural boundary proxy, and its informative capacity in Evolutionary Archaeology.

This type of symmetry analysis has been previously applied in Archaeology and it has been observed that in different contexts they used symmetry differently in elements as their architecture, fabrics, rock art or pottery.

In this work, examples of the usefulness and versatility of the study of symmetry will be shown, together with other classic proxies, which has been used to: a) Improve the definition of Bayesian chronological results. When the chronological forecasts provided by Bayesian studies are bimodal, symmetry has shown a greater resolution capacity rather than other proxies. b) Testing its capacity as a cultural boundary proxy. The patterns found in the record are always the product of a predefined plan. Therefore, symmetry used in the designs is affected by different types of transmission of information, and it provides us useful information to establish differences between groups and ways of making. Through its study, it is possible to analyze closer contacts between groups, where information is fluid, or cultural borders, which allows its use as a cultural boundary proxy.

To sum up, our results show that the combination in the use of several archaeological markers (including symmetry) seem to reveal complementary dynamics in the study of these societies and improve the definition of different processes, such as cultural boundaries and other data in the Evolutionary Prehistory field.

## 12 ICONOGRAPHY, TECHNIQUES AND TOOLS OF POTTERY AS DISTINGUISHING FACTORS OF IDENTITY IN THE WESTERN MEDITERRANEAN EARLY NEOLITHIC

**Abstract author(s):** **García-Martínez De Lagrán, Íñigo (UNED) - Molina Balaguer, Lluís (Universidad de Valencia) - Arcusa Magallón, Héctor (Independent researcher; Arcadia-FUNGE - UVa) - Bernabeu Aubán, Joan (Universidad de Valencia) - Laborda Lorente, Rafael (Independent researcher) - Manen, Claire (CNRS) - Quevedo Semperena, Izaro - Rojo Guerra, Manuel A. (Universidad de Valladolid)**

**Abstract format:** Oral

In the European Neolithic, pottery has played a fundamental role in the definition of human groups and archaeological entities. In the specific case of the western Mediterranean, this reality is extended by establishing the Cardial and Epicardial groups with different style elements in their pottery, but some of them are also shared. Defining these differentiating elements within these assemblages is the main objective of this paper. The analysis of a wide range of archaeological contexts in different territories of the western Mediterranean has allowed us to determine the existence of particular elements in certain geographical areas. These particularities are defined by different elements. In some cases, they are particular iconographic themes or representations, in others the use of specific techniques, and even in others the use of unique tools. The presence of specific vessel morphologies and possible combinations of themes with specific morphologies is also noted. All this in a general framework with certain shared characteristics in this vast territory that gives rise to an interesting dichotomy, especially from the interpretative point of view, even more so if we focus on identity issues.

## POTTERY AND IDENTITY IN THE MIDDLE NEOLITHIC: PRODUCTION AND DISTRIBUTION IN SOUTHWEST IBERIA

**Abstract author(s):** Neves, César (UNIARQ – Centre for Archaeology at the University of Lisbon; AAP - Association of Portuguese Archaeologists)

**Abstract format:** Oral

The transition from the Evolved Early Neolithic to the Middle Neolithic in southwest Iberia starts in the second half of the 5th millennium and ends in the first half of the 4th millennium cal BC, with the beginning of the first funerary megalithic monuments.

In contrast with the dynamics of the early stages of the Neolithisation process – where distinct cultural identities are well established – the Middle Neolithic in Southwest Iberia (~4500-3300 cal BC), seems to be characterized by a period of a large "sociocultural cohesion", shown by the homogeneity of domestic and funerary material culture, over a very broad territory.

It could correspond to a moment of stabilization and uniformity, with a collective knowledge, culturally recognized by human groups who occupy a large territory, sharing an increasingly common identity.

In pottery production, the Middle Neolithic represents a decrease of the decoration, until the presence of an archaeological record completely devoid of decorated vessels, in a complete opposition to the Early Neolithic, where pottery assemblages evidence the strong social meaning of decorative grammars, marked by a variety of techniques and decorative patterns.

It is between this dynamic that the first known megalithic funerary monuments emerged, in a phenomenon that belongs to the 2nd phase of the Middle Neolithic (~3700-3300 cal BC), and which also defines the beginning, in chronological terms, of this moment.

From the available empirical data, we will analyze the pottery role in the definition of the Middle Neolithic in southwest Iberia. During the Neolithisation process, this chronocultural phase developed in the moment that took place a set of human behaviors, with deep changes on social systems and symbolic complexity. These were, mainly, visible in the anthropic transformation of the landscape and the creation of social memories.

## DWELLING WITH THE IMAGES FROM THE ANCESTORS. THE DECORATED POTTERY OF REGADAS – TUA VALLEY, NORTHERN PORTUGAL

**Abstract author(s):** Teixeira, Joana (CITCEM-Transdisciplinary Research Centre «Culture, Space and Memory»/ Faculty of Arts and Humanities, University of Porto)

**Abstract format:** Oral

Regadas is a settlement located in the lower part of river Tua valley (Trás-Os-Montes, northern Portugal) that was excavated in the rescue context of the construction of Foz-Tua dam. There we found an occupation sequence from the Late prehistory where the best preserved contexts are dated from the regional Chalcolithic (2876-2503 AC) even if we believe it could have had an earlier foundation. In fact, Regadas' decorated pottery is generally characterized by its conservative aesthetics interpreted as deeply rooted in Neolithic traditions. Some features of this set of decorated pottery are also disruptive when compared to its regional parallels from the Neolithic and Chalcolithic and its interpretation is then complex and challenging. Our first aim is to present and discuss this data and how it seems to suggest a long-term intricate network of 'movements' of people/objects/ideas that somehow connected the Tua valley with interior and southern regions of Iberia.

Then, thinking about identity as a process, and not so much as a bounded entity, we will also discuss, through Regadas' case study, the role that the expression of different identities through behavior and 'archaeological objects' aesthetics, like in decorated pottery, could have had in groups' interaction during time. We will also discuss the extent to what we can, or not, directly correlate certain ceramics' characteristics to defined cultural entities strictly ascribed to a well defined chronology.

## THE CONTRIBUTION OF CERAMIC DECORATED TO UNDERSTANDING THE DYNAMICS OF CHALCOLITHIC COMMUNITIES: BETWEEN ESTREMADURA AND ALENTEJO (PORTUGAL)

**Abstract author(s):** Pereira Rocha, Leonor Maria (Universidade de Évora; CEAACP/UAlg) - Branco, Gertrudes (CHAIA/ Universidade de Évora)

**Abstract format:** Poster

Ceramic vessels are part of the visual environment of human behavior. One of the characteristics of the European culture of the Neolithic or later Copper Age is the appearance of special types of pottery indicating a particular concern with the presentation of food and drink, presumably for consumption in special social contexts.

In fact, the piece functionality is associated to it because of its shape, its decoration, applied onto pieces and in places that allow its visualization, carry a communicative intention, conditioned by the social and symbolic environment of the potter, intended to be understood in contexts of specific consumption.

It is in this context that the ceramic decorated with "acacia leaf" appears in the archaeological record. This is a decorative style, which results from the impression of a matrix - spatula on fresh clay - producing the effect of small leaflets that are arranged in a «spine» form or disposed in a cruciform way. Its presence, in an archaeological context, is conceived as one of the «directors fossils» of the communities that have inhabited the Portuguese Estremadura, during the Full Chalcolithic.

This type of ceramic decoration, a minority among the ceramics collected in the villages of Estremadura, can be found in a large number of villages (about 20), witnessing the existence of an extended community that shares an expressed message in a restricted set of ceramic recipients, which makes them eminently symbolic.

Recent archaeological works, carried out in the village of Santa Cruz 13, in Central Alentejo, allowed the collection of some ceramic fragments with "acacia leaf" decoration. These fragments are another element that testifies the intensification of the interregional interaction in the Chalcolithic. Its true dimension will be apprehended, always in a very small way, through the study and continuity of the archaeological works.

283

## **(RE)INTEGRATION OF THE CARPATHIAN BASIN INTO THE EUROPEAN MIDDLE PALAEOLITHIC: CULTURAL CONTACTS, INTERREGIONAL MOBILITIES, VARIABILITY IN SUBSISTENCE AND SETTLEMENT STRATEGIES [PAM]**

**Theme: 3. The Carpathian Basin: Integration, Mobility and Diversity**

**Organisers: Mester, Zsolt (Institute of Archaeological Sciences, Eötvös Loránd University; UMR 7194 HNHP CNRS/MNHN/UPVD, Institut de Paléontologie humaine) - Lamotte, Agnès (UMR 8164 du CNRS, HALMA, University of Lille, Bâtiment de Géographie)**

**Format: Regular session**

In 1976, Miklós Gábori published a great synthesis of the Middle Palaeolithic (MP) industries between the Alps and the Ural. As a main conclusion, he outlined a spreading process of the MP cultures from west to east, based on the actual typological and chronological dataset. He integrated the archaeological record of the Carpathian basin (CB) into this European scale palaeohistory of Neanderthals. Since the publication of his monograph, our understanding about the European Middle Palaeolithic have been changed considerably, due to new discoveries, new datations, new methodologies and new ideas. Cultural complexes have been recognized from the Eemian to the Interpleniglacial (MIS 5e-3, ca. 140-30 ka BP), like the microlithic tool industries, the Mousterian technocomplexes, the Keilmesserguppen, the Blattspitzengruppen and the laminar phenomenon. But little attention was paid to the archaeological materials of the CB.

Our aim is to (re)integrate the CB record into the European discours about MP. We are looking for cultural connections manifesting by similar patterns in technical behaviour, tool production, land use, settlement and subsistence strategies. Being connected to Central and Eastern Europe and the Balkans, the CB provides migration routes for animals and humans on a seasonal level or linked to the changing environment during the climatic oscillations of the last glacial cycle. In the light of the increasing chronological dataset, Gábori's model of the inhabitation process by Neanderthals should be revised.

For studying these different aspects, general synthesis, analysis on a regional or an interregional scale, and case studies are welcome.

### **ABSTRACTS**

#### **1 OVERVIEW OF THE MIDDLE PALAEOLITHIC OF HUNGARY IN EUROPEAN CONTEXT 45 YEARS LATER: ADVANCES AND NEW PROBLEMS**

**Abstract author(s): Mester, Zsolt (Eötvös Loránd University Institute of Archaeological Sciences; UMR 7194 HNHP CNRS/MNHN/UPVD)**

**Abstract format: Oral**

Forty-five years ago, in 1976, Miklós Gábori published his great synthesis of the Middle Palaeolithic (MP) industries between the Alps and the Ural. In this book, he placed the MP sites of Hungary and their lithic assemblages into European context. Taxonomically, he distinguished the Tata type industry (or Mousterian on pebbles), the Charentian of southeastern Europe, the Typical Mousterian of Central Europe, the Jankovichian and a Late Middle Palaeolithic industry with leaf points. He highlighted the existence of two groups, a western (Transdanubia) and an eastern (Bükk Mountains), without any relation between them. From 1980 onward, this picture changed considerably due to new discoveries and revisions by new approaches. Paralelly, the European context has been changed too. This pres-

entation aims at giving an overview of these changes in the interpretation of main MP sites in Hungary, like Subalyuk and Jankovich caves, Érd and Tata. The basic arguments of the new interpretations will be presented, as well as the related problems which have been raised or remained unsolved. The new discoveries allowed to identify new cultural units, like the Bábonyian in the region of the Bükk Mountains and the Micoquian in the Cserhát Mountains. Taking into account several similarities in typology, raw material economy and settlement strategy, the relation of these MP industries with bifacial tool production needs to be clarified. Although absolute datings are almost lacking for MP sites in Hungary, the chronology of the MP industries could be revisited regarding the European context.

## 2 GEOCHRONOLOGICAL FRAMEWORK OF THE MIDDLE PALAEOLITHIC IN HUNGARY

**Abstract author(s):** Ágnes, Novothny - Fonai, Milán (ELTE TTK)

**Abstract format:** Oral

The Middle Palaeolithic spans between 250 and 40 ka. This time interval corresponds with a part of Middle and Late Pleistocene, from Marine Isotope Stage (MIS) 7 to 3. The climate had drastically changed several times, warm and wet interglacial or interstadial conditions were altered by cold, dry glacials and stadials. The most widespread sediment on the surface of the Carpathian Basin is loess which has a considerable thickness of a few meter to maximum 80-90 m. It is among the most important and detailed terrestrial records of local climate and environmental changes during the Pleistocene. The 'young loess series', deposited from MIS 11 to 2, can be found widespread in Hungary and the most important key sections are located in the Gödöllő Hills and along the Danube-valley. The young loess series are subdivided into two parts. The lower part has a thickness of 15-20 m, intercalated by several thick, brown, well-developed forest steppe-like soils. The upper part has a thickness of 10 m and consists of sandy loess, intercalated by at least two very poorly developed soils. Two tephra layers are described from the young loess series. The lower one is termed Bag Tephra, locates above the lowermost pedocomplex. The high K-content suggests the correlation with the Villa Senni Tuff in Italy (around 351 ka BP). The other tephra layer is called Paks Tephra and it has similar composition like the Bag Tephra, therefore the same source area can be assumed. It deposited during MIS 3, as estimated from luminescence ages of the bracketing loess. In this study we are trying to present the state of the art (chrono-) stratigraphy of the Middle to Late Pleistocene in Hungary, as an essential geological framework for Middle Palaeolithic archaeological studies.

## 3 NEANDERTHAL SUBSISTENCE STRATEGIES IN HUNGARY FROM MIS 5 TO MIS 3

**Abstract author(s):** Seguedy, Marie (Institute of Archaeological Sciences, Eötvös Loránd University; UMR 7194 - HNHP, MNHN/CNRS/UPVD, Alliance Sorbonne Université, Institut de Paléontologie Humaine) - Patou-Mathis, Marylène (UMR 7194 - HNHP, MNHN/CNRS/UPVD, Alliance Sorbonne Université, Institut de Paléontologie Humaine)

**Abstract format:** Oral

Hungary is an important region to study Neanderthal behaviours since numerous Middle Paleolithic (Quina and Typical Mousterian, Taubachian, Bábonyian, Jankovichian) and transitional (Szeletian) technocomplexes are reported. So far, these different techno-cultural traditions are mainly known from lithic records. To provide further insights into Neanderthal behaviours, we present the preliminary results from the archaeozoological and taphonomic analysis of the Büdöspeszt and Szeleta caves. These analyses are accompanied by a synthesis of subsistence strategies from MIS 5 to 3 in Hungary. This study shows that Neanderthals exploited mainly large migratory herbivores such as woolly rhinoceros, bison, and horse but also smaller-sized herbivores in certain contexts and carnivores, notably as source of fur. This diversity suggests adaptation and anticipation skills and/or cultural choices. At all periods, Neanderthal occupations in Hungary consist of brief stopping-places and short-term camps mostly related to hunting, alternating with occupations by carnivores. As faunal remains are almost only preserved in caves and rock-shelters, this pattern could reflect a particular type of occupations. Neanderthal bone industries recovered at sites in Hungary are scarce but shed light on some possible behavioural changes through time.

## 4 RECENT DATA FROM SAJÓBÁBONY-MÉHÉSZ-TETŐ OPEN-AIR SITE : CHRONOSTRATIGRAPHY AND PALAEOENVIRONMENTAL RECORDS OF THE EPONYMOUS BÁBONYIAN (HUNGARY)

**Abstract author(s):** Salvador, Pierre (University of Lille) - Novothny, Agnes - Fonai, Milán (University of Budapest) - Marcoux, Nancy (University of Rennes 1) - Bout-Roumazeilles, Viviane (University of Lille) - Berger, Jean-François (University of Lyon 2) - Ventalon, Sandra - Lamotte, Agnes (University of Lille) - Mester, Zsolt (University of Budapest)

**Abstract format:** Oral

The Sajóbáony site of Méhész-tető is situated at about 207 m above sea level on the highest point of a small hill which forms the north-eastern end of the foothills of the Bükk mountains. The Sajó is the main river in the area. Several previous excavations have taken place at Méhész-tető, none of which provided any clear description of the stratigraphy or linking the site to the environment of the hill. A new field campaign, which started in 2019 still in progress, has made the reinvestigation of many studies possible, like the composition of clays, the characterisation of charcoal, the magnetism of the sediments and their composition elemental variations (XRF) and datings. A medium scale geomor-

phological study was carried out with the aim of integrating the archaeological site and its immediate environment. The study consisted of 5 manually dug holes (3 m deep) situated across the slope of the hill. Our objective was to check the conservation of the first pedostratigraphic observations. Next to the main excavation (12 m<sup>2</sup>), a manual open-hole-survey was also conducted. This revealed stratigraphy (2 m long by 1.80 m deep) from which a sedimentary column of 36 samples and 6 OSL dates were collected. The principal outcomes of our investigation demonstrated the development of a silty sequence older than 243 ka and also identified the last glacial/interglacial cycle (Eemian/Weichselian) in which the archaeological occupation levels were located. Using a multidisciplinary approach and original data, the purpose of this communication is to review the environmental evolution of the site in order to clarify the chronology of environmental and human events.

## 5 RE-READING THE LITHIC INDUSTRY OF THE EPONYMOUS BÁBONYIAN SITE AT SAJÓBÁBONY (BÜKK MOUNTAIN, HUNGARY)

**Abstract author(s):** Lamotte, Agnes (University of Lille) - Mester, Zsolt (University of Budapest)

**Abstract format:** Oral

Méhész-tető in Sajóbáony (northeastern Hungary), is an open-air site attributed to last glacial cycle. It yielded a lithic industry whose unique typo-technological composition gave rise to the classification of Bábonyian by Á. Ringer in 1983 and later in 2001. This Middle Palaeolithic cultural facies is characterised by leafpoints, Micoquian bifacial tools, Bábonyian knives and discoidal debitage resulting from flake production. The raw material used for both shaped tools and flake production is mainly quartz-porphyre.

Méhész-tető has been excavated several times by different prehistorians between 1975 and 1997 but unfortunately nothing has been published since 2000 so consequently, we were unfamiliar with the lithic composition, techno-economy datas of the industry, spatial distribution of the artefacts, and thereby did not possess any hypotheses regarding site function.

In 2019, however, this began to change. Firstly, we re-analysed all past collections from Toth Lajos and Arpád Ringer and, secondly was born a new international programme of excavations led by A. Lamotte and Zs. Mester, started at the site with a planned duration of 4 years (2019-2022) with many aims. Among them, this new programme permitted us to provide a better typo-technological characterisation of the industry and allowed us to compare all previous and current excavations (1986, 1997 and 2019-2022), using the same methods like metric, geometric morphometric, raw materials and chaine operatoire.

Each excavation yielded considerable numbers of artefacts scattered over 12 m<sup>2</sup>. Significantly, with this information, we were able to discuss the spatial distribution of each lithic category, the raw materials, make hypotheses regarding the daily activities carried out at the site and finally discuss about the Culture.

## 6 WEAR ANALYSIS OF THE LITHIC MATERIAL FROM SAJÓBÁBONY-MÉHÉSZ-TETŐ, HUNGARY

**Abstract author(s):** Borel, Antony (Histoire Naturelle de l'Homme Préhistorique - HHNP, Muséum national d'histoire naturelle, CNRS, UPVD, Paris; Institute of Archeological Sciences, Eötvös Loránd University, Budapest) - Mester, Zsolt (Institute of Archeological Sciences, Eötvös Loránd University, Budapest; Histoire Naturelle de l'Homme Préhistorique - HHNP, Muséum national d'histoire naturelle, CNRS, UPVD, Paris) - Lamotte, Agnès (University of Lille, HALMA Research Centre)

**Abstract format:** Oral

New excavations of the site of Sajóbáony-Méhész-tető (Hungary, Bükk Mountains), the eponymous site of the Bábonyian culture, have been carried out since 2019 in the frame of the French-Hungarian program of the French Ministry for Europe and Foreign Affairs. The revaluation of the site, aiming at characterizing the subsistence behaviours of its occupants, implies a thorough understanding of the function(s) of the stone artefacts. We propose here to present an extensive wear analysis carried out on the collections provided by the 2019 and 2021 excavations. The lithic material of Hungarian Palaeolithic archaeological sites has been the subject of only very few wear analyses. Moreover, no reference collection was so far accessible for the raw materials specific to the region, quartz-porphyre and limnosilicite in particular. Therefore, we will first present the ongoing experimental program which will later allow more detailed, qualitative and quantitative, examination of the surfaces of the artefacts. Through the microscopic screening of the stone pieces, we already classified them in four categories depending on the presence and clarity of the use traces. This first level of observation provides an insight of the spatial distribution and stratigraphical repartition of the use and about the relationship between tool raw material and use. The current results show clear discrepancies in terms of use micropolish development depending on the raw material of the tool. This raises questions concerning the proper function of the artifacts (more intensive use of the tools made of limnosilicite?) but can also be the result of a different development of the traces on the different raw materials or even of the technologies used for the observations. This will be discussed taking into account the new experimental data.

The experimental program is supported by the NRD Fund (K 132857), Hungary.

## 7 THREE CLASSICAL OPEN-AIR SITES OF THE BÁBONYIAN ON THE EASTERN MARGIN OF THE BÜKK MOUNTAINS (NORTHEAST HUNGARY): NEW INSIGHTS

**Abstract author(s):** Gábrriel, Sára (Eötvös Loránd University) - Béres, Sándor (independent researcher)

**Abstract format:** Oral

Due to the field researches conducted in the 1960's and 1970's in the Eastern margin area of the Bükk Mountains, a significant cluster of archaeological sites became known. These sites could be identified with the Middle Paleolithic era. Árpád Ringer presented the surface collections of five sites from this cluster in his dissertation, which was published in 1983. In his publication, the bifacial featured stone tools were compared to the collection of finds of the Central European Micoquian, which has been described by Gerhard Bosinski. However, Á. Ringer defined the Hungarian finds by the typological and technological characteristics as an individual cultural entity, by the name Bábonyian.

Since then, the term of the Bábonyian has been used in the international literature. Although during the last decades some field researches have been carried out, the traits and characteristics of the stone industry have not been described. On the eponymous site of the Bábonyian, since the year of 2019, in the framework of a French-Hungarian collaboration, new excavations have been carried out on Sajóbáony-Méhész-tető. Due to the new results of the research, it is worth to re-examine the finds of the classical Bábonyian sites.

During our presentation, we will present the surface collection of three of the five sites, which were published in 1983. The sites of Miskolc-Kánás-tető, Miskolc-Szabadka-tető and Sajókeresztúr-Szakáll-tető (Kövesoldal) are both located on the hilltops of the Eastern margin of the Bükk Mountains, 200-250 meters above sea level, north of the city of Miskolc. All the three sites' dominant raw material is the local quartz-porphry. The examined finds techno- and typology's characteristics will be compared to the informations published in 1983 to create a more complete image of the stone industry of the Bábonyian culture.

## 8 THE VARIABILITY OF THE MIDDLE PALAEOOLITHIC LEAF POINT INDUSTRIES IN THE CSERHÁT REGION AND THE IPOLY/IPEL' VALLEY

**Abstract author(s):** Markó, András (Hungarian National Museum - Budapest; University of Szeged) - Zandler, Krisztián (Ferenczy Museum Centre, Szentendre; University of Szeged) - Péntek, Attila (Independent researcher)

**Abstract format:** Oral

During the two last decades several open-air localities yielding leaf point industries were successfully excavated in Northern Hungary. At Vanyarc, Szécsénke and Galgagyörk, lying close to each other in the Cserhát region several hundreds or thousands of lithics were excavated in discrete artefact-bearing levels sealed by loam layers sterile in archaeological point of view.

The excavated assemblage from Szécsénke shows similarities with the 'Szeletian' industry from Moravia. The presence of the characteristic metarhyolite raw material the Galgagyörk and, especially, the Vanyarc site is strongly linked to one of the classical territories lying in the eastern part of the Bükk mountains and to the Tokaj-Hegyalja region. Lithic collections comparable to the Cserhát assemblages, however, have not been published from these territories until now.

Finally, in the Ipoly/Ipel' river valley the site of Hont first excavated by M. Gábori was (re)identified and tested by excavations too. The raw material types and the typological character of both the surface collected and excavated assemblages from this site is compared to the radiolarite tools known from poorly documented cave sites from the Transdanubia (formerly classified as belonging to the 'Jankovichian civilisation' or industry, as suggested by V. Gábori and M. Gábori) and probably to the 'Szeletian' known from Western Slovakia.

In the presentation we review the variability of certain tool classes like the side scrapers and end scrapers, as well as the assemblages from the four sites.

## 9 MIDDLE PALEOLITHIC OF THE PETROVARADIN FORTRESS IN A REGIONAL CONTEXT

**Abstract author(s):** Mihailovic, Dusan - Dragosavac, Sofija (University of Belgrade - Faculty of Philosophy) - Marković, Jelena - Mihailović, Bojana (National Museum in Belgrade) - Plavšić, Senka (University of Belgrade - Faculty of Philosophy)

**Abstract format:** Oral

The 2003 and 2004 rescue excavations of the Petrovaradin Fortress site near Novi Sad (Serbia) yielded a large number of Middle Paleolithic artifacts. Massive backed bifacially flaked sidescrapers, previously unknown from the southern part of the Pannonian Basin, were found in the lower layer of the site (Layer 2b), while the upper layer (2a) document an assemblage with a pronounced Charentian component (Mihailović, 2009). According to the OSL dating results, Layer 2b could be as old as  $86.0 \pm 9$  ka, while the obtained dates for Layer 2a vary between  $42.8 \pm 4.2$  ka and  $39.8 \pm 3.8$  ka (Marković et al., 2020). The unexpectedly late dates for Layer 2a raise the question of the stratigraphic integrity of the artifact-bearing strata, but also of the duration of Charentian in the region. Special attention will be paid

to these issues as well as the question of regional differentiation of Charentian industries in the southern part of the Pannonian Basin.

References:

- Mihailović, D., 2009. Middle Palaeolithic Settlement at Petrovaradin Fortress. Petrovaradin edition II, The City Museum of Novi Sad, Novi Sad.
- Marković, S.B., Vandenberghe, J., Stevens, T., Mihailović, D., Gavrilov, M.B., Radaković, M.G., Zeeden, C., Obreht, I., Perić, Z.M., Nett, J.J., Lehmkuhl, F., 2020. Geomorphological evolution of the Petrovaradin Fortress Palaeolithic site (Novi Sad, Serbia). *Quat. Res.* 1–14. <https://doi.org/10.1017/qua.2020.88>.

## 10 NEANDERTHAL DISPERSALS NORTHWARDS: TECHNOLOGICAL CONNECTIONS BETWEEN THE CARPATHIAN BASIN AND THE CENTRAL EUROPEAN MICOQUIAN

**Abstract author(s):** Picin, Andrea (Friedrich Schiller Universität Jena) - Keneder-Gubała, Katarzyna (Institute of Archaeology and Ethnology, Polish Academy of Sciences) - Stefański, Damian (Archaeological Museum in Kraków)

**Abstract format:** Oral

During the Weichselian, climatic deteriorations and the expansion of the Scandinavian ice cup caused demographic contractions and decline of the Neanderthals populations across the mid-latitude territories of Europe. During these events, the Carpathian Basin were likely the sink area that contributed to the repopulation of Central Europe during the climatic amelioration (Picin et al., 2020). During these dispersals, Neanderthals from this glacial refugia may have brought with them local cultural traditions that could have been useful in the open environments of the Central European plains and in highly mobile contexts. In his seminal book, Gábori (1976) interpreted the richness of scrapers in several Eastern European sites to a new facies – the Central European Charentian. Further technological analyses of those lithic assemblages from the Pannonian basin revealed the recurrence of Quina and demi-Quina scrapers and the use of Quina technology (e.g. Mester and Moncel, 2006; Mester and Patou-Mathis, 2016). In this paper, we explore the possible cultural connection between the Carpathian Basin and the northern territories investigating the role of the Quina scrapers in the Micoquian techno-complex. We compare the presence of Quina retouch in several sites from Germany and Poland from a chronological perspective showing the presence of these type of tools since the beginning of the Micoquian.

## 11 THE LEVALLOIS TECHNIQUE AS A FACTOR DEFINING MIDDLE PALAEOLITHIC TAXONOMIC UNITS IN SOUTHERN POLAND

**Abstract author(s):** Stefanski, Damian (Archaeological Museum in Kraków) - Picin, Andrea (Bereich für Ur- und Frühgeschichtliche Archäologie, Friedrich Schiller Universität Jena) - Valde-Nowak, Paweł (Institute of Archaeology, Jagiellonian University)

**Abstract format:** Oral

The Levallois technique is an essential element defining the taxonomic diversity of Middle Paleolithic in Europe. The presence of this technique in many of its varieties has been recognized at numerous sites located north of the Carpathian Mountains, and particularly in the area of Krakow. One of the most interesting assemblages was discovered at the site of Kraków-Zwierzyniec I. The collection of Albin Jura from the 1930s, as well as assemblages acquired in the course of systematic research conducted by Ludwik Sawicki (the 1930s) and Waldemar Chmielewski (1973-74) allowed to define a local unit defined as Levallois-Mousterian culture. Using the stratigraphic position and thermoluminescent dates, the chronology of this unit was determined for the Eemu period. Apart from the issues outlined above, the Levallois technique is reported from other chronological and cultural contexts. The aim of this presentation will be to summarize the available information, as well as to outline this phenomenon based on old and new discoveries.

## 12 RESULTS OF USE-WEAR ANALYSIS OF TOOLS FROM LATE MIDDLE PALAEOLITHIC SITES LOCATED IN THE Odra VALLEY, POLAND

**Abstract author(s):** Chlon, Marcin (Institute of Archaeology University of Wrocław) - Pyżewicz, Katarzyna (Faculty of Archaeology University of Warsaw) - Kufel-Diakowska, Bernadett - Wiśniewski, Andrzej (Institute of Archaeology University of Wrocław)

**Abstract format:** Oral

Despite the increase in the number of sites and the number of finds from the Middle Palaeolithic, our knowledge of stone tool use is still very poorly understood. In this presentation we would like to present the results of traceological analyses for three Late Middle Palaeolithic sites. The research was financially supported by the National Science Centre (grant no. 2017/25/B/HS3/00925).

The first of the sites, Haller Avenue in Wrocław, contains artefacts forming two cultural horizons: an older one (MIS 5a-MIS 5d) and a younger one (MIS 3). The older one contains traces of several episodes connected with the acquisition of animal carcasses. Traces of contact with hide, soft tissue, and bone, are present. In the younger horizon no impressive traces were found, which is probably related to the function of bifacial tools aimed at reproduction. The

next site, Pietraszyn 49a, yielded traces dated to the beginning of MIS 3. The site represents a kind of workshop, where bifacial tools were prepared. Surprisingly, use-wear analysis shows that some of the tools brought in from outside and those made at the site contained traces of use during butchering activities or food preparation. There were traces of contact with soft tissue, hide, and bone. Another site, Dzierżyszlaw 1, has until recently been associated with transitional industries. It is now known that the artefacts this site are a mixture of Middle and Upper Palaeolithic, and possibly also industries from the border of these periods. Only single traces evidencing their use as elements of weapons have been identified.

In conclusion, we can say that use-wear traces are repetitive in terms of materials. However, their quantity is a result of many components, including the length of work, quality and quantity of raw material, length of stay, as well as dynamics of post-sedimentation processes.

### 13 UNREMARKABLE TRANSITIONS IN THE EASTERN CARPATHIANS: THE MIDDLE TO UPPER PALEOLITHIC TRANSITION IN ROMANIA

**Abstract author(s):** Chu, Wei (Leiden University) - Doboş, Adrian (Romanian Academy of Sciences)

**Abstract format:** Oral

The Late Pleistocene European record shows emerging patterns of demic turnover frequently associated with technological change between c. 50–40 thousand years ago. Across the continent, this is thought to be related to indigenous population replacement and the diffusion of developing technologies by *Homo sapiens* resulting in a spatio-temporal patchwork of hybridized transitional and Initial Upper Paleolithic industries. The Late Pleistocene record of Romania forms an anomalous situation in these scenarios. On the one hand, it has important Pleistocene archives that preserve direct evidence of Neandertal and *Homo sapiens* genetic admixture. On the other, Romania heretofore shows little evidence of technological assimilation across the Middle to Upper Paleolithic transition despite being astride where evidence is posited. Here, we critically review the Late Middle Paleolithic archeological record of Romania with new radiocarbon ages and artifacts to clarify the validity of the current archeological interpretation. We conclude that previous characterizations of the Late Middle Paleolithic of Romania are largely biased on misunderstandings of site taphonomy, the specifics of lithic raw materials and their typo technological classifications. Superimposing external frameworks simply do not work.

### A. MIDDLE PALAEOLITHIC OF THE MÁTRA REGION (NORTHERN HUNGARY): NEW INVESTIGATIONS AT GYÖNGYÖSTARJÁN 10 SITE

**Abstract author(s):** Gutay, Mónika (Hungary - Dobó István Castle Museum)

**Abstract format:** Poster

The Mátra Mountains constitute a part of the North Hungarian Range where the majority of the Palaeolithic sites in Hungary is located. Many researches have been investigated on the territories of the neighbouring Bükk and Cserhát mountains of the range, but little attention was paid to the region of Mátra. In the last fifteen years intensive field surveys were carried out in this region by the Dobó István Castle Museum (Eger, Heves County). During these surveys, eleven localities were recorded, mainly in the southern and southwestern part of the region, with sporadic finds or artefact concentrations of Middle Palaeolithic bifacial industries. Gyöngyöstarján 10 site was found in 2006, and together with Gyula Kerékgyártó independent researcher, we performed field surveys on several occasions until now. The extension of the site is about 300 m x 180 m where we collected knapped stone artefacts and raw material fragments. The collection is characterized by Middle Palaeolithic bifacial tools, mainly scrapers and points. Most of them can be attributed to Micoquian-Bábonyan cultures. In 2021, we conducted systematic field work and test excavation at the site. In the most intensive area of the site, a surface of 6 m x 30 m was carefully documented by a 1 m x 1 m grid system. In total 2710 knapped stones and raw material fragments were recorded. The richest square yielded 64 pieces. For stratigraphic control two test pits were dug next to the surveyed area. In these pits, respectively 27 and 257 artefacts were unearthed in stratigraphic context. The raw material is almost exclusively the local limnosilicite. Samples were taken for sedimentological analysis and OSL dating.

---

## 284 VISUALIZING, INTERPRETING, AND PRESENTING ARCHAEOLOGICAL SITES TO THE PUBLIC

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Thomas, Ben (Archaeological Institute of America) - Fonseca, Sofia (Teiduma, Consultancy on Heritage and Culture; German Archaeological Institute; ICArEHB-UAIG)

**Format:** Regular session

The number of visitors to archaeological sites around the world increases every year. Visitation has an impact on archaeological sites and several groups, including ICOMOS, and multiple publications have addressed the many issues, positive and negative, of increased archaeotourism. In this session, rather than discussing the impact of tourists on archaeological sites, we would like to consider the site's impact on the visitor. How are archaeological sites pre-



sented to the public? What does a visitor see and experience and how does that compare to what they expect to see and experience? Does the visitor leave with a clear understanding of the site and its interpretation?

Furthermore, what a visitor sees is the result of decisions made by site planners and managers. How are sites interpreted and presented to the public? Who makes the decisions about what should be shown and not shown? How do we decide what point or period in the site's history is to be represented? What are the influences (historical accuracy, tourism, nationalism, among others) that affect decision-making? What is the archaeologists' responsibility in terms of assisting and aiding with interpretations? What do we want the visitors to take away from their visit?

Finally, how are new technologies affecting interpretation and presentation? What is the role of digital technology, such as virtual reality and 3D, in presenting sites? Does virtual presentation take precedence over physical reconstructions? Are physical site visits even necessary anymore?

In this session, we want to discuss how archaeological sites are visualized, interpreted, and presented to the public. We invite papers from archaeologists, site managers, tourism experts, preservationists, and others involved with archaeological site presentation for the public.

## ABSTRACTS

### 1 CONTEXTUALIZING ARCHAEO TOURISM AND THE VISITOR'S EXPERIENCE

**Abstract author(s):** Thomas, Ben (Archaeological Institute of America; Berklee College of Music)

**Abstract format:** Oral

Visiting archaeological and historical sites is one of the most popular activities undertaken by tourists—ranking third after eating out at restaurants and shopping. As global tourism grows, the volume of visitors to archaeological sites is increasing rapidly. Site managers and the people in charge of preparing and presenting sites for the public employ a variety of methods and technologies to help visitors understand and interpret what they are seeing. But what do the visitors take away from the site? How do they understand and interpret what they see and experience? Additionally, how do visitors prepare for a visit to an archaeological site? If they prepare for the visit by learning about the sites, where and how do they get their information? Do site interpreters, tour operators, and others involved with presenting sites to the public make resources available for potential visitors so that they can do some pre-visit preparation? Is the experience of visiting a site enhanced by pre-visit preparation? In this presentation, I discuss the results of conversations and surveys that were conducted with a variety of people and organizations involved in Archaeotourism including tour operators, site managers, and, of course, the visitors themselves. The primary objective of this effort is to understand how people prepare for a visit to an archaeological site, what they learn before and during the visit, and what they take away with them after the visit. My hope is that this study highlights effective methods of enhancing visitors' experiences and understanding of a site by providing context for what they are seeing.

### 2 TURNING THE ARCHAEOLOGICAL SITE OF ELEUSIS INTO MYELEUSIS: VIRTUAL AND AUGMENTED REALITY AGAINST OR PRO PHYSICAL SITE VISITS?

**Abstract author(s):** Tsiafaki, Despoina (Culture & Creative Industries Dpt, Athena Research Center, Xanthi Branch) - Papangeli, Kalliopi (Ephorate of Antiquities of West Attica) - Mourthos, Ioannis - Motsiou, Paraskevi - Michailidou, Natasa (Culture & Creative Industries Dpt, Athena Research Center, Xanthi Branch) - Tzavali, Chrysanthi - Kazazaki, Christina (Ephorate of Antiquities of West Attica) - Koutsoudis, Anestis - Kiourf, Chairi - Ioannakis, George (Culture & Creative Industries Dpt, Athena Research Center, Xanthi Branch)

**Abstract format:** Oral

The COVID-19 pandemic caused, among other issues, the periodic closure of archaeological sites and museums and a big decrease in their visitor numbers, when they reopened. Moreover, during the lockdown the diverse digital access to archaeological and in general cultural heritage was promoted, where possible, as a means for the relevant institutions to keep their relationship with a digitally overwhelmed audience, but also for contributing to the people's wellbeing, during an unforeseen situation, through contact with engaging yet remote sites, peoples and times.

However, this increase in the use of Information and Communication Technologies within archaeological tourism and public outreach in general, dates back of course to pre-COVID-19 times. Especially 3D digitisation, along with virtual and augmented reality are among the advanced digital technologies used in the latest decades for studying, restoring and communicating archaeological sites and objects, with the ultimate goal to enable visitors to gain a complete picture of a site and its interpretation, as far as this is possible.

The present paper will describe the relevant technologies employed within the myELEusis project, in order to provide visitors with pertinent information before, during and after their actual time in Eleusis. It will discuss how and why 3D digitisation, virtual museums and augmented reality are engaged within the project, with the aim to enhance the visiting experience. The sanctuary of Demeter and Kore and the archaeological museum of Eleusis, listed among the most prominent and world-renowned Greek classical sites, will be a principal attraction of Eleusis, as the European

Capital of Culture in 2023. Will or can the pioneering digital systems, that will be created, replace the experience of the actual visit to the physical site of the ancient Eleusinian Mysteries, especially during or after the pandemic crisis?

### 3 THE PAST RECONSTRUCTED AND RELIVED: BETWEEN VISUALISATION, EXPERIENCES, EDUCATION AND COMMERCIALISATION

**Abstract author(s): Pawleta, Michal (Adam Mickiewicz University)**

**Abstract format: Oral**

The aim of my presentation is to determine the role archaeological reconstruction and historical reenactment may play in the interpretation of archaeological heritage assets for the general public currently conducted in Poland. These issues will be discussed in the context of the changes which have ensued in contemporary attitudes to the past caused by a series of economic, cultural and social factors.

It will be argued that archaeological reserves and reconstructions can serve as tourist attractions, enchanting visitors and offering them contact with the past compatible with the new historical culture. The same can be claimed about historical reenactment presentations which proliferation has been observable during the last decade. There are a lot of potential archaeology has to offer to heritage tourism, by bridging the gap between the past and present with a level of immersion, emotional engagement and realism.

Archaeological reconstruction and historical re-enactment will be then discussed from this point of view, with special consideration of the potential they have to offer for the visualization of the past, its interpretation and the ways of experiencing it. The aim of the discussion of these phenomena will be to identify their constitutive elements but also the pitfalls that arise in connection with them.

### 4 TRACES OF EXISTENCE – CAPTURING AND DISPLAYING A BRIEF MOMENT IN TIME

**Abstract author(s): Toreld, Christina - Johansson, Eirik (Bohusläns museum)**

**Abstract format: Oral**

In the late 18th century, a small community of Jews made themselves a home on the island of Marstrand, situated on the Swedish west coast. Today, their stories are embedded in the multiple layers of archaeology and history on the island. The project Traces of Existence aims to reveal this short but important part of history and make it visible in the public space, using innovative techniques.

The idyllic seaside resort you meet in July in the 21st century is quite different from what you would have experienced arriving at Marstrand in November in the 18th century. Then, the island was both a transit port for shipping as well as a military base, with the mighty Carlsten's fortress. In 1775, the town of Marstrand came to be classified as a Porto-franco (free port in the legal sense), and soon, a small group of Jews from Germany, the Netherlands and Denmark arrived. Now, religious freedom prevailed, allowing settlement without conversion. They were not many who came, nor was their community long-lived. Soon they moved on to the larger town of Gothenburg. But their traces still remain on Marstrand. Most obvious is the synagogue that was established in a casemate to Carlsten's fortress. We can discern their residences and occupations through historical documents, we can trace their whereabouts in historical maps and by studying the archaeological record maybe we can find shards of their everyday life.

By lifting the evidence of Jewish heritage that dwells in archives, places, and archaeological records the project Traces of Existence seeks to make this historical episode tangible again in the streets of Marstrand, creating a walk in time, an experience with sounds, images and stories.

### 5 FROM THE ARCHAEOLOGICAL REMAINS TO THE CO-CREATION OF MEMORIES

**Abstract author(s): Vieira, Alexandra (CITCEM - Transdisciplinary Research Centre «Culture, Space and Memory»; Instituto Politécnico de Bragança) - Pires, Raquel (Instituto Politécnico de Bragança; ID+, Instituto de Investigação em Design, Media e Cultura)**

**Abstract format: Oral**

The region of Trás-os-Montes and Alto Douro (Northern Portugal) has an exceptionally abundant heritage, namely in terms of archaeological heritage. This condition gives this inland region, with a low population density, a unique landscape that holds a significant touristic potential. Additionally, there are already numerous approved walking routes and trails to explore. However, despite this combination of favorable factors to the practice of sustainable archaeological tourism, there are still no archaeological routes in the region capable of engaging visitors and local communities.

The interpretation and the recognition of the past as an activator of co-creative experiences (UX) in the present, will support the design and implementation of a more sustainable cultural-tourism product/service, and fostering the economic development of the region.

This communication follows from two converging ideas. On the one hand, the creation of an archaeological route, which articulates cultural heritage elements located in the municipalities of Alfândega da Fé, Carrazeda de Ansiães,

Vila Flor and Torre de Moncorvo, to stimulate debate and networking, but also to include the local community and visitors in cultural participation. On the other hand, what if Service Design Thinking helps to reorganize the sphere of Archaeotourism, elevating it as an activator of the dynamics of valorization and interpretation of the heritage (in situ and digital) for public enjoyment?

Methodologically, we propose the combination of archaeological research, leading to tourism promotion, using the methods of Service Design Thinking, such as scenario design, user journey maps, blueprints, among others. We believe that such methodologies can encourage setting up or improvement of experiences, as well as decision-making on: which archaeological sites will be integrated into the Route; what are the preservation conditions that must be ensured; what are the most appropriate heritage interpretation strategies in each case; among other aspects.

## 6 THE CONSERVATION AND EXHIBITION PROGRAM OF VÉSZTŐ-MÁGOR, HUNGARY

**Abstract author(s):** Seifert, Jerrod - Lingle, Ashley (Cardiff University) - Gyucha, Attila (University of Georgia) - Parkinson, William (Field Museum; University of Illinois - Chicago) - Duffy, Paul (University of Kiel)

**Abstract format:** Oral

This multi-year conservation and mitigation program focuses on the Vésztő-Mágor tell in southeastern Hungary. The site is the largest prehistoric tell on the Great Hungarian Plain with ~7 m of stratified cultural layers dating to the Neolithic, Copper, and Bronze Ages, and is part of the Vésztő-Mágor National Historical Park. The Park features a unique, in-situ exhibition of a stratigraphic snapshot of Hungarian pre-history. The trench was opened in 1986 in the central part of the tell and was later covered with a permanent, closed structure to facilitate public access. Due to the fragile nature of the earthen heritage, a new program is underway to rejuvenate the site and increase visitor engagement.

With generous support from the Foundation for the Study and Preservation of Tells in the Prehistoric Old World, the first phase of the program began in 2022, focusing on the stabilization of the stratigraphic profiles and the conservation of the exposed features and artefacts. All conservation works implemented under the project will serve three main purposes, including capacity building, preservation, and engagement. Following this initial phase, we will model the newly regenerated site and begin developing digital experiences for site visitors. This program recognises the value in both the in-situ archaeology as well as the benefits of digital heritage.

This paper will examine the first phase of the project, focusing on the conservation of the in-situ archaeology and the development of a novel approach to environmental monitoring, interpretation, and data validation. We will demonstrate that by having a more nuanced understanding of the mechanisms of environmental decay of the site, a more sustainable preservation program can be developed. Ultimately this method will allow for the improvement of the physical and virtual experience of the site itself.

## 7 ANCIENT FINDS FOR MODERN TIMES. DEVELOPING A VR EXHIBITION FOR ARCHAEOLOGICAL SITES ON THE LOWER DANUBE: CIRNA AND NUFARU (ROMANIA)

**Abstract author(s):** Bors, Corina Ioana (National History Museum of Romania - MNIR) - Suteu, Calin (Gigapixel Art) - Cocis, Horatiu (County Museum of History and Art - Zalau - Salaj) - Florea, Mihai - Damian, Paul - Vasile, Mihai (National History Museum of Romania - MNIR) - Damian, Oana ("Vasile Parvan" Institute of Archaeology)

**Abstract format:** Oral

The Danube's Archaeological e-Landscapes project (DAeL) represents an opportunity to valorize the archaeological heritage by new technologies. In such a framework was possible to study museum collections and related documentary archives in order to create digital content for a state-of-the art exhibition focused on two archaeological sites: Cirna – Bronze Age cremation necropolis and Nufaru – Byzantine fortress. The rich and culturally diverse archaeological heritage of the Danube region is the only remnant of the millennia of our society's development and a carrier of important information about our past. Its huge potential for the development of tourism in the region is facing a major challenge, as it is not visible enough to be sustainably managed and used. By "visibility", not only sheer physical presence of archaeological artefacts or reconstructions of sites is meant, but also the visibility of archaeology for the general public. New technologies enable us not only to visualize archaeological knowledge in completely new ways, but also to transfer it promptly and in attractive ways to the broader public. The site from Cirna was completely excavated in the 40's and 50's of the 20th c. and published very accurately (for the scientific standards of those times), yet the original landscape heavily impacted by extensive agricultural and fish farming developments in the 70's followed by the total destruction due to the major floods of the Danube about 15 years ago. The site from Nufaru had part of the vestiges still visible in mid-19th c., yet today large portions of the fortification overlapped by a modern village. As a result, the exhibition offers an interesting curatorial dialogue, comprising a classical manner for displaying relevant artefacts, as well as providing a new VR milieu for a better contextualization, giving to the public new possibilities to understand and explore the past.

## 8 OTHER EYES: USING AVATARS AND IMMERSIVE REALITY FOR EMBODIED ARCHAEOLOGICAL INTERPRETATION

**Abstract author(s):** Morgan, Colleen (University of York) - Eve, Stuart (L-P Archaeology) - Alexander, Michelle (University of York)

**Abstract format:** Oral

The UKRI AHRC funded OTHER EYES project seeks to create avatars using bioarchaeological data to understand the experiences of past people using virtual embodiment and immersive technologies and to communicate this understanding to others. We are in the process of creating a mixed reality experience based on human remains excavated from Roman-era cemeteries in York, UK to test research questions regarding the construction and use of avatars to understand the past. These avatars include the 'Ivory Bangle Lady,' a Roman-era woman of North African descent and a man of Middle-Eastern descent. The ethics of resurrection are necessarily fraught, therefore an integral part of OTHER EYES is the formation of a rigorous, transparent, ethical framework for the digital reconstruction, visualisation and transmission of past people using bioarchaeological evidence. There are also considerable technical and interpretive challenges for this work that are informative for those seeking to access immersive technologies for archaeological investigation and dissemination. In this talk we discuss the formation, implementation and reception of this project.

## 9 PRESENTATION OF ARCHAEOLOGICAL SITES AND SUSTAINABLE CULTURAL TOURISM – HOW IT WORKS IN REAL LIFE EXAMPLES

**Abstract author(s):** Lukacevic, Marijana (Private company)

**Abstract format:** Oral

In Croatia, country rich in historical and cultural heritage, fortunately cultural tourism is a concept that is increasingly present in the language of tourists. Consequently, archeology, as a very mystical and interesting science to the general public, has found its place in the concept of cultural tourism. The main question of this presentation is how to attract tourists to archeological sites? How and who will properly present to them archeological sites such as prehistoric ones where after the research there is little left to see on the site itself? Are digital technology and VR the future of the presentation of archeological sites and educational boards with QR codes just an introduction to what the visitor should experience? Presentation of cultural heritage, archeological and historical sites is financially very expensive, local and state government units cannot allocate sufficient funds for all phases of reconstruction and presentation of one or several archeological and historical sites. Consequently, because of insufficient financial funds, we are losing the definition of complete and sustainable cultural tourism in one region. But, today, thanks to financial resources of various EU funds, it is possible to think about several parallel projects of reconstruction, presentation and digitalization of cultural heritage; and after a financial period of 7 to 10 years to have sustainable cultural tourism in one region. On the example of Požega-Slavonia County, the county in the heart of the Slavonia-Continental Croatia region, this presentation will show how the implementation of several parallel EU-funded projects of reconstruction and presentation of archeological sites, prehistoric and medieval, creates an infrastructure of sustainable cultural tourism and connecting archeological sites with activities of local people. And, finally, what benefits and recognizability we already have because one part of the Iron Age Danube Route with the Council of Europe certificate passes through our county.

## 10 MUGEPORTAL: A DIGITAL PLATFORM FOR THE LAST HUNTER-GATHERERS OF THE TAGUS VALLEY, PORTUGAL

**Abstract author(s):** Gonçalves, Célia (ICArEHB, Universidade do Algarve) - Umbelino, Cláudia (CIAS, Universidade de Coimbra; ICArEHB, Universidade do Algarve) - Figueiredo, Mauro (Universidade do Algarve) - Cascalheira, João - Godinho, Ricardo - Belmiro, Joana - André, Lino - Martins, Daniel - Matias, Roxane - Bicho, Nuno (ICArEHB, Universidade do Algarve)

**Abstract format:** Oral

The Muge Shellmiddens Project: a new portal for the last hunter-gatherers of the Tagus Valley, Portugal focuses on the requalification and valorization of the archaeological and paleoanthropological heritage of the Mesolithic complex of Muge (Tagus Valley, Portugal), classified as a Portuguese National Monument since 2011. It is a new multidisciplinary and innovative approach that involves the development of cybernetic infrastructures and e-science initiatives, that in turn will allow: (1) a systematization of the archaeological data collected over the last 150 years in Muge, implementing an online database that offers the possibility of storing, consulting and performing analytical-interpretative and spatial queries of archaeological, paleoanthropological, paleoenvironmental and historiographic data and, (2) the creation of interactive didactic and dissemination contents based on augmented and virtual reality technologies showing the daily lives of these communities. With these approaches, the project intends to promote a new path of scientific and cultural access to the Muge shellmiddens, transporting the Mesolithic to the present in a vibrant and informative way.

11

## LASTING IMPRESSIONS: PRESENTING ARCHAEOLOGICAL SITES OF THE XEROS RIVER VALLEY (CYPRUS) THROUGH 3D MODELS AND AUGMENTED REALITY

**Abstract author(s):** Ripanti, Francesco (Independent researcher) - Papantoniou, Giorgos (Trinity College Dublin, The University of Dublin) - Vionis, Athanasios (University of Cyprus) - Lanitis, Andreas (Cyprus University of Technology) - Ioannou, Eleftherios (The University of Sheffield)

**Abstract format:** Oral

During the COVID-19 pandemic, the role of digital technologies in facilitating the access to cultural heritage sites from home has been under the spotlight. Now that the social distancing measures are starting to be lifted and tourists can safely travel again, further reflection is needed on how to blend in-situ experiences with the opportunities offered by digital experiences - as they are not mutually exclusive. What do visitors expect from using technology while visiting heritage sites? Can digital experiences support the fruition of heritage in the long-term? What are the main challenges for the archaeologists? This paper will address these and other questions through a case-study research from Cyprus.

Developed within the framework of the "Unlocking the Sacred Landscapes of Cyprus" research project, the UnSa-La-CY app narrates the evolution of the surrounding landscape and the fate of pre-modern monuments and archaeological sites in the Xeros River valley (Larnaca District), serving as a guided tour for visitors of the area. Through QR codes, the users get access to historical information about the corresponding monument and, in selected cases, to a 3D reconstruction of monumental features part of the sacred landscape - partially browsable with augmented reality.

Over 2021, an evaluation process investigated the functionality, the user experience, and the educational impact of the app through mixed methods research - such as participant observation and surveys. Building on these newly collected data, this paper will discuss the outcomes of the evaluation process. The visitors' remarks, requests and priorities will be presented, to inform a reflection on the archaeologists' responsibility in the decision-making process behind the app design and implementation.

12

## UIST UNEARTHED: VISUALISING ARCHAEOLOGICAL SITES THROUGH AUGMENTED REALITY

**Abstract author(s):** Gal, Emily - Rennell, Rebecca (University of the Highlands and Islands)

**Abstract format:** Oral

Uist, in the Western Isles of Scotland boasts internationally-significant archaeological sites, exceptional preservation of remains, and diverse archaeological landscapes. Nevertheless, there are few impressive upstanding remains, fewer still with any form of on-site interpretation and limited material in local museums. This is challenging for communities and visitors wishing to engage more meaningfully in Uist's heritage. To date, this rich archaeological resource has been under-exploited in terms of visitor experiences.

Created and led by Lews Castle College UHI Archaeology staff supported by Comhairle nan Eilean Siar, the Uist Unearthed app reimagines important archaeological sites along the Hebridean Way in stunning Augmented Reality (AR), offering an exciting trail-based experience for visitors. It is the first of its kind in Scotland – presenting location-based AR experiences of archaeological sites. The mixed-media app contains detailed AR reconstructions of sites alongside bilingual information from excavations, animations, audio, and 3D artefact models. The creation and testing process highlighted the importance of balancing 'authenticity' with user experience at visitor sites. This presentation will reflect on priorities, challenges and opportunities for presenting and interpreting archaeological sites through Augmented Reality.

13

## HOW IDEALISED VIRTUAL REALITY MEDIATES ARCHAEOLOGICAL SCIENTIFICITY TO THE PUBLIC

**Abstract author(s):** Lengyel, Dominik - Toulouse, Catherine (BTU Brandenburg University of Technology Cottbus-Senftenberg)

**Abstract format:** Oral

In the 2020 session 'Sensitizing and Engaging the Public', we presented our method of visualising uncertainty in archaeological knowledge to show how abstraction and idealisation can help to engage the public in archaeology in a way that maintains scientificity by design for the visual translation of archaeological hypotheses.

In this paper we intend to present an ongoing research project which should provide direct answers to the questions posed in the session. It is about an amphitheatre on the coast of the Adriatic Sea that is marked by the impression of decay, while the task of the adjacent museum will be not only to show the magnificent architecture that preceded the ruin, but also to convey its social and cultural implications, since ancient amphitheatres were veritable visual reflections of society with their direct, structured representation of the social classes organised by the ranks. A largely destroyed building, which is at the same time a representative of an extensively researched building type, oscillates between individuality and commonalities, and therefore turns out to be particularly suitable for a visualisation method that focuses on idealisation and standardisation. The decision as to what is to be shown and conveyed is

made jointly between the disciplines of archaeology and architecture, both however committed to science with a commitment to a minimum of fictional addition and a maximum of scientific foundation. The find is responsible for the concrete location, the genius loci, the virtual digital visualisation is responsible for the scientific information, the spatial mediation in 3D, with or without virtual reality, as well as the emotional impact. Walking through even an abstracted spatial hypothesis with the help of digital technologies leaves behind a clear understanding of the site, a complementary addition through new technologies to the direct tactile experience of walking through the physical site locally.

## 14 VISUALIZING VIKING AGE AND MEDIEVAL TOWNS AND CENTRAL PLACES IN NORWAY. DIGITAL DISSEMINATION

**Abstract author(s):** Nytnun, Arve (Møre og Romsdal county)

**Abstract format:** Oral

By visualizing, interpreting, and presenting archaeological sites to the public, we are trying to get the visitors to understand how the sites may have looked like. But in what other ways does this type of dissemination affect the visitor?

Since 2018 we have been working close with historians, craftsmen and data engineers to find the right way to rebuild important historical sites in 3D graphics. The historical places are all important viking age and medieval sites, that represent important periods in the urbanization and development of towns and central places at different times. In Edøya we have chosen to focus on the mid viking age, while in Veøya in Romsdalsfjord we are presenting the early town, in the breaking time between the old Norse religion and Christianity. Some of the places are not easily accessible, and the 3D visualizing will make it possible to bring the sites to the tourist/visitor/school children etc.

In this paper I will take a look at the benefits with in making 3D models, but also present some of the challenges with doing so, not only relating to the technical and scientific challenges, but also in how we portray the presentation, and how we choose to present it.

How are sites interpreted and presented to the public? Who makes the decisions about what should be shown and not shown? The archaeologists, historian or 3D designer? How do we decide what point or period in the site's history is to be represented? What are the influences (historical accuracy, tourism, nationalism, among others) that affect decision-making?

## 15 GUIDELINES, RIGHT-HOLDERS, AND STAKEHOLDERS: HOW ARE WE COMMUNICATING AND EDUCATING IN ARCHAEOLOGICAL TOURISM?

**Abstract author(s):** Fonseca, Sofia (Teiduma, Consultancy on Heritage and Culture; German Archaeological Institute)

**Abstract format:** Oral

The ICOMOS International Cultural Tourism Committee (ICTC), is responsible for the ICOMOS Cultural Tourism Charter, considered the first international document dedicated to bringing awareness to the necessity for a responsible tourist approach to cultural heritage. The first version of the Charter dates to 1976, the second to 1999, and since 2021 the ICTC has been working on a revision version made to the charter due to the profound changes global tourism has suffered in the last decades. The draft charter, that has yet to be adopted at the ICOMOS GA 2022, in Thailand, is entitled "ICOMOS International Charter for Cultural Heritage Tourism (2021): Reinforcing cultural heritage protection and community resilience through responsible and sustainable tourism management", and focus on the importance of collaboration among stakeholders, participatory governance, people-centered and rights-based approaches, endorsing access, education, and enjoyment, to everyone visiting heritage places. In principle 3, it emphasizes "the importance of increasing public awareness and visitor experience through sensitive interpretation and presentation of cultural heritage". But how are we presenting and communicating archaeological sites to the public? And what are the guidelines to how we should convey the knowledge of right-holders and stakeholders regarding the sites? We will be using the 2021 Charter to understand what we should be bringing forward regarding communication and education at our Heritage sites to create more sustainable and responsible tourism.

## 16 PUIG CIUTAT, A LOW BUDGET ARCHAEOLOGICAL PARK

**Abstract author(s):** Tamba, Robert - Pujol, Angels (GIRA Association) - Sala, Roger (SOT Archaeological Prospection) - Ble, Eduard (DIDPATRI - University of Barcelona)

**Abstract format:** Oral

In small villages, with less than a thousand inhabitants, few resources can be dedicated to the maintenance of infrastructures dedicated to archaeology. In the case of Puig Ciutat, the solution that emerged was to create a free access and open-air archaeological park.

The archaeologists in charge of the excavation elaborated and presented a proposal having full liberty on the contents and the historical discourse. The strategy included involving learning theory specialists and the creation

of a webpage with complementary information. A virtual museum was also designed to compensate the lack of a physical one and to be able to present to the public the most singular elements of the archaeological collection.

After a few year of punctual contributions to the contents of the park and basic maintenance, an annual funding is allocated since 2019. As the excavation works are very slow and no new remains can be consolidated, it was decided to cover the remains at the end of each campaign and to represent the walls delimiting the spaces under excavation and additional features of interest with wood elements.

The main facilities of the park include panels that enable a self-guided visit with QR codes that give complementary information, reproductions of objects of interest that the public can touch and feel and a multi-point geocaching game.

Finally, starting form 2022, the park will host a recreational history event open to the public with theatricalised visits and access to the experimental activities that the recreational history members will be organising.

The main goal of the project of Puig Ciutat is that the public feel the site as their, as it is part of the history of humanity.

## 17 **VISUALIZING, RECONSTRUCTING, AND „VISITING” THE PAST: A CHALLENGE FOR THE MODERN ARCHAEOLOGIST?**

**Abstract author(s):** Dimopoulou, Sofira (Classical Archaeology, University of Münster)

**Abstract format:** Oral

This paper aims to present how the modern digital technology can be a medium to a direct connection between the past and the future for visitors of archaeological sites. The presentation is based on my PhD dissertation about the cult group in Lycosura in Arcadia of Peloponnese and the upcoming 3D reconstruction project of the colossal statues in the dark cella of the temple of Despoina. Pausanias was an archaeologist of the 2nd century AD., who visited the sanctuary of Despoina at Lycosura and his description about the temple, the statues, and the secret cult of the goddess is the only literary source about this archaeological site. The preserved fragments of the depicted figures in the National Archaeological Museum of Athens and of Lycosura Museum and the digital reconstruction of the group give the opportunity to the modern scholar and viewer to visualize and see them completed. A 3D visualization and tour inside the temple, where the visitor can experience and interpret the colossal group could be a real challenge. What is the purpose of this reconstruction and how far can the virtual reality affect the interest of interpreting ancient traditions? How can the visitor- in the case of Lycosura- experience the secret and forbidden and be a part of them?

## 18 **TRANSLATING GEOARCHAEOLOGY INTO GEO-EDUCATIONAL ITINERARIES IN THE MOLINA AND ALTO TAJO UNESCO GLOBAL GEOPARK, GUADALAJARA, SPAIN**

**Abstract author(s):** Banerjea, Rowena (University of Reading) - García-Contreras Ruiz, Guillermo (Universidad de Granada) - Monasterio, Manolo (Geoparque de la Comarca de Molina de Aragón-Alto Tajo and Museos de Molina) - Mattei, Luca (Universidad de Granada) - Pluskowski, Aleks (University of Reading)

**Abstract format:** Oral

UNESCO Global Geoparks and National Parks provide ideal settings to use geoarchaeology to synergise the presentation of cultural and natural heritage in their past landscapes. This paper explores ways to translate the important role that geoarchaeology plays in understanding past landscapes into heritage and tourist trails in relation to frontier landscapes in the Middle Ages with reference to 'castlescapes'—the cultural landscape associated with the biography of the castle. Geoarchaeology—the application of earth science techniques to archaeological research questions —creates synergies between the monument and its landscape and between cultural and geo-heritage. Soils and sediments are the backbone of the archaeological record and provide information about the changing form and function of spaces within castles and concerning the links between these spaces and activities in their hinterlands.

Cultural trails are increasingly commonplace tourism products and important aspects of tourism in Geoparks, National Parks, the Council of Europe's Cultural Routes programme and regional branding such as "Le Pays Cathare" in France. Trails are multi-faceted constructs, and this paper proposes to enhance them by using geoarchaeological and other environmental data to educate visitors as to how the historical landscape looked at a specific time. We provide ways to translate the role that geoarchaeology plays in understanding past landscapes into heritage and tourist trails using the case study of the Castle of Molina de Aragón, and its medieval frontier landscape, located in the Molina and Alto Tajo UNESCO Global Geopark. Geo-educational itineraries within the Molina 'castlescape' will be created with a GIS platform by drawing ideas from eno-tourism, where soil profiles are regularly presented in vineyards and museums, information boards with QR codes, and an app to view visualisations such as augmented reality informed by 3D photogrammetry and landscapes reconstructions based on geoscientific data, but also to showcase the entire scientific process.

A.

## ECHOES-DIGITAL RECONSTRUCTION OF ANCIENT HUMAN BIOGRAPHIES THROUGH THE STUDY OF ARCHAEO-ANTHROPOLOGICAL MATERIAL FROM THESSALONIKI, GREECE

**Abstract author(s):** Aidonis, Asterios (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace) - Georgiou, Georgia - Kompatsiaris, Ioannis (Centre for Research and Technology Hellas - CERTH/ITI) - Protosalti, Soultana - Tzeveni, Stavroula (Ephorate of Antiquities of Thessaloniki City, Hellenic Ministry of Culture and Sports) - Alagiologlou, Cleopatra - Mavrokostidou, Maria (TETRAGON) - Kartsiakli, Vasiliki - Vra-ka, Christina (dot2dot) - Papageorgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace)

**Abstract format:** Poster

Urban areas are places where architecture, material culture, and the organization of space, reflect their history. The reconstruction of the historical past of cities brings to light specific features of past societies. We propose a methodology for highlighting the human past of a city, through a key factor of social expression, the biographies of its inhabitants. We study the human remains and the associated findings of material culture from the excavations during the construction of Thessaloniki's metropolitan subway. By integrating scientific innovations and cutting-edge technologies, such as isotopic analysis, virtual (VR) and augmented (AR) reality, we reconstruct the health, diet, and demography of the ancient population as well as the biographies of everyday and exceptional individuals. Through the cooperation of cultural institutions and companies of the sector of the creative industries, we develop alternative narrations and experiential tours. Our research project aims to preserve the historical memory of the transformed urban landscape of Thessaloniki, point out the significance of ancient humans as social agents in archaeological narratives and attract interest in the city's multicultural and diachronic character.

Acknowledgment: This research has been co-financed by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH – CREATE – INNOVATE (project title: ECHOES-Development of a methodology for the digital reconstruction of ancient human biographies through the study of archaeo-anthropological material, project code: T2EDK-00152).

---

285

## GENDER DYNAMICS AT THE DAWN OF THE CLASSICAL WORLD: AN INDIGENOUS PERSPECTIVE [AGE]

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Saltini Semerari, Giulia (University of Michigan) - Ferrer, Merixtell (Universitat Pompeu Fabra) - López-Bertran, Mireia (Universitat de València)

**Format:** Regular session

The Iron Age brought lasting changes to the organization of Mediterranean societies, including increasing social complexity, the creation of city-states and other distinct territorial polities, the emergence of Mediterranean-wide exchange networks, and the widespread adoption of new technologies. These interconnected changes likely had a considerable impact on the economic and political organization and everyday lives of local communities, yet gender – one of the main axes around which people lives is structured – has yet to be fully integrated into this narrative. This is problematic, because traditional norms and behaviors regarding gender likely contributed to shaping local responses to these widespread changes, while also having to shift and adjust, in the long-term, to the changing economic and political context.

In this session, we would like to explore this issue from a comparative, Mediterranean perspective, highlighting the diversity of local responses to broad global shifts. In particular, we are calling for contributors to focus on the ways in which the allocation of power changed as more resources became available through Mediterranean-wide exchanges and migrations, as the social organization based largely on kinship became more stratified and as the distinction between the public and the private sphere became sharper. We would like to anchor our discussion around three main points: (1) a focus on all genders in their intersection with other axes of social organization (e.g. age, status); (2) a diachronic perspective; (3) gender in its relation with culture contact: how was gender renegotiated in light of the opportunities/threats/changes that occurred with the renewal and intensification in connectivity that took place in this period?



**1      **MERCHANTS AND WIFES. STORIES OF ROMANISATION IN PANNONIA****

**Abstract author(s): Szabó, Melinda (MTA - ELTE Research Group for Interdisciplinary Archaeology)**

**Abstract format: Oral**

In the context of the Mediterranean, the 1st century CE is not the dawn of the classical world. But in the Carpathian Basin the Roman conquest was the beginning of something new. The Roman province of Pannonia geographically was not part of the Mediterranean, but in the cultural aspect it had the same main characteristics as any other province of the Mediterranean. The indigenous Celtic and Illyric tribes of the region had their local habits, but as the Romans arrived, they had to find a way of living together.

In my presentation I would like to heighten two different aspects of the relation between the Romans and indigenous population. First, I deal with the difference or at some point the similarities between the Roman and indigenous merchants, who worked sometimes together. The second aspect is the practice of marriage of the new inhabitants. In the first decades of Roman presence, Roman residents usually married their own libertae. The change in this habit testifies the change in contact between Roman and Celtic inhabitants.

**2      **GENDER AND INTERCULTURAL DYNAMICS IN IRON AGE CAMPANIA****

**Abstract author(s): Cuozzo, Mariassunta (Università del Molise Italy)**

**Abstract format: Oral**

The paper deals with gender dynamics in Campania (Southern Italy) during the Iron Age. This is the period when the Greek "colonies" of Pithekoussai and Cumae were established profoundly changing the societal dynamics of the region. The present focus on gender adds another element to the multiple and often contradictory strands that pervade funerary studies such as the dialectics and/or the tensions between the collective and individual strategies. This has important gender implications, directly involving the highest-ranking female figures in the communities, the emergence of a Campanian aristocracy and also its growing monopoly over the exchange networks linking the Tyrrhenian to the rest of Mediterranean.

The paper discusses also some theoretical issues related to the definition of culture, ethnic identity, intercultural dialectics, cross-breeding and hybridization. From an archaeological viewpoint, a knotty question concerns the possibility that the material culture can convey ethnic and social meanings "Icons of power" and group dynamics are going to be analysed.

**3      **TRACKING VARIATIONS IN GENDER-ROLE PATTERNS. WOMEN AND SOCIO-ECONOMIC DEVELOPMENTS IN CENTRAL AND SOUTHERN ITALY****

**Abstract author(s): Desiderio, Anna Maria (Université Paris Nanterre; Università degli studi di Salerno) - Esposito, Arianna (Université Bourgogne Franche-Comté)**

**Abstract format: Oral**

This contribution aims to address the complex political and social dynamics characterizing the early Iron Age communities of ancient Italy, from the ninth to the seventh centuries BC. During this period, the system of exchange relationships and mobility in the central-western Mediterranean becomes considerably more complex and intensified. This leads to important changes in the socio-political organization of the Italic communities actively involved in the circuits of exchanges. In this context, they can hold, in various forms and degrees, groups and individuals from outside, who contribute to inter-cultural exchanges and technological innovations with native societies.

Our analysis aims to examine these socio-economic and political changes through the gender lens. What is the women's contribution to the construction of ideological models in increasingly hierarchical societies? Researchers have observed, for example, the concentration of imported ceremonial artefacts in the graves of prominent women. Examples come from southern Italy, Campania, and Etruria. They highlight the role played by small elite groups, who manage relations with the non-native components within the Italic communities. We would like to focus on the mediating function of the women and their participation in the local re-elaboration of external techniques and cultural models. It is precisely the diachronic and comparative perspective that is at the heart of our approach. This allows us to reveal a complex and interconnected system of identities, affected by a set of variables, expressed in an intersectional manner and funeral contexts dependent. This very dense system of relations and exchanges between the different societies involved (Greeks, Etruscans, Italics) plays a role in the balance of connectivity in the central-western Mediterranean.

## 4 GENDER DYNAMICS AND THE ORIGIN OF THE POLIS IN BASILICATA

**Abstract author(s):** Salfini Semerari, Giulia (University of Michigan)

**Abstract format:** Oral

The transition from the Early Iron Age to the Archaic period in Basilicata saw a confluence of large-scale social shifts which dramatically changed the economic, political and territorial organization of the region. Long-term processes of social competition and hierarchisation had created large indigenous communities plugged into wide-ranging exchange networks. To these communities settlers from the Aegean brought new resources, ideas and skills, giving rise to complex processes of culture contact. Ultimately, these processes also resulted in a reconfiguration of settlements in the region with the abandonment of Early Iron Age sites situated on the first inland plateaus in favor of new 'urban' foundations closer to the coast. This contribution discusses how gender dynamics may have intersected these changes and contributed to shaping them, from continuities in Early Iron Age gender traditions, to negotiations of gender roles in ritual contexts, to intermarriage, to the question of whether the transition to more institutionalized settlement forms based on (male) citizenship drastically diminished women's involvement in public political life.

## 5 FROM THE COLLECTIVE TO THE INDIVIDUAL: POWER AND GENDER DYNAMICS IN WESTERN SICILY, 9TH-6TH CENTURIES BC

**Abstract author(s):** Ferrer-Martín, Meritxell (Universitat Pompeu Fabra)

**Abstract format:** Oral

At the end of the 2nd Millennium BC the Sicilian population began a process of global transformation that, from the mid-8th century, was stressed by the gradual installation of groups of Aegean and Levantine immigrants in the coast of the island, and the subsequent establishment of regular relationships among these three communities. These changes are evidenced in settlement patterns, funerary practices, and domestic contexts.

These transformations point to the development of new social and political dynamics, but also to the emergence of new gender constructions, representations and relationships that can be analyzed clearer through the study of their ritual politics. Specially, I refer to the analysis of their main communal ritual places located in the settlement, the so-called acropolis.

The aim of this communication is to examine through the acropolis the construction of new power configurations and, mostly, the emergence of new hegemonic masculinities and femininities. To do this, I'm going to focus on two acropolis -Monte Polizzo and Polizzello- where, through their use of space and the different practices carried out there periodically, can be analyzed the gender and political transformations of these communities between the 9th and the 6th centuries BC.

## 6 THE SACRED WELL OF SANTA CRISTINA: CULT AND SYMBOLS

**Abstract author(s):** Carta, Arianna (Università del Litorale di Capodistria)

**Abstract format:** Oral

In Sardinia, the second biggest island of the Mediterranean sea, there are approximately 60 sacred wells, built during the final Bronze and first Iron Age, which represent a unique phenomenon in the entire Mediterranean area. In this paper I will specifically discuss Santa Cristina's isodomonic water temple (ca. XI sec. B.C.), the cultic use of which seems to be mostly related to the feminine sphere and its symbols: water, moon, (re)birth, death, while its cults survived centuries up to medieval times.

The discussion will proceed around three main axes. The first will be the analysis of Santa Cristina's sanctuary symbols: double staircase, vulva-shape perimeter, the up-side-down shadow phenomenon, the moon and the sun symbology.

The other axis will be the analyses of the archaeological context and the related remains (votive offerings such as bronze figurines, female-head thymiaterion, fibulae), astronomical hypothesis concerning the temple orientation according to the moon and the sun, the Phoenician influence and its possible role in the construction of the well and its cultic use (Tanit Goddess). The paper will also address continuity issues: patterns and changes occurred between Iron Age and Classical period, i.e. the subsequent worship of the Greek Goddess Demeter in this area and water temples named after female saints within catholic religion.

The third axis will provide some hints on Sardinia's folklore and traditions: tales about female characters and wells and their connection to archaeological sites and even connections to the traditional medicine (the "eye-medicine" transmitted through female lineage which implied the curative use of water) that can show the continuity of symbols and patterns within traditional culture.

## 7 HAVE YOU MET MY WIFE? GENDER AND LATE NURAGIC SARDINIANS

**Abstract author(s):** Hayne, Jeremy (Università Cattolica del Sacre Cuore)

**Abstract format:** Oral

Judging from iconographic and archaeological evidence, gender was one fundamental aspect of individual and group identity in the Sardinian Late Bronze and Iron Ages, and was critical in shaping how communities were navigated in a period that comprised deep societal changes (increasing contact with foreign communities at home and abroad). Yet discussions of gender roles are often ignored by scholars. There are various reasons for this: lack of burial data for this period of Sardinian protohistory; a focus on the problems of Sardinian chronology at the expense of a more comprehensive understanding of society. This paper engages with the discussion of Iron Age changes from a gender archaeology perspective, in two potentially informative areas: firstly iconography of the Sardinian bronzes. Studies of these have concentrated on stylistic elements of the male warrior or attempted a chronology based on style, but an exploration through gender perspective has been relatively untouched. The presence of female figurines implies gendered autonomy but how is this related to the wider social changes of the period? Does this reflect an increase in importance of the family, as seems to be intimated by changes to settlements or was there an increased role for women as lead figures at Iron Age sanctuaries? Secondly, contact between later Nuragic Sardinians and foreigners. Covering a period between the 9th-7th centuries BC Sardinians were in contact with both Etrurians on mainland Italy and Phoenician settlers Sardinia. Burials in Villanovan cemeteries seem to show that women played an important role in shaping contact, and intermarriage was likely to have been a factor in both contact situations. How did this contact affect gender dynamics of the islanders? This paper looks at the importance of gender diachronically and from an indigenous perspective, highlighting how the role of women and men has been moulded.

## 8 ENGENDERING THE "ORIENTALIZING" KOINE: GENDER DYNAMICS AND BODILY CAPITAL IN THE EARLY IRON AGE OF SOUTHERN PORTUGAL (7TH–5TH CENTURIES BCE)

**Abstract author(s):** Gomes, Francisco (University of Lisbon)

**Abstract format:** Oral

Recent research has highlighted the key role of gender dynamics in contexts of intercultural contact arising from the fixation of Levantine groups throughout the Mediterranean. Conversely, the impact of such contacts on the gender norms and their expression within local communities has also begun to be explored in greater detail.

However, significant blind spots still remain which need to be explored in further detail. The so-called "Orientalizing" koine of Southwestern Iberia is a case in point: while a great deal of research has been conducted on the impact of the Phoenician presence and on the social and political development of the communities which became embedded in the "Orientalizing" network mediated by that presence, very little attention has been afforded to the role of gendered social relationships in the structuration of that network.

New data from Southern Portugal does however afford new insights into that role. The information gleaned from newly excavated funerary sites is particularly interesting, as it highlights a shift in the ways gendered identities were conceived or, at least, expressed. One particularly significant aspect of that shift concerns practices related to bodily care, which in the Late Bronze Age were the province of male individuals and closely embedded in a "warrior ideology", but now become a prerogative of women, highlighting a new focus on female bodies which extends to other aspects, such as adornment and dress.

It will be argued that this shift, far from incidental, is a key component in the restructuring of local communities, especially in rural areas, and that it reflects a change in the strategies of accumulation of what might be called "bodily capital" (sensu Bourdieu) that was instrumental in the development of new sociopolitical structures which allowed those communities to adapt to their new position in the wider "Orientalizing" network.

## 9 ENGENDERING BODIES AND OBJECTS IN PLACES OF INTERACTION IN THE EARLY IRON AGE IBERIAN PENINSULA

**Abstract author(s):** López-Bertran, Mireia (Universitat de València) - Vives-Ferrándiz, Jaime (Museu de Prehistòria de València)

**Abstract format:** Oral

Over the last years archaeological research in the Mediterranean has emphasized the active role of material culture and objects for a better understanding of phenomena of culture contact. The far western Mediterranean during the Iron Age is no exception and diverse situations of interaction between indigenous people and groups of Phoenician and Greek origins, have been identified in which things played a key role.

In this paper we will focus on the cultural construction of gender in these episodes of contact situations. In tune with the tenets of a social and engendered archaeology we will address the material visibility of gender difference throughout the first half of the first millennium BC in the Iberian Peninsula. We will do so focusing on the mouth of the Segura and Vinalopó rivers; The reason for the selection of this area is that it shows very different degrees of involve-

ment and interaction between indigenous and Mediterranean groups, not least regarding the consequences of this contact. More specifically, we will examine the rich and varied evidence from ritual and funerary contexts.

The fundamental questions that we will raise are what gender-specific practices operated and how material culture was mobilised to construct, maintain or alter gender conceptions. Our theoretically informed approach places ideas of the social body at the forefront of the analysis by asking how things might have materialised gendered values and individuals in this area. This methodology allows us to get an in-depth understanding of social significances of gender differences and power relations and to what extent they differed and changed through time.

## 10 **CONNECTING GENDER BETWEEN ISLANDS: SOCIAL, ECONOMIC AND GENDER RELATIONS BETWEEN THE PUNIC ORBIT AND THE INDIGENOUS BALEARIC SOCIETIES (550-123 B.C.E.)**

**Abstract author(s):** Torres Gomariz, Octavio (Universitat d'Alacant; Universitat de Barcelona)

**Abstract format:** Oral

The colonial relations between the Phoenician-Punic communities of Ibiza and the indigenous groups of Mallorca and Menorca have been discussed in the protohistoric research of the Balearic archipelago (Spain). While for Ibiza there is a certain consensus in understanding them as state and patriarchal, the social structure of the indigenous groups of the eastern islands has been more debated. There has been talk of a progressive social stratification visible in necropolises and sanctuaries, something that contrasts with a defended continuity in the essential socio-economic forms. In short, this is a debate in which archaeology has focused above all on the great architectural manifestations of these island communities and the power relations that they materialise. However, the articulation of gender systems has not generally been integrated into these discourses, something that this work aims to advance. The study of everyday life reveals itself as an exceptional scenario for exploring the progressive construction of gender in this space and time, which has its roots in earlier periods and is at this moment when it reaches greater clarity. Through the integral analysis of domestic spaces, together with the information obtained from other areas of material culture, we propose an approach to the daily life of these populations in order to answer the following questions: was gender a real axis of social organisation at this time for both societies? Did the contact between the two structures have any kind of repercussion? The proposed answer is yes, but with its diversities and adaptations, and this work will propose the materials and hypotheses to understand this process.

## 11 **JEWELLERY AND ORNAMENTATION IN ANCIENT SOUTH-EAST ITALY: AN INSIGHT INTO GENDER AND CULTURAL ENGAGEMENT FROM THE 6TH-4TH CENTURIES BC**

**Abstract author(s):** Newland, Tayla (University of Sydney)

**Abstract format:** Oral

As an artefact type, jewellery has been systematically undervalued. While countless scholars have investigated prestige goods found in male burials, jewellery and ornaments have been decontextualised and relegated to museum catalogues, largely due to their association with 'feminine' enterprise. However, the study of jewellery can offer fundamental insights into the identities of its owners, and provides a useful lens through which cultural interaction can be viewed. This is particularly relevant in the context of ancient south-east Italy, where cross-cultural engagement between indigenous Italians and Greeks has long been debated. Despite this, past studies of jewellery from the region have proven Hellenocentric and superficial, with a notable absence of research on ornaments from indigenous sites.

This paper addresses the lacuna through a new typological analysis of jewellery from 6th-4th century BC south-east Italy. It considers the ways in which gender was actively embodied by ornamentation, and situates gender at the nexus of other facets of social identity such as age, social status and ethnicity. It also foregrounds indigenous women as agents of cultural mediation, and demonstrates that Italian communities used body modification to distinguish themselves from neighbouring groups. These analyses offer new insights into the lived experience of identity, changing social roles, and the nature of cultural contact on a local scale. But above all, they reframe gender within the dynamic socio-cultural context of this period, and provide a new perspective on the shifting social landscapes of the ancient Mediterranean world.

## 12 **EROTIC IMAGERY IN THE EASTERN ALPS AND ADRIATIC DURING THE 6TH/5TH CENTURY AS MANIFESTATIONS OF ELITE WOMEN'S AUTHORITY AND AGENCY**

**Abstract author(s):** Nebelsick, Louis D. (Unwersytet Kardynala Stefana Wyszynskiego w Warszawie)

**Abstract format:** Oral

Whereas most scholars dealing with fascinating East Alpine late sixth/early 5th century Situla Art concentrate on the "Situla Feast" as a reflection of Eastern Alpine social and ritual realities, I would like to explore more sophisticated aspects of this pioneering narrative imagery.

In this paper, I would like to examine the remarkable Situla from Pieve d'Alpago grave 1, an elite female sepulchre that has fascinated not only the scholarly community with its drastic and lusty depictions of courtship, sex and birth.

Scholarship has tended to see the imagery of this vessel reflecting drastically sexualized rustic narratives focussed on re-enactments of the Hieros Gamos and strategies of legitimizing inherited authority.

In this reevaluation of the situla's lusty imagery, I posit that, on the one hand, the imagery of this situla can be embedded in contemporary East Alpine iconographic formulae emphasizing women's sexual agency and familial authority. On the other hand, it surprisingly clearly reflects very specific Mediterranean mythologies involving transgressive sexuality. There are remarkable similarities between the Pieve d'Álpage situla's imagery and motifs in archaic Etruscan and Umbrian art, and particularly on Apulian stelae and Campanian subgeometric vase painting. Even more significantly, there are both iconographic and syntactic parallels between the Piave frieze and Pausanias' (5,17,5-19,10) description of the Kypselus Chest, which he saw in the Temple of Hera in Olympia.

In particular, the conceptual and iconographic interpretations of resolute Dike as the aggressive persecutor of Adikia /personified transgression of familial social and sexual norms and mythological women's attempts to transcend these strictures lie at the heart of the remarkable iconography of the Pieve d'Alpago situla. Clearly, interwoven mythologies were being invented, shared and interpreted in particular by elite women throughout the Adriatic.

## 13 A STUDY OF GOLD AND SILVER APPLIQUES OF SCYTHIAN GARMENTS

**Abstract author(s):** Lifantii, Oksana (National Museum of History of Ukraine)

**Abstract format:** Oral

My proposal examines gold and silver garment appliques of Scythian elite representatives that were buried in barrows of East European Steppe. The base of the study contains the appliques of clothes from more than 130 barrows of the 7th – 3rd c. BCE.

The character of images presented on these jewellery does not seem random. The symbolism brightly appears on long plaques of headdresses, where some integral "rows" and "order of code" could be seen, which is harder with small appliques.

Over 99% of items under analysis belong to the so-called small appliques (items with simple depiction and which length/height is twice as width) of garments that were used as the decor of all parts of the costume, from headdresses to shoes. The long appliques contain complex image schemes and the length of the item greater than the width three and more times.

The vast majority of long appliques decorated women's headdresses. I manage to allocated credible remains of 81 elite headdresses. Among them, nine are related to male "başlık" (hood) and forehead bands; 70 – with female "calathus", conic hats, blankets, hats, forehead bands and tiaras (type of Scythian hat). The remains of only two headdresses were found in children's graves, in the form of a conic cap with side beads owned by a girl 6-7 years old and a forehead band worn by a girl 10-12 years old. Furthermore, eight cases of decoration with gold appliques of men's and probably women's clothing (coats), seventeen women's dresses and one child shoulder clothes were traced. From nine remains of belts with appliques found in graves, in one case belt was belonged to the armed women, the so-called Amazon.

---

## 286 PUBLIC ARCHAEOLOGY AND SITES OF CONFLICT [PUBLIC ARCHAEOLOGY COMMUNITY]

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Benetti, Francesca (Historic Environment Forum) - Westmont, Camille (The University of the South)

**Format:** Regular session

The past is contentious, and archaeologists and heritage practitioners are often at the forefront of interpreting these sites for and with modern audiences. These professionals also have a critical role to play in mediating disagreements over perspectives of the past, or in understanding and negotiating personal and visitors' emotions when dealing with signs of past conflicts. Working in sites of conflicts (or in sites that create tensions today) may require sensitivity (e.g. when dealing with human remains), clear aims, stakeholder collaborations, and a range of additional measures that may not be necessary in other contexts. How can archaeologists engage with difficult stories? What if stories of the past instigate conflicts/tensions today? What risks must archaeologists consider when working on these types of sites? Are there any opportunities to be harnessed? In this session we welcome papers aimed at exploring these topics, as well as others linked to sites of conflicts, from past battlefields to more recent conflicts and to social tensions stemming from different perspectives of the past.

## 1 FINDING FAMILY AT FROMELLES: KINSHIP, PRIVATE MOURNING AND NATIONAL COMMEMORATION AT A WORLD WAR I BATTLE SITE

**Abstract author(s):** Renshaw, Layla (Kingston University London)

**Abstract format:** Oral

The Battle of Fromelles took place in July 1916 in Northern France. Intended as a diversionary attack during the Somme offensive, it was a military disaster resulting in massive loss of life. One of the first major deployments of ANZAC forces on the Western Front, it has been described as the 'worst 24 hours in Australian history', and the 5th Australian Division suffered over 5,500 casualties.

In the wake of the battle, German burial parties gathered up the dead and buried them in mass graves. Due to the tenacious investigations and campaigning of amateur historian Lambis Englezos, and a network of relatives and supporters, the mass graves were eventually re-discovered and excavated in 2009. The exhumations were accompanied by intensive forensic analysis of the human remains and accompanying artefacts, as well as a large-scale DNA identification program. Of the 250 soldiers recovered, 166 have been successfully identified. The remains have now been reburied in a newly built cemetery close by to both the battle and mass grave sites. A new museum at Fromelles has become an important site of heritage and commemoration within the landscape of the Western Front.

This paper is based on a series of interviews with Australian relatives of the dead during the identification process. It examines tensions between different identities of Fromelles as the resting place of individual soldiers and as a heritage site for collective remembrance and education. Relatives value their profound, intimate and authentic connection to Fromelles, its landscape and residents. However, they also aspire to raise public consciousness of the battle, elevate the status of the site, and ensure state resources are committed to both investigating and honouring the dead. The impact of memorial diplomacy, the Great War centenary, and the universalizing effect of contemporary heritage practices will be explored.

## 2 REWRITING THE STORY OF SECOND WORLD WAR IN SKANDERBORG

**Abstract author(s):** Host-Madsen, Lene - Paulsen, Charlotte - de Vos, Julie (Museum Skanderborg)

**Abstract format:** Oral

During World War II, Denmark was occupied by Nazi Germany and during the last year of the occupation, the headquarters of the German Luftwaffe was placed in Skanderborg Dyrehave in the central part of eastern Jutland. After the war, the camp was reused to intern German refugees; civilians who had to flee their homes in the northeastern part of Germany, due to the Soviet offensive.

The relationship between Danes and Germans was tense both during and after the occupation and all contact with the interned civilians in the refugee camps was prohibited.

Based on archaeological fieldwork done in Dyrehaven, Skanderborg during the spring 2022, partially including a community dig, in this paper, the possible pitfalls and opportunities of doing archaeology at a contested site, as well as of including the local community in this doing, will be discussed.

The shaping of the narrative of the site is mainly in the hands of Danish researchers from Museum Skanderborg, integrating Danish locals in the research through a community dig. We are lucky to be in possession of original sources, as for instance diaries, and hopefully the archaeological digs will reveal untold stories that will add nuances to the narrative of the Germans in Dyrehaven. But how will the fact that the Germans themselves are absent from shaping their own narrative affect the knowledge that we produce? Or how do we balance with sensibility between both sides, without compromising our critical sense or undermining the drama lived on both sides of the barbed wire? The bringing together of this narrative, raises multiple questions that we would like to share at this session.

## 3 SOURCES OF CONFLICT: THE CASE STUDY OF THE AGITPROP SITE IN DREŽNICA, CROATIA

**Abstract author(s):** Iva, Stojevic (Institute of East Asian Studies, École Normale Supérieure de Lyon) - Gligora, Valerija (Valdir - obrt za istraživanje i usluge, Zagreb) - Grgurinović, Ivona (Department of Ethnology and Cultural Anthropology, Faculty of Humanities and Social Sciences, University of Zagreb) - Parežanin, Lujo (Department of Comparative Literature, Faculty of Humanities and Social Sciences, University of Zagreb) - Gomes Coelho, Rui (Department of Archaeology, Durham University; UNIARQ - Centre for Archaeology, University of Lisbon) - Horvatinić, Sanja (Institute of Art History, Zagreb) - Teixeira Simões, Sara (UNIARQ - Center for Archaeology, University of Lisbon)

**Abstract format:** Oral

The "Agitprop" site was located in 2020 during a landscape survey done within the project Heritage from Below | Drežnica: Traces and Memories 1941-1945. Between 1943 and 1944 the camp of the Central Technique of the Agitation and Propaganda Department of the Central Committee of the Communist Party of Croatia was located at Mt. Javornica, near Drežnica in central Croatia. The "Agitprop" was an important apparatus of the Yugoslav antifascist

resistance logistics, a kind of guerilla news agency service. Its Central Technique was a movable unit, printing newspapers, magazines, leaflets, as well as poetry and other literary works in the isolated mountain area.

Despite "Agitprop's" clandestine status during WW2, surviving local members of the resistance still have memories of it, and the local population still calls the forest glade "Agitprop". Agitprop's archives were lost, however, cooperation with local communities, along with testimonies of partisans working in the "Agitprop" published after the war, documentation efforts in the late 1960s, as well as archives and secondary sources were all used in the effort of locating the printing house.

In this paper we will present the results of the 2021 archaeological excavation on the "Agitprop" site in relation to ongoing archival and literary investigations about partisan cultural production. The aim of this paper is to reflect on the complex relationship between archaeological and archival sources in contemporary archaeology. We will focus on the circumstances surrounding work and history of the "Agitprop", and discuss how archaeological and historical evidence can be related in the production of an archaeological narrative. Even though the paper focuses on this one site, the issues raised by this excavation can be observed in similar sites, especially those that appear to be in conflict with official memory politics, or are in any way not in line with mainstream narratives.

#### **4 CULTURAL HERITAGE OF THE ITALIAN PARTICIPATION IN THE SPANISH CIVIL WAR: ARCHAEOLOGY, MEMORY AND RESIGNIFICATION OF A CONFLICT ARCHAEOLOGY SITE**

**Abstract author(s):** Perez-Juez, Amalia (Boston University) - Garcia Ruiz, Jose Luis (Independent Researcher) - Rodriguez Simon, Pedro (Independent Researcher) - Torija, Alicia (Tufts University) - Aramberri, Josu (Universidad del País Vasco -UPV)

**Abstract format:** Oral

Between July 1936 and August 1937, the northern region of Burgos, Spain, was a territory divided between those who remained faithful to the Spanish Republic and those who followed the fascist coup d'état. In the spring of 1937, the population of these communities witnessed the arrival of international troops, primarily the Italian soldiers from the Corpo Truppe Volontaire. This presence modified the landscape with the construction of trenches, dugouts, machine gun nests, and other structures for warlike attack and defence. The Italian troops also made dozens of engravings and graffiti on surrounding buildings and rocks. After the war, the landscape was changed again, this time, with propagandistic architecture such as the "Ossuary Pyramid of the Italian Fallen" or the monument to rebel soldiers.

This contribution presents the results of the project MD-209-2021, which deals with the protection of Spanish Civil War remains left by the Italian troops in northern Burgos. The work entails the cataloging of engravings and graffiti, but it also encompasses larger goals, which include the preservation and resignification of Civil War remains -clearly anti-democratic-. We are living a moment with an ongoing debate concerning the preservation of this kind of heritage. Citizens and researchers don't agree on the way it should be preserved or even if it should be. On the other hand, archaeological heritage offers a perfect opportunity to put things in context, and educate about present democratic values.

The remains we have located are rapidly decaying. Their preservation is urgent. The construction of roads, the demolition of old buildings, and ignorance or contempt are endangering the conservation of an irreplaceable, limited, undocumented and non-renewable heritage. The project also presents an international cooperation derived by the study of these remains and proposes how we can investigate, share, and engage in narratives that are still alive today.

#### **5 PUBLIC MEMORY AND ARCHAEOLOGY OF THE TENNESSEE CONVICT LEASE WAR, 1891-1892**

**Abstract author(s):** Westmont, V. Camille (University of the South)

**Abstract format:** Oral

Following the end of the US Civil War, white elites in the American South became re-enslaving African American men through the prison system. Prisoners were sold by the state penitentiaries to private businesses where they were forced to labor without pay for the duration of their prison sentences. Many businesses used prison labor as a means of preventing free labor from unionizing or striking for better working conditions. After 20 years of labor and racial oppression, free white working class communities across the state of Tennessee began using guerrilla tactics to bring about an end to the prison labor system. Repeated incidents of arson, attacks on prison wardens and guards, and public protests led by coal miners between 1891 and 1892 eventually led Tennessee to end their forced prison labor system. This series of events has collectively been called the Tennessee Convict Lease War. While the history of forced prison labor is gaining more attention across the American South, acts of rebellion such as the Tennessee Convict Lease War continue to be under-interpreted or entirely uninterpreted for public audiences. This paper explores efforts currently underway to expand interpretation of the Convict Lease War at the Lone Rock Stockade, where free coal miners repeatedly attacked a convict labor prison and successfully liberated the prisoners on one occasion.

## 6 FINDING COMMON GROUND IN THE SEARCH FOR THE UNITED STATES' LOST SERVICE MEMBERS

**Abstract author(s):** Peixotto, Becca - Toney, Joshua - Dalton, Kevin - Freudenstein, Nicolle - Grant, William (Henry M Jackson Foundation)

**Abstract format:** Oral

Through its Partnerships and Innovation (PI) program, the Defense POW/MIA Accounting Agency (DPAA) works with universities and organizations in the United States and around the world to fulfill its mission to provide the fullest possible accounting of the 70,000+ US service members missing from past conflicts. These collaborations often bring to light differing relationships that stakeholders have with the aircraft crash sites, battlefield landscapes, and sea loss locations. Archaeological excavations of World War II US aircraft crash sites in Europe by DPAA Partners allow an examination of the points of conflict and opportunity as the DPAA mandate, host nation heritage agency policy, local understandings of historical and present landscapes, and the interests of professional, trainee, and avocational archaeologists meet. In this paper, we discuss trends in the successes and challenges at the policy, institutional, and community levels encountered by DPAA and our Partners. Our experience suggests we can find common ground by respecting local memory and fostering new shared history at sites of past conflict.

## 7 CONFLICT ARCHAEOLOGY IN SCHOOLS: DISCUSSING DARK HERITAGE THROUGH MATERIAL CULTURE

**Abstract author(s):** Väisänen, Teemu (University of Turku)

**Abstract format:** Oral

The concept of dark heritage has recently gained traction in Finnish archaeology. While the definition of the concept remains debated, it generally refers to places of death, suffering, and disaster, whether battlefields, concentration camps or notorious sites of disasters. Such sites have not only been studied archaeologically in the recent decades, but they have also seen involvement of public and schools.

While there has been discussion on dark heritage as a source for history teaching in the form of school visits, little has been written on how students can address the difficult past of WWII through material culture, eg. taking part in archaeological excavations and discussing the difficult history through finds. In this paper, we discuss the possibilities of conflict archaeology in education.

As a case study, we focus on the Luftgau Finland research project organized by the University of Turku. The project researching the use of Finnish airfields by the Luftwaffe has seen public participation through public excavations, field schools and - most recently - an archaeological summer camp. These projects have not only educated a new generation of students into conflict archaeology and wartime history, but also sought to discuss difficult heritage with the local communities.

---

## 287 MACROARCHAEOLOGY - DEFINITION, OBJECTIVES AND APPLICATIONS OF A NEW ARCHAEOLOGICAL PARADIGM

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Schmid, Clemens (Max Planck Institute for Evolutionary Anthropology) - Matzig, David (Aarhus University)

**Format:** Regular session

Three years ago Charles Perreault published the "The Quality of the Archaeological Record", where he systematically deconstructs archaeology as a field frequently operating outside what it can verify "beyond reasonable doubt": "If juries were allowed to use the same test of consistency that archaeologists use, jails would be filled with innocent individuals and people would have no trust in the justice system." (Perreault 2019, p.21)

He justifies his withering critique with the following argument: In the last decades archaeology has fully internalized originally sociological or ethnological microscale research questions, focussing on individual-level agency, social organisation or even religion. That is ineffective, because the archaeological record is not sufficient for that in sampling interval, resolution and dimensionality. The mismatch of research questions and data – the "underdetermination problem" – causes archaeologists to publish narratives that can neither be verified nor falsified.

Founded on Perreault's analysis, this session seeks to explore the value in, barriers to, and arguments against a paradigm-shift towards what he introduces as "macroarchaeology": a data-focussed search for long-term, large-scale patterns of human behaviour, which emerge through extrinsic environmental drivers as well as intrinsic cultural evolutionary dynamics. It entails setting aside microscale processes in favour of evaluating the archaeological record itself — just like palaeontology did with the fossil record — and a focus on a small number of universal research questions surrounding measurable population parameters (e.g. rates of change in artefact categories or correlations among group structure properties).

To engage a diverse set of speakers who scrutinize theoretical and technical challenges of macroarchaeology, we invite contributions that...



- propose definitions and objectives for this field of research
- critically engage with its theoretical foundations
- argue for or against the paradigm
- discuss how it could complement previous work
- present research and datasets that fit a macroarchaeological frame of reference.

## ABSTRACTS

### 1 MACROARCHAEOLOGY: HOW CAN ARCHAEOLOGY MAKE NOVEL AND USEFUL CONTRIBUTIONS TO EVOLUTIONARY THEORY?

**Abstract author(s):** Perreault, Charles (Arizona State University)

**Abstract format:** Oral

Paleolithic archaeologist Geoff Bailey once observed that “archaeology . . . is reduced to an appendix, at best entertaining, at worst dispensable, of ecology, sociology, or whichever study of contemporary behaviour happens to be in current fashion.”. Although harsh, his comment is still accurate more than 35 years later. Archaeologists certainly aspire to make useful contributions to evolutionary theory and to our general understanding of human behavior. Archaeologists, for various historical reasons, have come to view themselves as prehistoric ethnographers, whose goal is to interpret the macroscale archaeological record in terms of microscale processes borrowed from other disciplines. In doing so they have produced a flow of information about the past that is impressive in its quantity but that is for the most part unverifiable. If archaeologists are to contribute to our understanding of human behavior and culture in a meaningful way, they need to do like paleontologists and recalibrate their research program to the quality of the archaeological record. This recalibrated agenda entails a different set of research questions than the ones archaeologists are trained to ask. Here I outline the kinds of research questions and the research strategies the macroarchaeology program entails.

### 2 CULTURAL MACROEVOLUTION

**Abstract author(s):** Prentiss, Anna (University of Montana) - Walsh, Matthew (National Museum of Denmark)

**Abstract format:** Oral

Charles Perreault's macroarchaeology offers an agenda focused on causes for variation in the pace and direction of cultural change. It joins a wider discussion of cultural macroevolution that includes several major themes. First, cultural macroevolution emphasizes the long term pattern of evolution. Such research offers opportunities for identification of a variety of underlying phenomena structuring variation in macroevolutionary trends. Second, cultural macroevolution provides insights into transitions on multiple scales. Technological transitions are common, while so-called great transitions are rare and the latter cannot exist without the former. Thus, cultural macroevolutionary explanations of transitions requires understanding of evolutionary hierarchies and reticulate causation. Third, cultural macroevolution contributes to scholarship concerning the wider bio-cultural evolutionary process. Culture provides one of several forms of inheritance (others include social learning, genetic, and ecological) and evolutionary causality is a reciprocal process incorporating effects of selection, phenotypic change, and acquired variation. Thus, cultural macroevolution enhances our understanding of critical processes such as animal and plant domestication. We review the wider scope of cultural macroevolution with respect to its potential to contribute to our understanding of human evolution across multiple scales. We provide illustrations of evolutionary process drawing in part from our own research in Arctic and Pacific Northwest North America.

### 3 WOULD A DINOSAUR VET CLINIC BE A DANGEROUS PLACE? SOME THOUGHTS ON THE ONTOLOGY AND EPISTEMOLOGY OF ARCHAEOLOGY

**Abstract author(s):** Araujo, Astolfo (Museum of Archaeology and Ethnology - University of São Paulo) - Okumura, Mercedes (Institute of Biosciences - University of São Paulo)

**Abstract format:** Oral

Processual archaeology was mistaken in many ways; however, we believe that one of the most damaging ideas that is still popular among some archaeologists is the belief that we study a fragmentary and imperfect cultural record and, therefore, that we do a poor, incomplete, and handicapped anthropology or ethnography of the past. Of course, processualists were not alone in this view. The idea of Archaeology as being interested in revealing an instant portrait of the past and human individual idiosyncrasies is one that has been permeating in the discipline in the last 60 years, trespassing even seemingly opposing theoretical stances, such as the “ecological”, “paleoethnographic”, or “agency” paradigms. In a sense, that prevents many archaeologists to realize that our discipline is in charge of studying the only long-term record of human culture, which can be regarded as a pivotal element to better understand cultural changes through time. We propose that archaeologists should engage in projects that can be properly developed considering the nature of the archaeological record. Such projects can include long term changes of

archaeological cultures, including changes in artifacts, subsistence, settlement, or burial patterns, among others, contributing towards the discussion regarding which factors are involved in cultural innovation or stasis through time. We consider that a theoretical framework that includes Evolutionary Archaeology and Cultural Transmission Theory would be fit to this endeavor, although other theoretical approaches could be considered. In this communication we will point some ontological issues and stress the importance of addressing Archaeology from a standpoint that is rooted in Philosophy of Science. We believe that once the mismatches between ontology, epistemology, and practice are detected and overtly stated, archaeologists can be more critic about their reasoning, discourse, and practices.

#### **4 MECHANISMS IN ARCHAEOLOGICAL EXPLANATION: MUCH NEEDED FOR MACROARCHAEOLOGY, BUT MAINLY MISSING FROM THE POST-MODERN MAINSTREAM**

**Abstract author(s): Marwick, Ben (University of Washington)**

**Abstract format: Oral**

In the last decade there has been burst of discussion in the social sciences, in biology, and in philosophy of science on how scientific explanations should be structured. Early unproductive engagements by archaeologists with philosophy of science work on explanation has led to a general neglect of these important developments in scientific explanations. Rather than advocate a specific explanatory style, these recent discussions in other fields indicate that one of the most important and useful structural elements in social science explanations are mechanisms. For archaeologists, working at the intersection of human and natural sciences, it has not been clear if the approach to mechanisms of biologists or sociologists will be more useful and generative. I argue that with some modifications, sociologists' concepts of mechanisms are most natural for archaeological explanation, and hold the most potential to improve reasoning about challenging situations, such as a unique case study. I describe the modifications necessary to satisfy most archaeological situations, and define "mechanismic" thinking as a way to deal with three important objections likely to come from archaeologists. I explore the dynamics of underdetermination determined by the temporal scale of an archaeological inquiry, and evaluate how this limits the kinds of mechanisms that can be included in explanatory narratives in archaeology.

#### **5 MACROARCHAEOLOGY, EPISTOMOLOGY, AND THE QUALITY OF THE ARCHAEOLOGICAL RECORD**

**Abstract author(s): Allison, James (Brigham Young University)**

**Abstract format: Oral**

Perrault (2019) combines a critique of current archaeological practice with a call to re-center research on questions of culture history as well as "macroarchaeology", or the search for large-scale patterns of human behavior and cultural development. His arguments for what archaeologists should do (and stop doing) are driven by the way the quality of the archaeological record underdetermines the answers to questions that archaeologists often seek to answer. There is much to like in Perrault's arguments, but there also are some problematic aspects. I agree that something like Perrault's macroarchaeology should receive greater focus within the discipline, and that archaeologists should carefully consider the quality of their data, but I cannot agree with his call for a radical pruning of archaeology's research agenda.

Perrault argues that archaeologists should search for "smoking guns" that allow hypotheses to be proven "beyond a reasonable doubt". This is a simplistic and unrealistic description of the research process. He does better when he introduces the idea of using likelihood ratios to evaluate the support given to multiple hypotheses but does not fully develop the idea.

I argue for a Bayesian epistemology, which uses the prior probabilities as well as the likelihood ratios of multiple hypotheses (given available data) to reduce uncertainty about the hypotheses, without strictly confirming or rejecting any particular hypothesis. A Bayesian research model provides a different perspective on the underdetermination problem – if smoking guns aren't necessary for research to progress, then the quality of the archaeological record is not as debilitating as Perrault suggests. Archaeological research can (and should) proceed at a variety of scales and work with data of varying quality. Macroarchaeology should become an important part of the discipline, but its impact will require successful macroscale studies, not radical pruning of other parts of archaeology's research agenda.

#### **6 ARE WE WHAT WE EAT? THE SOUTHWEST ASIAN "NEOLITHIC REVOLUTION" AS MACROARCHAEOLOGICAL THEORY**

**Abstract author(s): Roe, Joe (Institute of Archaeological Sciences, University of Bern)**

**Abstract format: Oral**

V. Gordon Childe's theory of a 'Neolithic Revolution' cemented the Neolithic of Southwest Asia as one of the key episodes in the cultural evolution of our species – ground zero for a new socioeconomic system that went on to transform prehistoric societies across Eurasia. Nearly a century of subsequent research has greatly expanded our knowledge of

the sequence and nature of the Southwest Asian Neolithic, yet in many ways we seem no closer to a definitive model of the causes and consequences of this new economy than we were in Childe's day. Indeed, the very concept of a Neolithic Revolution has accumulated such a weight of critique and modification that it seems all but buried: we now know that that, far from being a sudden spark of genius, the advent of agriculture was highly dispersed and protracted; alternative explanatory narratives have de-centered the development of agriculture as the primary driver of social change; and there is increasing scepticism that there was anything special or 'revolutionary' about the Neolithic at all, compared to periods before and after.

In this paper, I attempt to resuscitate the Neolithic Revolution within Perreault's (2019) macroarchaeology framework. I argue that, due to its roots in historical materialism, Childe's original formulation is a model of prehistoric social change that is still plausible—and plausibly tested—against the archaeological record. It can be seen as a set of interlinked hypotheses regarding a) the reconfiguration of Neolithic people's relations to economic production in response to external and/or internal drivers; and b) long-term economic and social changes this set in motion. And crucially, while many contemporary approaches to the Southwest Asian Neolithic suffer from, to use Perrault's terminology, 'underdetermination', we can derive from these hypotheses a set of 'smoking guns' that we could reasonably expect to see in the regional archaeological record.

## 7 CYCLES IN A LONG-TERM PERSPECTIVE

**Abstract author(s): Gronenborn, Detlef (Leibniz Reserach Institute for Archaeology - RGZM)**

**Abstract format: Oral**

Archaeology and other historical sciences have a long history of searching – and finding – long-term processes and dynamics in their respective records. These approaches go back to Classical Antiquity but have continued in the scholarly debates throughout the millennia, and continue to be evoked today.

Some of these theoretical models circle around a concept of history encompassing cycles, which entail the succession of integrative and disintegrative phases as inherent and essential components of these dynamics.

These approaches have been accused of being deterministic, and they are. But they are also based on empirical observations beginning with early farming societies (and likely much earlier but less well investigated societies), indicating that these do follow cyclical patterns in which integrative and disintegrative phases succeed each other. These phases not only form much of the archaeological data, but actually may constitute one major forcing factor in historical processes. If so, these cyclical successions of stages required and require humans in the past and in the present to cope with their inevitability.

Despite the ancestry of the concept, it is still valid and one component of these cycles, namely the concepts of (social) cohesion/cooperation are currently being discussed vividly, albeit more often as static stages, rather than as dynamic factors. Nevertheless, may cohesion be one major factor in resilience mechanisms.

Relating to the combined efforts of a wider group, I will summarize the current state of research on early to complex farming societies and their implications for modern state-level societies, including our own presence and possible future.

## 8 RECOVERY & RESILIENCE OF PREHISTORIC SOCIETIES AFTER DISTURBANCE AS SEEN THROUGH PALAEODEMOGRAPHY

**Abstract author(s): Riris, Philip (Institute for Modelling Socio-Environmental Transitions)**

**Abstract format: Oral**

The time taken by human societies to recover after disturbances is of widespread interest to archaeologists and anthropologists. To date, there has been no consistent, comparative study carried out a large (macroarchaeological) scale across prehistoric cultures to determine rates of recovery, their spatiotemporal variability, and the factors that affect outcomes. This talk will present a meta-analysis of palaeodemographic records that use archaeological radiocarbon dates as a proxy for prehistoric population history. It will draw on well-known case studies, with a view towards quantifying the geographical/biotic/cultural influences on societal recovery, as well as how different types of disturbances may shape adaptive responses. In summary, the paper aims to advocate for rigorous and robust approaches towards past patterns of resilience, ideally ones that 1) focus on measurable, comparable properties of cultural dynamics, and 2) are linked more closely with interdisciplinary definitions of resilience, in order to enable large-scale syntheses of archaeological and anthropological data. Arguably, achieving these two goals stands the greatest odds of success from a macroarchaeological perspective.

## 9 ZOOM AND ENHANCE: HIGH RESOLUTION RECONSTRUCTION OF MACRO-SCALE PROCESSES WITH BAYESIAN HIERARCHICAL MODELS

**Abstract author(s):** Hinz, Marfin - Roe, Joe (Institut für Archäologische Wissenschaften, University of Bern)

**Abstract format:** Oral

The usefulness of macro-level studies has been increasingly appreciated in archaeology over the last 10 years, not only since the publication of the book that is the reference point of this session, but also thanks to the greater accessibility of the data needed for such research. From this point of view, the call for a macroarchaeology is a culmination of a broader endeavour.

As exciting as the macroarchaeological research programme is, its aim of linking macro-scale processes to external drivers is a difficult task. In general, the prediction for recent prehistory is that only processes that take place over centuries can be identified. However, many relevant triggers have a much shorter duration, e.g. short-term climate fluctuations or epidemics.

One proven approach to increasing temporal sampling data is to combine data over large geographic areas. Another is data assimilation, which combines a modelled representation with data. Hierarchical Bayesian models are able to do both and can be used to link different qualities of data and supplement missing data, e.g. from one region with data from another.

In this talk, we embed a hierarchical Bayesian approach to reconstructing population density within the framework of macroarchaeology. With this methodology it is possible to reconstruct macro-scale processes with higher resolution than with a single indicator, potentially exceeding the empirical limits proposed by Perreault. In this way, relevant causal relationships between different population-level triggers and responses can be more accurately and credibly demonstrated, offering many more opportunities to address issues of macroarchaeological relevance.

## 10 A MACROEVOLUTIONARY ANALYSIS OF EUROPEAN LATE UPPER PALAEOLITHIC STONE TOOLS USING A BAYESIAN PHYLOGENETIC FRAMEWORK

**Abstract author(s):** Matzig, David (Aarhus University)

**Abstract format:** Oral

The identification of material culture variability remains an important goal in archaeology, as such variability is commonly coupled with interpretations of cultural transmission and adaptation. While most archaeological cultures are defined on the basis of typology and research tradition, cultural evolutionary reasoning combined with computer-aided methods such as geometric morphometrics (GMM) and Bayesian phylogenetic inference allow us to achieve a deep-time perspective, where the processes that were involved in shaping the evolutionary history of these artefact groups can be tested statistically.

In this paper, I present a macroevolutionary analysis of cultural change in the European Final Palaeolithic and earliest Mesolithic. Using a time scaled Bayesian phylogeny based on the outline shape of lithic tools obtained from a large set of legacy data via 2D geometric morphometrics, I estimate the rates of diversification, and trait evolution in artefact shape for the period between 15,000 and 11,000 BP. I test whether the recovered patterns correlate with the climatic and environmental changes occurring within this time frame.

This approach fits a macroarchaeological research program and serves as an example for potential future applications of this paradigm to the European Stone Age archaeological record.

## 11 MACROARCHEOLOGICAL BY DEFAULT: THE RESEARCH CENTER "THE ROLE OF CULTURE IN EARLY EXPANSIONS OF HUMANS" (ROCEEH)

**Abstract author(s):** Haidle, Miriam - Bolus, Michael - Bruch, Angela - Conard, Nicholas - Hertler, Christine - Kanaeva, Zara - Kandel, Andrew - Sommer, Christian (Heidelberg Academy of Sciences and Humanities, Research Center ROCEEH)

**Abstract format:** Oral

The research center "The Role of Culture in Early Expansions of Humans" (ROCEEH) is a long-term project studying expansions of cultural capacities, resource space and range during the period between 3 million and 20,000 years ago in Africa and Eurasia. Its goal is a systematic understanding of the interactions and dynamics of these fields in the process of "becoming human". At the core of the project stands the ROCEEH Out-of-Africa Database (ROAD) which unifies geographical and stratigraphical data of about 2,200 localities with information of about 16,500 assemblages of archaeological finds, hominin fossils, faunal and botanical remains. The multidisciplinary, relational structure of ROAD with GIS functionality allows for multi-variable queries and the visualization of the results on different maps. Thus, large-scale comparisons of different time-slices, archaeological periods, and find categories are facilitated.

The macroarchaeological approach of ROCEEH has become manifest in various forms. A theoretical avenue was taken with the Model of Evolution and Expansion of Cultural Capacities (EECC). The model integrates interactions

of evolutionary-biological, historical-social, ontogenetic-individual, and ecological factors and processes and delineates the broadening of cultural capacities from social information use to abstract notional capacities. Macroarchaeological case studies include, among others, a multidisciplinary examination of behavioural flexibility in the Middle Stone Age of Southern Africa, the increase of ochre use in the African MSA, the development of hunting technologies, large scale cultural network analysis, and the expansion of potential food resources due to the use of different tools and fire. ABM modelling of the potential of crossing sea straits with different water movement skills, for example, represents a third track taken by the research centre. Although the central research questions of ROCEEH are macroarchaeological by default, other studies on a small or even micro-scale represent important facets of our interpretation of deep human history.

## 12 MACROARCHAEOLOGY AND THE SOCIAL REACTORS PROJECT

**Abstract author(s):** Ortman, Scott (University of Colorado)

**Abstract format:** Oral

Since 2014, the social reactors project has been working to establish a theoretical and empirical basis for the study of human settlements through history. The project's primary goal is to identify common properties of human settlements, and general processes of growth and decline, in a framework that accommodates both regularity and contingency. We refer to human settlements as social reactors due to their role in concentrating and accelerating social interactions and their outcomes in space and time. This view derives from urban scaling research and the discovery that allometries of contemporary urban systems are also apparent in pre-modern and even non-urban systems. To date, project researchers have completed more than two dozen studies of urban allometries in past societies known through ethnography, history, and archaeology, and ranging from hunter-gatherer camps to Neolithic farming villages to urban centers of classical antiquity and Precolumbian Latin America. In this presentation, we summarize this work to show just how general scaling effects are, and to argue that the emerging field of macroarchaeology needs to include patterns like these within its scope of research.

## 13 A MACROARCHAEOLOGICAL PERSPECTIVE ON THE ARCHAEOGENETIC RECORD

**Abstract author(s):** Schmid, Clemens (Max Planck Institute for Evolutionary Anthropology)

**Abstract format:** Oral

Charles Perreault's analysis in and of "The Quality of the Archaeological Record" (2019) operates on a high level of abstraction: Macroarchaeology is well laid out as an idea, but still lacks concrete examples. In this paper I want to explore how a macroarchaeological research program could interface with the relatively new field of archaeogenetics.

Although it has only gained momentum in the last ten years, archaeogenetics has already demonstrated high disruptive potential. It allows remarkable new insights into human population history, the domestication of plants and animals, human subsistence strategies, or the evolution and impact of pathogens. Ancient DNA offers new pathways to reconstruct past human behaviour on very different scales, from biological kinship-structure at individual sites, to regional mobility and migration, to long term patterns of genetic adaptation [1].

Perreault's macroarchaeology was conceived with a focus on material culture, but could ultimately extend to arbitrary observations in space and time. I argue that the high-dimensional, well standardised and increasingly spatio-temporally dense aDNA data is a treasure trove for macroarchaeological meta analysis. Archaeogeneticists are only beginning to understand "macroscale patterns" in – for example – (effective) population size, mobility, or kinship systems. Genetics-derived proxies emerge as a whole new domain of promising correlates in "macroscale processes".

So far few aDNA papers have adopted a quantitative meta-perspective, or conceptualised diachronic summary statistics that could be compared with archaeological or biogeographical trends. Here I will give an overview of the state of this research, explain how my own work on large-scale mobility estimation integrates with macroarchaeology and outline potential ways into a future, where archaeologists and geneticists cooperate less through narratives, and more via code and data.

[1] Orlando, L., Allaby, R., Skoglund, P. et al. Ancient DNA analysis. *Nat Rev Methods Primers* 1, 14 (2021). <https://doi.org/10.1038/s43586-020-00011-0>

---

## 289 THE MATERIALITY OF LIVED RELIGION UNDER AND AFTER ROME

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Fleming, Robin (Boston College) - Effros, Bonnie (University of British Columbia)

**Format:** Regular session

Roman and medieval archaeologists and historians are invited to present papers that focus on the material culture of lived religion both under and after Rome. Presentations can focus on either traditional religious practices or those

associated with Christianity, Judaism, or Islam. Papers, beside introducing the audience to particular materials of religion rooted in a particular time and place, should also think through the interpretive challenges and uses of material culture for those interested in understanding past lifeworlds. The session provides space for historians, archaeologists, Romanists, and medievalists to have a serious discussion about the different ways our disciplines and chronological fields think about and use material evidence to reconstruct lived religion, the interpretive challenges it presents, and how, in the future, those of us working in different disciplines and in different periods might better combine our efforts. The goal of this session is to open a productive dialogue between Classicist and medievalists, historians and archaeologists.

## ABSTRACTS

### 1 **DECAPITATED DOGS AS A MATERIAL OF RELIGION IN IN ROMAN BRITAIN**

**Abstract author(s): Fleming, Robin (Boston College)**

**Abstract format: Oral**

Of the 1,500 dog ABGs found in structured deposits at Romano-British sites, almost two hundred are the remains of animals that had been decapitated. These dogs are found in the company of a fairly standard repertoire of odd accompaniments (everything from whole pots, to gaming pieces, to hares, human skulls, baby animals, and shoes), lending these deposits an air of what Bronisław Malinowski called "a high quotient of weirdness." This paper lays out the evidence for the deployment of decapitated canines in the practice of everyday religion in Roman Britain. It discusses the different contexts, periods, and social milieux in which the killing of these animals took place. It also thinks through the lived experience of events at which dogs lost their heads. Finally, it discusses the use of canines as a material of religion and meditates on what dogs can tell us about who, in Roman Britain, felt entitled to engage in ritual.

### 2 **NEPTUNE AND OCEANUS IN ROMAN BRITAIN: EVIDENCE FOR THEIR CULT AND THE BUILDING OF PROVINCIAL CULTURE**

**Abstract author(s): Goldstein, Avner (Boston College)**

**Abstract format: Oral**

The cults of Neptune and Oceanus were never widespread in Roman Britain but are nonetheless witnessed for the whole of the Roman period across military sites, at villas, and at local shrines patronised by ordinary people. This paper describes Neptune and Oceanus' evocations in these three very different contexts and argues that rather than simply functioning as gods of the sea, they were culted first for the help they gave travellers- especially soldiers; second as a symbol of imperial power and Roman identity; and third as more generalised water deities, something that had resonance in Britain, where water cults had been important long before the coming of Rome. Through this, we see the role religion and ritual played in the construction of a particular provincial culture, requiring us to question what it meant to 'become Roman' on one's own terms and rethink traditional theories of 'Romanisation' for cultural life in the provinces.

### 3 **THE SACRED STONES WORSHIP CONCEPTS FROM GREEK & ROMAN MYTHOLOGY TO ISLAM RELIGIOUS PRACTICE**

**Abstract author(s): Zear, Asem (Pázmány Péter Catholic University)**

**Abstract format: Oral**

In this paper, I would present the ancient story of sacred stones "omphalos" or "baetylus" which were found in Greek mythology in the story of Gaea goddess when she gave to her husband Cronus a stone to eat instead of her son Zeus the new-born. Zeus himself could defeat his father Cronus and got the stone and put it in the centre of the earth, Delphi temple and covered with a row of wool.

In Rome, Emperor Elagabalus 218/222 AC who came to Rome from Syria was already the hereditary high priest of the cult of the god Elagabalus there. Once made emperor he brought the god's baetylus stone to Rome with great ceremony and built the Elagabalium to house it.

After the death of this Emperor, this cult of religion has moved back to Syria with the stone itself. According to the archaeological evidence found in Palmyra city in Syria, there was a similar baetylus worship in the temple of Ba'al but because of the roman conquest the queen Zenobia asked to send the baetylus to a safe place which probably was al-Batra in Jordan temple of al-Lāt. Which later on in the early Islam time this stone moved to al-Kabba in Macca nowadays.

I will mention also the Jews and Christianity's concepts about the sacred stone in the Jerusalem city and the story of Abraham when he saw the god in his dream telling him about the holy land and the sacred stone which he used to sacrifice his son in the name of god.

## 4 THE LIVING, THE DEAD, AND WHAT TO BELIEVE

**Abstract author(s): Wenn, Camilla Cecilie (Museum of Cultural History, University of Oslo)**

**Abstract format: Oral**

The paper will focus on the religion displayed in burial settings. A case study, excavations in a necropolis in Hierapolis of Phrygia, Turkey, is the point of departure. The originally Roman necropolis was used and reused for a period of c. 1200 years. The period saw a significant religious shift through which the religious affiliation of the population changed from predominantly traditional Roman beliefs to Christianity, something that can be observed in the associated grave goods and customs, as well as in the townscape. The backdrop is the major changes in the town itself, where pagan temples are destroyed and places of Christian cult and worship take their place. The paper explores the meeting between old and new, the dialogue between conservatism and new religious expressions in the grave material as a means of understanding the effect of change on the populace. The way the living treated their dead shows how the ideas of life and afterlife changed, how religion was expressed in the moment where the known life ended, but also how old expressions had new interpretations.

## 5 ALIGNING THE DEAD: RETHINKING BURIAL ORIENTATION AND CHRISTIAN CONVERSION

**Abstract author(s): Mason, Austin (Carleton College) - Hosek, Lauren (University of Colorado, Boulder)**

**Abstract format: Oral**

In this paper, we argue for a closer and more comprehensive examination of burial orientation in European mortuary archaeology, particularly in the context of Christian conversion. The efficacy of using mortuary contexts to determine religious identity has long been questioned, but burial practices, including orientation, can reflect shared community rituals and group affiliation, while deviations from regional and local norms can offer clues as to social and religious identities at both community and individual scales. While archaeologists note the directional orientation of the body in a grave as standard practice when documenting cemeteries, little consideration is often paid to this characteristic in subsequent analysis. We propose that approaching burial orientation at multiple scales offers important insight into the interplay of mortuary practices, life histories, and physical and symbolic features of the landscape. At the scale of an individual burial, orientation is one expression of normative or deviant mortuary treatment and can help signify transgression, piety, outsider status, elite status, or unusual life or death circumstances when compared to the local community. On a larger scale, cemetery orientation patterns may reveal relationships to the landscape, the built environment, and (more controversially) celestial bodies in ways that may be of religious significance. To illustrate the potential value of a more thorough, multi-scale analysis of burial orientation, we offer examples from early medieval European Christianization contexts in both England and Bohemia. By visualizing burial orientation data in a novel way that combines circular diagrams plotted on a compass rose in R with aspect-slope maps developed in ArcGIS, we examine the topography of cemeteries and consider the religious and social factors that may have influenced orientation at multiple scales. Re-emplacing burial orientation in the context of landscapes, religious practices, and local customs enriches our understanding of Christian conversion in early medieval Europe.

## 6 LIVING AND DYING UNDERGROUND: LIVED RELIGION IN THE CAVES OF ROMAN AND POST-ROMAN BRITAIN

**Abstract author(s): D'Alisera, Alexander (Boston College)**

**Abstract format: Oral**

From the coasts of Wales to the scars of the Yorkshire Dales, caves in Britain contain an impressive array of evidence for myriad prehistoric and historic human activity. The human use of caves in the Romano-British period is particularly well-attested in the material record, revealing varied modes of quotidian life in economic, mortuary, and ritual-religious spheres. Importantly, the c. 410 withdrawal of the Roman state did not put an end to such underground encounters, and a number of British cave sites contain evidence for continued activity well into the middle ages. Early medieval encounters with the underground in Britain, however, are often overlooked in favor of the larger corpus of Romano-British evidence. In this paper, I take a long view of the British underground across the traditional dividing line of the early fifth century, by focusing on two cave sites that contain material evidence of both Romano-British and early medieval human activity: Dog Hole, in Cumbria, and Lesser Garth Cave, near Cardiff. In both locations, the geomorphological form of the cave proved to be an enduring and attractive locus for ritualized human behavior. Through this study, I suggest ways in which the environmental reality of the caves themselves (their darkness, their soundscapes, their flora and fauna) might have complemented and provoked varying modes of Insular religious practice, both before and after the Roman withdrawal. By historicizing the material record left behind in these caves, I ultimately argue that further analysis of the underground can grant scholars fresh access to the lived religious practices of both the Roman and the post-Roman periods in Britain.

## MONUMENTAL BRONZES OF THE 11TH-12TH CENTURY: THE CASE OF BRONZE DOORS

**Abstract author(s):** Mödinger, Marianne (IMAREAL, Universität Salzburg) - Bernabei, Mauro - Bontadi, Jarno (CNR-IBE) - Fera, Martin (Universität Wien) - Schlie, Heike - Utz, Judith (IMAREAL, Universität Salzburg) - Abate, Francesco (Istituto Italiano di Tecnologia; Università Ca' Foscari Venezia)

**Abstract format:** Oral

About 25 bronze doors from the 11th-12th century, most of them located in Italy, represent the only surviving bigger complex of large bronzes from the European Middle Ages.

All doors are made of different copper alloys most likely by the lost wax process: they could be cast as a whole, or individual metal fittings were attached to a wooden support. Some doors have inlays of various materials that allowed the colored depiction of different biblical scenes or saints. Through comprehensive material analyses of all doors on-site during the course of our project at the University of Salzburg, Austria, we aim to:

1) Characterize materials and techniques used in the construction of the doors; 2) Identify artists and workshops, and their specific alloys and techniques; 3) Visualize networks of material knowledge: Properties, affordance and the material iconology in image systems also in a wider mediterranean perspective.

Methods used include 1) three-dimensional photographic recording of the doors and documenting their relief structure for further studies; 2) non-invasive chemical analyses to identify the alloys used; 3) dendrochronological analyses to identify and date the types of wood used, providing important information about restorations, additions and the use of local woods; 4) metallographic and isotopic analyses on selected doors, providing information about material treatments after casting and the origin of the copper used.

The data obtained expand our knowledge of the comprehensive complex of medieval large bronzes, which relate to each other and whose material communicates closely with the meaning of the pictorial representations. We reconstruct the production as well as the cooperation and networks of the individual craftsmen and patrons and thus shed light on an important chapter of medieval craft and art history.

## MONKS AND MARY, PATRONS AND THE PARISH: A HOLISTIC APPROACH TO MEDIEVAL RELIGIOUS LIFE IN THE MONASTIC CHURCH IN TEWKESBURY

**Abstract author(s):** March, Eleanor (University of Exeter)

**Abstract format:** Oral

Monastic and church archaeology's shared roots with architectural history has traditionally meant that studies have adopted more functionalist approaches, concerned with identifying the main phases of a site's physical development and different architectural styles. In the more recent years however, the spatial and sensory turn in archaeology has encouraged the consideration of church space in relation to religious performance and medieval Christianity has increasingly been recognised as an 'embodied experience'. Through a specific case study focusing upon Tewkesbury Abbey, Gloucestershire (England), this paper explores the way in which church buildings were a sensory environment through which individual religious experience was mediated.

Tewkesbury is a rare example of a British medieval Benedictine monastic church surviving almost in its entirety, its exceptionally well-preserved Norman core juxtaposed with later architectural developments. To date, the lack of archival sources surviving directly from the monastery has concentrated research upon the surviving fabric of the church and its architectural development. Nevertheless, a truly interdisciplinary, multifaceted approach connecting the surviving fabric of the church with what is known of the 'lost' fabric and the historical record, considering medieval liturgy, has facilitated the repopulation of the complex network of religious belief, practice and performance at Tewkesbury with people, texts, architecture and material culture. In turn this has enabled a three-dimensional exploration of the development of the church, from its foundation as a conventual church for a new reformed community of Benedictine monks, a place of Marian worship, a burial place for the 'great and good', and a site of popular devotion and parochial worship.

## ARCHITECTURE AS EVIDENCE OF RELIGION

**Abstract author(s):** Hoxha, Zana (Institute of Albanology)

**Abstract format:** Poster

The fast spread of Christianity across the Roman Empire and beyond affected the development of public buildings. As of this time, the temples were built for the people instead of the gods. The large number of believers coming into the presence of God led to big and monumental buildings. This paper analyses and presents the appearance of Early Christian Architecture in the territory of Kosovo. Besides historical sources, the appearance of Christianity can be easily traced through architecture. Even though a "suburb" of the empire, it is quite rich in buildings of this period. Moreover, the region was part of the building program of the Emperor Justinian, enriching the region even more. Until today, forty six early Christian buildings have been identified. In the first part of the paper a general introduction of historical fact regarding the period will be given, continuing with a detailed analysis of the architecture using the



examples from the territory of Kosovo. The paper will conclude with the social, economic and topographic analysis, to understand the differences of the buildings of the period throughout Kosovo. Concluding, Christianity played a big role in the life of the local community and architecture is an evidence to prove it.

## 291 INTERACTION IN NEOLITIZATION, NEOLITIZATION AS INTERACTION. ARCHAEOLOGICAL DATA AND ANALYTICAL PROCEDURES FOR DEFINING INTERACTION CONTEXTS [PAM]

**Theme:** 2. [Re]integration

**Organisers:** Cortell-Nicolau, Alfredo (University of Cambridge) - García Martínez de Lagran, Íñigo (Universidad Nacional de Educación a Distancia) - García-Puchol, Oreto (Universitat de València)

**Format:** Regular session

Taking Europe as an example, the spread of agriculture and husbandry has been defined as a mixed model that involves demic diffusion and local interaction in a general eastern/western gradient. Recent results provided by ancient DNA reinforce this approach, previously highlighted by diverse theoretical models considering the archaeological record. The demographic success triggered by the new way of life would be in the basis of the fast expansion around some areas. Nevertheless, the rate and, consequently, the Neolithic time of arrival depends on several factors including geographic and environmental conditions in regards with the requirements of crops and stockbreeding, the social mechanisms of the spread and the networks developed, and the presence and density of local hunter-gatherers. Thus, a patched mosaic of situations, considering time and space is currently visible in the archaeological record.

From a broader perspective, the focus of this session is on interaction contexts involving potential contacts between Mesolithic last hunter-gatherers and Neolithic newcomers and, therefore, it welcomes proposals where this situation is present worldwide. Specifically, we want to open a new window in this changing world considering several analytical procedures and conceptualizations from taphonomy, chronological modelling, mathematical and computational approaches and the analysis of patterns in cultural variability. Papers from specific archaeological contexts and/or macroscale frameworks will also be welcome. Ultimately, the goal is to bring a new scenario to discuss potential interaction contexts considering novelties in archaeological data and analytical development.

### ABSTRACTS

#### 1 CONTINUITY, DISCONTINUITY AND THE SOCIAL ROLE OF HOARDING OVER THE MESOLITHIC-NEOLITHIC TRANSITION IN SOUTHERN SCANDINAVIA

**Abstract author(s):** Børnevad-Ahlqvist, Mathias (University of Copenhagen) - Fischer Stephansen, Clara (Museum Østjylland) - Sørensen, Lasse (National Museum of Denmark)

**Abstract format:** Oral

In this paper, new results on the continuity and discontinuity of ritual hoarding over the Mesolithic-Neolithic transition of Southern Scandinavia are presented as a means to explore the processes and mechanisms behind this period of cultural change. Using a multi-scalar approach, we put forward a new framework focusing on the important psychosocial role hoarding and ritual practices, in general, may have played within the Neolithization process and the various forms of interaction that underpin it. We interpret our analytical results using an interdisciplinary framework built around the combination of practice theory, migration theories, communities of practice, sociology, symbolic anthropology, and cognitive science of religion. Based on the observable hoarding developments, we hypothesize that the hoarding practice seen in the Southern Scandinavian Funnel Beaker culture is a product of cultural transmission processes involving influences from incoming immigrating Neolithic groups and pre-existing local Mesolithic practices. Rather than considering the hoarding a by-product of other societal changes, we further hypothesize that these hybridized practices played a key role in negotiating interactions, societal tensions and cultural identity throughout the Neolithization process in Southern Scandinavia.

#### 2 THE BEGINNING OF THE LBK IN THE EXTREME SOUTHWEST OF ITS SPREAD IN EUROPE

**Abstract author(s):** Krauss, Raiko (Institut für Ur- und Frühgeschichte und Archäologie, es Mittelalters) - Bofinger, Jörg (Landesamt für Denkmalpflege Baden-Württemberg)

**Abstract format:** Oral

Since 2017, we have been researching Early Neolithic occupation in a region in southwestern Germany, west of the city of Tübingen. The area shows an unusually high density of LBK sites. New data on Mesolithic settlement and environment in the 5th millennium BCE shed new light on the beginning of the Neolithic. For example, a paleo-watercourse was found in a valley, which represents an important archive for the reconstruction of the environment in the course of the Pleistocene up to the beginning of the Neolithic settlement. Of supra-regional importance is also the chronology of the settlement, which has been possible since a few years on the basis of the evaluation of the

settlement material. Another aspect of our research are the ties of the Early Neolithic groups to the areas of origin of the LBK in the Eastern Carpathian Basin. These can be seen in the burial customs, but also in specific finds. With our lecture we would like to present the project itself and first results of our evaluations.

### 3 **MODELLING PARA-NEOLITHIC "RECONQUISTA": HUNTER-GATHERERS' REVIVAL OF THE EARLY VTH MILL. BC IN THE SOUTH OF EASTERN EUROPE**

**Abstract author(s):** Kiosak, Dmytro (Ca' Foscari University of Venice, Italy) - Radchenko, Simon (Università degli Studi di Torino)

**Abstract format:** Oral

The issue of hunter-gatherers / early farmers interaction is particularly vivid in the south of Eastern Europe. Here, two subsistence systems co-existed for millennia in VI-IV mill. BC. Sometimes in a single microregion there are sites of hunter-gatherers and those of early farmers separated just by few kilometers of distance. However, sites situated close in space can be separated in time and vice-versa. An intriguing pattern appeared when refining the chronological controls with AMS-dating. The early farming settlement had a punctuated nature: after a demise of a certain agricultural society there usually were some centuries with a little known evidence of human occupation. Such a gap is evident in the early Vth mill. BC after disappearance of Linear Pottery culture and prior to expansion of Early Trypillia agriculturalists. Surprisingly some dates from "ceramic" hunter-gatherers (para-Neolithic) sites fell into this time slot, thus suggesting that deserted fields were resettled as hunting grounds.

Under the conditions of still insufficient radiocarbon dating and dubious stratigraphies, "scenario" modelling seems to be the only way to investigate the mechanisms of this revival. The GIS-aided modelling pointed to the possible "refugia", where hunter-gatherers population could continue its way of life during agricultural expansion. The demographic potential of "reconquista" is estimated as well as routes and geographical "targets" of re-expansion of para-Neolithic groups. The possibilities of their interaction with early farmers in the decline phase are highlighted as relatively limited, while possible zones of such contacts are defined on chronologically and geographically evident basis.

### 4 **MESOLITHIC RESILIENCE, INTERACTIONS AND ACCULTURATION IN THE TRANSITION TO NEOLITHIC. THE VIDIGAL CASE STUDY IN THE PORTUGUESE SOUTHWEST COAST**

**Abstract author(s):** Soares, Joaquina (Museum of Archaeology and Ethnography of the District of Setúbal/AMRS; Archaeological Centre of the University of Lisbon- UNIARQ) - Tavares da Silva, Carlos (Archaeological Centre of the University of Lisbon- UNIARQ)

**Abstract format:** Oral

The circulation of Neolithic innovations, available in the Western-Central Mediterranean area, might be proceeded much faster through cultural osmosis, crossing Mesolithic networks of interaction than by demic colonisation. The diversified hunter-gatherer communities of Southern Portugal were porous rather than bounded and are likely to have perceived the advantages and disadvantages of adopting new economic and technological resources, while their integration into different social and cultural systems. Thus, they adopted selectively Neolithic novelties in accordance with their needs for subsistence and cultural beliefs. In then resource-rich Sado paleo-estuary, Mesolithic communities resisted the adoption of agro-pastoral economy that was in fact a trap for the hunter-gatherer way of life, reducing mobility and individual freedom, and imposing an economic intensification with greater labour investment. From the Neolithic package, they only adopted polished stone tools and pottery. For the Southwest Coast similar behaviour can be defended and is also likely to have occurred in the middle basin of Guadiana River.

The settlement of Vidigal in the coastal plain between Sines and Sardão Cape, occupied in the time span of 5730 - 5081 calBC,  $2\sigma(\text{Beta-452078,6800}\pm 30\text{BP}; \text{Beta-470466,6260}\pm 30\text{BP})$ , developed a subsistence pattern based exclusively on wild resources (fishing, hunting, shellfish harvesting). Polished stone axe and rare pottery are the sole Neolithic material markers recovered. About 20Km north, the early Neolithic (middle of the sixth millennium calBC) community of Vale Pincel I, who may have been of indigenous origin, combined the exploitation of wild and domesticated resources; while ceramics, stone tools and millstones are abundant. What kind of interaction could have existed between these groups? So far, the model of opposed Mesolithic hunter-gatherers and Neolithic peasants as bounded entities have been rejected. On the contrary, we propose the co-existence of several stages and rhythms of neolitization between neighbouring groups, even for a sub-region like the Southwest Coast.

## 5 **NERJA-CONDUCT OF DISCOVERY: NEW DATA ON THE RECENT PREHISTORY OF THE SOUTHEAST OF THE IBERIAN PENINSULA**

**Abstract author(s):** Alvarez-Fernández, Esteban (University of Salamanca) - Agirre, Amaia (Universitat Autònoma Barcelona) - Aura, J. Emili - Carrión, Yolanda (Universitat de València) - Cerezo-Fernández, Rosana (Universidad de Salamanca) - Fernández-Mallo, Carla (Universitat de València) - García Borja, Pablo (UNED) - Portero, Rodrigo (Universidad de Salamanca) - Rufà, Anna (Universidade do Algarve) - Sanchidrián, José Luis (Universidad de Córdoba) - Aparicio, M<sup>a</sup> Teresa (Museo Nacional de Ciencias Naturales-CSIC, Madrid) - Jordá Pardo, Jesús F. (UNED, Madrid) - Marlasca, Ricard (Posidonia SL, Eivissa) - Rubio del Hoyo, Juan Manuel (Universidad de Salamanca)

**Abstract format:** Oral

In the summer of 1985, a team led by Professor D. Francisco Jordá Cerdá excavated the so-called Discovery Conduit ("Conducto del Descubrimiento") of Nerja Cave, located between the Sala de la Mina ("Mina Chamber") and the Sala de la Torca ("Torca Chamber"), which allows access to the Sala de la Cascada ("Cascada Chamber"). The excavation made it possible to document at least two levels, based on the archaeological material recovered, the upper one belonging to the Chalcolithic and the lower one to the Neolithic. These levels are not in primary position but were dragged from Sala de la Mina. In the lower levels of Sala de la Mina, occupations of the last groups of hunter-gatherers (Mesolithic) have been documented.

The materials at Nerja-Conduct of Discovery have remained unpublished until now. The preliminary study of the anthracological remains, fauna (macrovertebrates, fish, birds, continental and marine molluscs), ceramics, lithic and bone industries (above all, awls) and personal ornaments (shell beads and pendants, stone brazalets) allows us to specify the early Holocene occupations carried out in Nerja Cave.

## 6 **POTTERIES FOR ARROWS?... - IT'S A DEAL! POSSIBLE CONTEXTS OF MESOLITHIC-NEOLITHIC INTERACTION IN THE EBRO VALLEY (SPAIN)**

**Abstract author(s):** García-Martínez De Lagrán, Ñigo (UNED)

**Abstract format:** Oral

In the Ebro Valley (Spain) there are a number of sites with different archaeological contexts that could be defined as interaction contexts between Mesolithic and Neolithic groups. In addition to this, in these sites it is also possible to analyze the evolution of the last hunter-gatherer communities of this territory and the consequences of the Neolithization for these groups. In this contribution, I will analyze the stratigraphy, the chronology, the subsistence and the lithic and ceramic technologies to define three fundamental milestones of this process. First, the development of the last hunter-gatherers just before the arrival of the Neolithic. This point is essential to understand the social, economic and anthropological processes that were triggered with the Neolithic. It is also very important to determine the relationship between these groups and certain climatic events. Secondly, I will analyze the possible archaeological evidences of the interaction phenomena between Mesolithic and Neolithic groups, especially in relation to pottery and projectile points. Finally, I will analyze in perspective the stratigraphic and socioeconomic evolution of these Mesolithic communities in order to understand the outcome of the Neolithization. At this point, the chronological determination of the Neolithic expansion phenomena, which could be divided into two distinct phases, will be fundamental. In conclusion, I intend to define these contexts of interaction from a double perspective, on the one hand, evolutionary and protagonist of the hunter-gatherer groups, and, on the other hand, from the time determination of the phenomena of expansion of the Neolithic groups and the nature of the processes of interaction between these communities. All this to test the existence or not of these contexts of interaction.

## 7 **NEOLITHIZATION AS INTERACTION IN THE HIGH CANTABRIAN MOUNTAINS**

**Abstract author(s):** Diez Castillo, Agustín (Universitat de València)

**Abstract format:** Oral

With this communication I try to contribute to explore why the time of arrival is different in High Cantabrian Mountains of what is known in the neighboring territories of the Northern Meseta or in similar environments like the Pyrenean mountains. The relevance of the role of the last local hunter gatherers could be one of the several factors involved in the explanation. Through chronological modeling and other mathematical approaches including landscape models, I try to explore the different scenarios that could explain the late adoption of the agricultural way of life in the High Cantabrian Mountains. The high density and the successful adaptations to the environment (mainly to the coastal resources) of the local hunter-gatherers could partially explain the late adoption of the agricultural way of life in the High Cantabrian Mountains. However, the well established neolithic networks south of the Cantabrian Mountains should have triggered the neolithization of these mountains as is the case in the Pyrenean where early Neolithic evidences related to the lowlands of the Ebro valley are well documented.

## 8 TESTING MODELS FOR CULTURAL DIVERSITY IN THE NEOLITHIZATION SPREAD AT THE EAST OF IBERIA

**Abstract author(s):** Cortell-Nicolau, Alfredo (University of Cambridge) - García-Puchol, Oreto (Universitat de València) - Juan-Cabanilles, Joaquim (Servei d'Investigació Prehistòrica. Museu de Prehistòria de València)

**Abstract format:** Oral

The starting point of the so-called "Dual model", in the 80s of the 20th century, established the basis of a narrative model in regards to the neolithization process in eastern Iberia, accounting for the possibility of farming spread with and without relation to the previous Mesolithic settlers. Since then, several developments considering archaeological fieldwork, the radiocarbon framework, ancient DNA results and computational approaches, have provided a renewed basis to discuss this pivotal process triggered from the spread and consolidation of the agricultural way of life. Nevertheless, the theoretical efforts conducted are flawed by the poverty of the resolution of the archaeological context. Even more so when we point out to interaction contexts influenced by several factors, which can include taphonomic processes affecting both stratigraphical sequences and the chronological record.

Considering this challenging scenario, we will put the focus on shared cultural variants across the last Mesolithic and Early Neolithic records: more specifically on geometric projectile points. From an evolutionary perspective, we will test several hypotheses about patterns of cultural change considering a remarkable archaeological record, which includes pivotal Mesolithic and Neolithic sites in the context of the neolithization process in Eastern Iberia, such as Cueva de la Cocina, Cova de l'Or and Cova de les Cendres among others.

## 9 SOCIAL NETWORK ANALYSIS AS AN INTERACTION METHODOLOGY. A PRACTICAL EXAMPLE IN PREHISTORY

**Abstract author(s):** Jiménez-Puerto, Joaquín R (Departamento de Prehistoria, Arqueología e Historia Antigua de la UVEG) - Puerto, M<sup>a</sup> Pilar (Universitat de València. Facultat de Geografia i Història)

**Abstract format:** Oral

The Archaeological contexts may be studied from different perspectives. Analytic procedures from other academic fields such as Statistics, Computer Science or Social Network Analysis (SNA), have been recently applied. Such methodologies have produced interesting results in Evolutionary Archaeology and prehistoric cultural processes.

The SNA is a powerful tool when analyzing large and complex databases, since its procedures can provide intuitive visualizations and reveal the existence of patterns locked in raw data. Moreover, it allows to work at different scales of analysis at the same time, making unnecessary to choose between structure or agency.

In this work, a practical example of these new archaeological analytical approaches is discussed with a network study in the Copper Age, through material culture items: flint arrowhead. This network perspective has been used to trace the information flows between social groups in a diachronical axis. Therefore, the success in application to flint arrowheads could make this methodology easily applicable to geometric assemblages, early cardial pottery or any other archaeological information available, in order to apply community recognition and data flow characterization. Thus, our goal was to identify social dynamics and evolutive trajectories in the East area of Iberian Peninsula, which could be easily applied to other chronological scenarios, such as the Meso-Neo transition.

## 10 DECOLONIZING THE NEOLITHIC RESEARCH CURRICULUM: A NEW MODEL CHARACTERIZING THE NEOLITHIC TRANSITION IN TURKEY

**Abstract author(s):** Menemenli, Yasemin (Umea University)

**Abstract format:** Oral

Many models attempt to study Neolithic lifeways, but these still define the transition in the Near East in terms of its subsistence mode, and treat it as a 'package', with the view that it is a 'revolutionary' step towards the 'rise of the modern civilization'. Moreover, these models focus on studying the origins and the causes of this so-called 'phenomenon', and do not really attempt to characterize or define Neolithic itself.

The problem is that existing models only seek to highlight changes in one or two aspects of human societies as drivers of the transition, and they hesitate to combine too many different parameters to study it. As a consequence, previous attempts to study the transitions to Neolithic lifeways often homogenize human agency, commemorate academic imperialism, separate theory from political realities, fail to consider the material aspects of colonialism, and fail to address the role of history in cultural change satisfactorily.

The only model that attempts to tackle the stated problems is Zvebil and Rowley-Conwy's (1984) 'availability model' that endeavoured to define the boundary between Mesolithic and the Neolithic lifeways, highlighting continuity between Mesolithic and Neolithic social organizations. However, a limitation exists in that this model argues that subsistence strategies do not relate to any social organization or ideology. The availability model demonstrates that the 'revolutionary' aspects of the transition are in fact simply context laden misrepresentations of the reality.

This article presents a new model that aims to characterize the Neolithic in Turkey by considering environmental, biological, social and cultural factors, defining the boundary between the Mesolithic and Neolithic, and decolonizing the Neolithic research curriculum in Turkey.

## 11 **ALONG THE SPECTRA: AN INTEGRATIVE MULTI-SCALAR APPROACH TO INTERACTION BETWEEN "FARMERS" AND "FORAGERS"**

**Abstract author(s):** Schlicht, Jan-Eric (Kiel University; CRC 1266 - Scales of Transformation)

**Abstract format:** Oral

Farmers" and "Foragers" conventionally tend to be understood as two rather fixed categories in archaeological narrative, especially in the context of producing lifeways developing into the dominant mode of subsistence during the process labeled as "Neolithization". Since ethnographical research could show a remarkable diversity in lifeways "between" these two categories, this project aims to investigate cases of interaction between people following more producing and more appropriating lifeways on several scales. Global, large scale quantitative analyses of ethnographic cases aims at detecting patterns of similarity/dissimilarity through the application of practice spectra and clustering methods. To get a hold of lower scales, a selection of particular archaeological, ethnohistorical and ethnographic cases from different times and different locations is being addressed in-depth. In conjunction with a theoretical footing in systemic complexity as an ontological guideline the interplay between these perspectives is intended to function as a qualitative "ground for experiment" in the assessment of universals and particulars, categorization as well as the opening of paths towards more nuanced approaches in the investigation of transformative relationships.

---

## 298 **RAW MATERIAL ACQUISITION, MANAGEMENT AND TECHNOLOGICAL CHOICES FROM THE MESOLITHIC TO THE BRONZE AGE IN SOUTH-EASTERN EUROPE [PAM]**

**Theme: 3. The Carpathian Basin: Integration, Mobility and Diversity**

**Organisers:** Vitezovic, Selena (Institute of Archaeology, Belgrade) - Arampatzis, Christoforos (Archaeological Service of Rhodope, Ministry of Culture and Sports; Aristotle University of Thessaloniki) - Rajkovic, Dragana (Archaeological Museum, Osijek)

**Format:** Regular session

The system and the organisation of acquiring and exploiting different raw materials represent the most important part of every economical system. Questions such as the availability of some of the raw materials, degree of their exploitation versus their availability, mode of exploitation, method of their extracting, connected with the technological choices, are particularly important for studying both economic and other social aspects. Analyses of raw materials may provide information on the human-environment relations; the relative distance of the sources from the settlement may point to the territories used or controlled by certain group, trade and exchange routes, etc. Technology of extracting materials such as stones or ores may indicate the level of technological knowledge. Furthermore, some materials can be considered as luxurious and prestigious among certain communities; this is often, but not exclusively related to the rarity or to the difficulties in obtaining a given raw material.

This session will focus on the lithic, osseous and perishable raw materials used by prehistoric communities of South-Eastern Europe from the Mesolithic to the Bronze Age. This is an interesting time period when communities became more sedentary, thus creating new relations with their environment, and the period when important changes in technology, but also subsistence and economy occurred, which in turn created the need for new activities, new everyday tools and changes in raw material choices, acquisition and management.

Potential themes include, but are not restricted to:

- exploitation of local and distant sources of flints and other lithic materials;
- trade and exchange of exotic raw materials (obsidian, marine molluscs, etc.);
- raw material choices and management of osseous raw materials;
- use of perishable raw materials (wood, plant fibres, etc.).

We would like to invite case studies, synthetic papers, as well as papers discussing theoretical and methodological problems.

**1 UNDER PRESSURE –LITHIC RAW MATERIAL PROCUREMENT STRATEGY: A CASE STUDY OF VLAKNO CAVE (CROATIA)**

**Abstract author(s):** Bodružić, Mario (University of Zadar) - Perhoč, Zlatko (Independent researcher) - Vujević, Dario (University of Zadar)

**Abstract format:** Oral

Systematic archaeological excavations of the Vlakno cave on Dugi Otok Island have revealed the continuity of settlement on the site from the last glacial maximum to the early Holocene. The site is one of the starting points in studying the adaptations of late Pleistocene hunter-gatherers to climate and environmental changes occurring in this dynamic period. It is presumed that the transgression of the sea level changed the socioeconomic perspective of its occupants, creating changes both in settlement patterns as well as in exploitation strategies. Lithic raw material procurement strategies, whether seen as embedded, purposely driven, or socially implemented, reflect on mobility and/or possible regional socio-economic connections. In the case of Vlakno, a strongly locally orientated procurement strategy is established through all phases of its occupation. Nevertheless, a steady increase in local cherts and the decline of western Adriatic and southern Alpine cherts in Holocene layers could reflect environmental, technological, and socioeconomic changes, and should therefore be discussed.

**2 CHERT DEPOSITS IN ISTRIA, CROATIA - POSSIBLE SOURCES FOR PREHISTORIC COMMUNITIES**

**Abstract author(s):** Šprem, Katarina (Juraj Dobrila University of Pula)

**Abstract format:** Oral

Chert or flint is a fine-grained sedimentary rock mostly composed of silica and very frequently used during prehistory due to its sharp edges and hardness. However, no chert is composed of pure silica; all cherts have impurities which give the rock its visible characteristics. These are also one way of determining the provenance of archaeological artifacts using geochemical analysis, a method on the rise in the archaeological science in Croatia. There are several chert deposits known in Istria, Croatia, most of which can be found in carbonate sediments of Cretaceous age in the form of irregular nodules or lenses. Several of the deposits are known to have been used during Neolithic; for example, the Vižula or Marlera deposits. We will present our work in locating, sampling, documenting, and researching the chert deposits in the Istrian peninsula, which mostly focused on the deposits used during the Neolithic. We will also present the first ever results of a geochemical analysis done on Istrian cherts, their characteristics noted during micropetrographic analyses, as well as our reference database of samples collected during our fieldwork.

**3 LITHIC RAW MATERIALS AND INTERACTION SPHERES: AN EARLY NEOLITHIC CASE STUDY FROM BULGARIA**

**Abstract author(s):** Gurova, Maria (National Institute of Archaeology with Museum, Bulgarian Academy of Sciences) - Bonsall, Clive (School of History, Classics and Archaeology, University of Edinburgh)

**Abstract format:** Oral

The Neolithization of Southeastern Europe between c. 6700–5800 cal BC witnessed the emergence of three major interaction spheres centred, respectively, on: 1) mainland Greece and the Aegean islands (Greek Early Neolithic), 2) the Balkans east of the Dinaric Alps (First Temperate Neolithic [FTN]), and 3) the Eastern Adriatic (Impressed Ware Neolithic). Archaeologically, these are distinguishable not only in terms of architecture, burial practices and ceramic traditions, but also in the patterns of exchange of lithic raw materials. The circulation patterns of obsidian and high quality flint differ between these interaction spheres. The obsidian used in the Greek EN came predominantly from sources on the island of Melos in the Aegean, that found at EN sites along the East Adriatic coast mainly from the Central Mediterranean island of Lipari, while that present in FTN sites originated largely from sources in the eastern Carpathians in Hungary and Slovakia. While the circulation patterns of high quality flint are less well-documented, current evidence points to marked geographical differentiation in the sources exploited.

In this paper we draw on the results of techno-typological analyses of lithic assemblages combined with petrographic and geochemical provenance studies to investigate the contrasting patterns of acquisition and use of obsidian and 'Balkan flint' at FTN sites in Bulgaria.

**4 OBSIDIAN EXCHANGE IN EARLY NEOLITHIC EASTERN HUNGARY**

**Abstract author(s):** Priskin, Annamária - Szeverényi, Vajk (Deri Múzeum)

**Abstract format:** Oral

In autumn 2017, during preventive excavations preceding motorway construction, a unique deposition of obsidian nodules was discovered at a site near Váncsod (Hajdú-Bihar County, Eastern Hungary). The find contained 13 large nodules ranging in size between 10 to 20 cm in diameter and belongs – most probably – to the Early Neolithic Körös

period. According to PGAA results, the source of the raw material can be determined as the Slovakian sites of the Eperjes-Tokaj Mountains (Carpathian C1). The find is unique in terms of the quantity and form of obsidian raw material in Hungary, and possibly in all of southeastern Europe. The special context of the assemblage – a hoard of nodules without other associated finds – requires extra effort regarding dating. Taking the Váncsod assemblage and other finds from Hajdú-Bihar County as our starting point, we analyse access to obsidian raw material, the character of obsidian exchange and interaction networks in the Early Neolithic of Eastern Hungary.

## 5 RAW MATERIAL CHOICES IN EARLY HOLOCENE CYPRUS AND THE DEVELOPMENT OF THE EASTERN MEDITERRANEAN SOCIALSCAPE

**Abstract author(s):** Moutsiou, Theodora (University of Cyprus)

**Abstract format:** Oral

This paper discusses the occurrence of rare raw materials in archaeological assemblages at the transition from the Epipalaeolithic to the Aceramic Neolithic on the island of Cyprus in the Eastern Mediterranean (~11,000 – 5200 Cal BC). Locally available picrolite and exotic obsidian from mainland sources are used in the manufacture of stone tools and ornaments diachronically. Artefacts made of these distinctive materials are found at various locations across the island. The distinctive physical qualities of these raw materials, their rarity and the effort exerted in their curation suggest active choice by their makers. Why was so much effort exerted in the acquisition of the specific raw materials? Do these choices reflect landscape affordances or other criteria? The paper interrogates the island's lithic record focusing on these questions with the aim to improve our understanding of how these early communities interacted with their landscape to build their social networks and exchange their goods.

## 6 RESULTS OF THE RECENT EXCAVATIONS OF THE LATE NEOLITHIC SITE KOTLINA, BARANYA COUNTY: FLINT, STONE AND BONE ARTEFACTS

**Abstract author(s):** Rajkovic, Dragana (Archaeological Museum Osijek) - Šprem, Katarina (Juraj Dobrila University of Pula) - Vitezović, Selena (Institute of Archaeology)

**Abstract format:** Oral

The site of Kotlina was discovered in 2009 during a large archaeology prospection project of Baranya in NE Croatia. Systematic archaeological research of the site was initiated in 2018 and the project "Kotlina, the prehistoric site" encompassed non-invasive field survey and excavations. Until today, the area covering approximately 150 m<sup>2</sup> was excavated, revealing diverse archaeological structures: post holes, rubbish pits and graves. The portable archaeological finds were rich and diverse and consist of pottery sherds, animal bones, bone artefacts, chipped stone artefacts, polished and abrasive stone artefacts as well as one bead made from mollusc shell. One very small fragment of copper was discovered. Also, a large quantity of obsidian tools was recorded during the excavations. Portable archaeological finds and absolute dates show that the site can be attributed to the Late Neolithic Lengyel culture.

In this paper, the results of the analysis of flint, stone and bone artefacts using variety of techniques that focus on the raw materials selection, technology and typology will be presented. Both local and imported raw materials were used, thus showing a complex pattern of raw material acquisition and management.

The study of archaeological implements provided important information about the Lengyel communities located to the south of the Drava River. It will be very interesting to compare these data with other Lengyel sites in the north.

## 7 STRATEGIES OF RAW MATERIAL ACQUISITION AND TOOL PRODUCTION AT THE NEOLITHIC LAKESIDE SETTLEMENT ANARGHIRI IXB, WESTERN MACEDONIA, GREECE

**Abstract author(s):** Papadopoulou, Stella (Archaeological Museum of Thessaloniki)

**Abstract format:** Oral

The intensive and large scale excavations of the last decades in northern Greece have brought to light the remains of many Neolithic settlements, including tells, flat-extended sites and lakeside settlements. Along with the study of other categories of material culture, numerous chipped stone assemblages have been part of specialized studies. Research on lithic materials has revealed various aspects of the organization of chipped stone tool production and patterns of regional variations among the Neolithic communities.

The presentation focuses on the chipped stone assemblage from the Neolithic lakeside settlement Anarghiri IXb, located at the Amindeon basin in Western Macedonia, Greece. The settlement lies at the marshy shore of Lake Chimaditis and was occupied from the Late Neolithic I to the early Final Neolithic period (5400/5300-4200 cal B.C.). The extensive excavation at Anarghiri IXb revealed a rich chipped stone assemblage comprising more than 10,000 products. Various raw materials were exploited for the production of chipped stone tools, including excellent quality regional and exotic materials. The discussion focuses on the strategies of raw material acquisition employed by the Neolithic community and the technological choices related to tool production and use through the settlement's lifetime.

## 8 ANTLER EXPLOITATION IN THE NEOLITHIC WETLANDS OF WESTERN MACEDONIA, GREECE. EVIDENCE FROM THE SETTLEMENT ANARGHIRI IXB

**Abstract author(s):** Arampatzis, Christoforos (Aristotle University of Thessaloniki)

**Abstract format:** Oral

The last twenty years the Archaeological Service of Florina has conducted extensive surface surveys and large-scale excavations in the Prefecture of Florina in Southwestern Greece. According to this research, a lot of prehistoric settlements were established between the four lakes of the area (Lake Chimaditis, Lake Zazari, Lake Vegoritida and Lake Petron) that date back from the Greek Early Neolithic (6700/6500- 5800/5600 BC) to the Greek Late Bronze Age (1700/1500-1100 BC).

One of the biggest settlements of the area is the lakeside settlement Anarghiri IXb which was situated in the northeastern shore of Lake Chimaditis. The four rescue excavation campaigns (2013-2016) unearthed a settlement that was inhabited almost uninterruptedly from the middle of the 6th millennium BC to the end of the 5th millennium BC (Greek Late Neolithic and part of the Greek Final Neolithic) while there is scant evidence that it was also inhabited during the Greek Early Bronze Age (3300-2000 BC). The extensive investigation so far yielded thousands of wooden piles, thermal structures and thousands of figurines, chipped stone tools and osseous artifacts.

The worked antler assemblage from the Neolithic layers of the settlement forms one of the biggest assemblages in prehistoric Greece and Balkans. Their study showed that the antler artifacts played a great role in the everyday activities inside and outside of the settlement. In this presentation there will be an analysis of the raw material preferences, the technological choices and the typological repertoire, which can be used as the basis for the creation of a typology of all antler artifacts in Western Macedonia.

## 9 BONE WORKING AND IDENTIFYING CHANGES IN BONE-WORKING TECHNOLOGICAL KNOWLEDGE. THE CASE OF 'MANUFACTURE-BY-WEAR' TECHNIQUES

**Abstract author(s):** Margarit, Monica (Valahia University of Targoviste, Romania) - Boroneant, Adina ('Vasile Pârvan' Institute of Archaeology, Romanian Academy)

**Abstract format:** Oral

This study proposes to identify the changes that intervened in the processing of osseous raw materials, during the North Danube Neolithic and Chalcolithic, starting from three cases of 'manufacture-by-wear' techniques: bipartition by abrasion, segmentation by sawing and perforation by wear. The three techniques appeared suddenly at the beginning of Neolithic and again suddenly disappeared (bipartition by abrasion) or become sporadic (segmentation and perforation) during the Chalcolithic. In our opinion, the disappearance of these procedures is linked to the disappearance of certain artefact types (such as belt elements and rings) and their replacement by other ones allowing a faster production. A first goal of our study targets the raw materials used: were certain bones selected for a certain technique?; were the choices of animal species and consequently their bones maintained as long as these techniques were employed?; were these materials readily available? A second goal looks at the reasons of their appearance and abandonment, and the technological advantages and disadvantages of these procedures when compared to other transformation chains. Based on their experimental reconstructions and by comparing them with other much faster techniques producing similar results, we aimed to see if they represented a real technological innovation. The experiments indicated that the manufacturing techniques replacing them during the Chalcolithic produced similar results but were apparently simpler with a reduced time-investment. Given the technological data discussed above, the osseous material industry can indeed be regarded as a cultural marker if we can identify clearly the moment certain object types were abandoned thus leading to the abandonment of these techniques, perhaps with the influx of new changing socio-economic imperatives.

Acknowledgements

The work presented here was supported by Romanian Ministry of Education and Research grant CCCDI - UEFISCDI, project number PN-III-P2-2.1-PED-2019-1279, within PNCDI III.

## 10 MANAGING OSSEOUS AND OTHER RAW MATERIALS IN A MIDDLE BRONZE AGE STRONGHOLD FROM THE EASTERN CARPATHIANS (SILIȘTE-PE CETĂȚUIE, ROMANIA)

**Abstract author(s):** Bejenaru, Luminița ("Alexandru Ioan Cuza" University of Iași, Faculty of Biology) - Drob, Ana ("Alexandru Ioan Cuza" University of Iași, Interdisciplinary Research Institute, Science Department, Arheoinvest Research Center) - Bolohan, Neculai ("Alexandru Ioan Cuza" University of Iași, Faculty of History)

**Abstract format:** Oral

The economic and social configuration of the Middle Bronze Age requires technological diversification, which also attracts more diverse raw materials. The proposed case study capitalizes on the results of research conducted in a fortification from Eastern Carpathians (Siliște-Pe Cetățuie, Neamț County, Romania), which although located at a considerable distance from immediate resources, it managed to control a territory and secure its position. Archae-



ozoological analysis indicates the importance of animal husbandry (98% of domestic animal remains, of which 60% cattle, 16% sheep/goat and 15% pig).

Among the concerns of the communities from Silișteea-Pe Cetățuie, the processing hard materials of animal origin is also proven archaeologically, which attests to a sustainable behaviour. Numerous bone sharp objects used for household activities (pottery, weaving, sewing), bone chisels, deer antler handles also suggesting the use of metal objects have been identified. The raw materials of animal origin come mainly from the skeletons of domestic species, but also of the wild ones. In the same context, the local communities also used the "raw material" as a support for the materiality of the ritual activities, as evidenced by the animal meat offerings placed at the base of the buildings. Local resources were used for construction (sandstones), tools (bones), food (salt), and remote resources for household activities (river stones), pottery (minerals).

## 11 IMPORTED MOLLUSCS IN THE CENTRAL BALKANS AND SOUTHERN CARPATHIAN BASIN IN THE NEOLITHIC REVISITED

**Abstract author(s):** Vitezovic, Selena (Institute of Archaeology, Belgrade) - Rajković, Dragana (Archaeological Museum Osijek)

**Abstract format:** Oral

The trade and exchange of marine mollusc shells in the Neolithic and the Eneolithic in Europe is a very interesting topic that attracted attention by many scholars. The phenomenon of Spondylus trade in particular was addressed from different perspectives. However, the entire European region is not researched in an uniform way. In regions such as present-day Bulgaria or Hungary the evidence of marine molluscs is rich and diverse, mainly due to intensive research of cemeteries with rich burial equipment. The archaeological record from the area in between, namely western and central Balkans and the southern Carpathian basin (roughly present-day Serbia and Croatia) is somewhat different; furthermore, it was never systematically studied. The aim of this paper is to provide an overview of current evidence regarding the distribution of the imported marine mollusc shells in this region and also to re-analyse earlier hypotheses in the light of the current evidence. Some 40 years ago, it was suggested, after the information available at the time, that only the sites along the Danube took part in the Spondylus trade during the Late Neolithic. However, mollusc shells were present in the area already in the Early Neolithic Starčevo culture, furthermore, they may be found in the Late Neolithic in the entire Balkan area. The main obstacle for the interpretation is inadequate research, but also specific trait of the Neolithic in the area with very few burials discovered. Findings are limited to predominantly discarded, broken and/or lost ornaments from settlements and the quantity of ornaments seems modest in comparison with other parts of Europe. However, current evidence shows that the ornaments from mollusc were highly valued items, and that the central Balkan area was an important trading route through which these ornaments were further distributed throughout the Neolithic period.

## 12 PRECIOUS ITEMS FROM THE SOUTH AND THEIR LOCAL IMITATIONS: SHELL ORNAMENTS IN THE NEOLITHIC IN POLAND

**Abstract author(s):** Kurzawska, Aldona (Institute of Archaeology and Ethnology Polish Academy of Sciences) - Sobkowiak-Tabaka, Iwona (Faculty of Archaeology, Adam Mickiewicz University in Poznan)

**Abstract format:** Oral

In Poland, ornaments made of mollusk shells are recorded relatively frequently in funeral contexts at archaeological sites associated with the Neolithic and the Early Bronze Age. Among them, Spondylus shells were always considered by archaeologists as the most significant – precious items acquire through trade or exchange, associated with the introduction of agriculture and the emergence of a new social order. The importance of Spondylus however partially caused all other shell finds to be less important for archaeological interpretation.

The study of shell ornaments from the Neolithic and Early Bronze Age sites in Poland revealed that except Spondylus ornaments also other species were imported from the South; freshwater *Lithoglyphus naticoides* and Mediterranean *Glycymeris* and *Venus*. The majority of shells used for ornaments production are of local origin, freshwater mussel, and fossil Miocene shells. However, their choice was not random. Only particular "types" of shells with a specific external morphology (shape, structure, color, pattern, size) were selected. Our research indicated that the shells collected locally by the so-called "Danubian societies" imitated the shell forms used by prehistoric societies of south-eastern Europe during the Neolithic. Certain "types" were in demand due to their meaning in a shared tradition of body ornamentation. Imported shells, their presence at the sites provide evidence for migration routes, long-distance cultural interaction, and exchange. Their local imitations might have been of similar value a sign of belonging to the same cultural tradition, a visual marker of identity, maintaining ties with the representatives of the cultural idea communities living far apart.

## FROM TURQUOISE TO COPPER – THE ROLE OF BEADS AND COLOUR IN THE EARLY PRELUDES TO METALLURGY

**Abstract author(s):** Bruvoll, Hallvard (University of Oslo, Department of Archaeology, Conservation and History)

**Abstract format:** Oral

In central Anatolia, the Late Neolithic to Early Chalcolithic transition marks several important changes in material culture. At the large tell site of Çatal Höyük, this is seen in the relocation of the settlement from the East to the West Mound, and the first appearances of two-storied houses and painted pottery. Beads and bead-making technology on the other hand, has received little attention by prehistorians when it comes to studying cultural change, though this material holds a considerable potential for improving our understanding of such processes.

At Çatal Höyük, the blue and green beads show remarkable changes in material and technology from the late seventh to the early sixth millennium BCE. Early examples of these beads are in naturally coloured materials, like turquoise, which are later replaced by heat-treated odontolite, and eventually by strongly coloured glazes. Glazed steatite beads appear for the first time on the West Mound, and, though the results are still preliminary, the used colorant was probably copper. These glazed beads predate previously known examples from Upper Mesopotamia by several centuries.

The "fake turquoise" hypothesis is known from earlier bead studies in the Levant. As turquoise deposits are extremely rare, odontolite (fossilized ivory) could be used to imitate the turquoise colour through a heating process. I argue here that odontolite, also very rare, would in turn be imitated by baking of steatite, and adding copper as colorant, as seen on the Çatal Höyük beads. This gradual process may explain how copper first became entangled with pyro-technology, a millennium prior to the development of proper metallurgy in the region.

The research presented here is included in a forthcoming volume on the recent excavations at the West Mound, as part of the Çatal Höyük Research Project.

## THE EXPLOITATION OF LOCAL RESOURCES AND INTERCOMMUNAL EXCHANGES IN NEO-ENEOLITHIC. SOME OBSERVATIONS FOR THE SUBCARPATHIAN AREA FROM EASTERN ROMANIA

**Abstract author(s):** Diaconu, Vasile (Neamt National Museum Complex)

**Abstract format:** Oral

The Neo-Eneolithic communities from the Subcarpathian area have exploited different local resources. From an archaeological perspective, the most important resources were the useful rocks and the salt.

Even if in the concerned space we can find several types of useful rocks (mostly sedimentary ones), the analysis of several batches of artefacts from Neolithic and Eneolithic sites stated that the flint has the biggest share, even if it originates from the Prut river basin, situated at a distance of approximately 100 km from them, which was most probably brought by exchanges. In the same manner, we could explain how obsidian is present to sites from the concerned area, as the petrographic analysis stated that it originates from the Carpathian zone of Slovakia, over a distance approximately 400 km away. It is worth mentioning that the obsidian findings are more common in the Neolithic sites, as they are quite rare on the Eneolithic ones.

Unlike other geographic areas from Eastern Romania, the sub-mountainous part contains important salt deposits, which attracted the old human communities there. Some of the archaeological sites dug in the near proximity of the salt water streams were strictly linked to the exploitation of this resource. Besides the needs of the community, the salt obtained from recrystallization was also used for regional trades. It is very possible that this local resource was the base of the intercommunal links from which they obtained high quality rocks for the lithic industry or other "luxury" goods (copper pieces, amber, marine shells).

## EVIDENCE AND OPTIONS OF THE PREHISTORIC SALT EXPLOITATION IN THE CARPATHIAN MOUNTAINS

**Abstract author(s):** Porubcanová, Zuzana (Department of Archaeology and Museology, Masaryk University Brno)

**Abstract format:** Oral

This contribution presents the options of the exploitation and extracting the salt from the various salt sources in Neolithic, Eneolithic and Early Bronze Age. It is also dealing with its distribution in the selected area. The salt sources, which could be available to the prehistoric population include salt springs, brines, saline soils, halophytic plants and rock salt deposits that were visible or situated just below the ground. Based on the distribution and availability of these salt sources it is possible to identify areas and sites, where salt production was likely to occur during the period between 5600 and 1600 BC. The contribution is also dealing with the problematic of the evidence of the salt sources exploitation in the regions of the Carpathian Mountains, which can be very different in the Western part and in the Eastern part of the Carpathians, despite of that they are the same kinds of the salt sources. Various salt sources require different method of their exploitation. Although they provide us with many kinds of the evidence, it can be very difficult (for archaeology) to find them. Therefore, this paper is suggesting hypothesis and possible solutions of these problems.

## PECICA-ȘANȚUL MARE (ROMANIA): A REGIONAL CENTER FOR CRAFT AND TRADE IN THE MIDDLE BRONZE AGE

**Abstract author(s):** Nicodemus, Amy (University of Wisconsin-La Crosse) - O'Shea, John (University of Michigan)

**Abstract format:** Oral

Pecica-Șanțul Mare (Arad County, Romania) was a major trade and craft production center during the Middle Bronze Age (ca. 2000-1500 BC). Its inhabitants participated intensively in local, regional, and extra-regional exchange networks, bringing a range of utilitarian and prestige raw materials into the Mureș River valley. The quantity and diversity of imported items at Pecica far exceeds that of contemporary settlements in the region, with goods often by-passing other Mureș communities along the major river trade routes. Pecica appears to have had preferential access to valuable extra-regional raw materials, such as unworked Baltic amber and marine shell, as well. This settlement also was a major producer and exporter of craft items, including fine metalwork and composite ornaments prominently displayed by elites. Control over both craft production and exchange was critical to Pecica's role as a regional center. From its initial founding, Pecica had specialized economic functions, including serving as a gateway community to the Lower Mureș region.

## THE USAGE OF CLAY SOURCES IN MIDDLE BRONZE AGE. A CASE STUDY FROM EASTERN ROMANIA

**Abstract author(s):** Drob, Ana ("Alexandru Ioan Cuza" University, Interdisciplinary Research Institute, Department of Exact Sciences and Natural Sciences, Arheoinvest Center, Iași) - Bolohan, Neculai ("Alexandru Ioan Cuza" University, Faculty of History, Iași) - Vasilache, Viorica ("Alexandru Ioan Cuza" University, Interdisciplinary Research Institute, Department of Exact Sciences and Natural Sciences, Arheoinvest Center, Iași) - Rățoi, Bogdan ("Alexandru Ioan Cuza" University, Faculty of Geography and Geology, Iași) - Brebu, Mihai ("Petru Poni" Institute of Macromolecular Chemistry, Iași)

**Abstract format:** Oral

The archaeometric study of pottery from the Middle Bronze Age stronghold from Siliștea-"Pe Cetățuie" (Neamț County, Romania) highlighted the presence of a local kaolinic clay, with a high iron content, which was used in pots manufacturing. The Siliștea-"Pe Cetățuie" settlement, located in the South-Eastern extremity of the Cracău river watershed, is naturally defended from three directions (N, E, W) by steep slopes, the defensive system being completed by an anthropic ditch (S), characteristics that generate difficulties concerning the plateau's accessibility. In this regard, the two communities documented in the settlement, Costișa and Monteoru, used a local clay, suggesting the existence of preferences regarding immediate and effortless access to resources.

Based on this information, we carried out an experimental study in order to identify the source of the clay raw material exploited by the two Bronze Age communities. Thus, a first source is represented by a ravine located at approximately 600 m West from the settlement, close to the base of the slope and the second source, which is on the inhabited plateau, is represented by the clay on the Eastern upper slope of the settlement.

In order to identify the source of the raw material we used more interdisciplinary methods of analysis, such as mineralogy, Scanning Electron Microscopy (SEM) and Energy-Dispersive X-Ray (EDX) Spectroscopy, Micro-Fourier Transform Infrared Spectroscopy (FTIR) and Thermogravimetry (TGA/DTA). The results of this experiment provided information on the behavior of the Middle Bronze Age communities that occupied areas East of the Carpathians, especially regarding the exploitation and use of the natural resources required for pottery manufacturing.

## INVESTIGATING SZÉKELY HISTORY THROUGH REGIONAL AND INTERDISCIPLINARY APPROACHES

**Theme:** 3. The Carpathian Basin: Integration, Mobility and Diversity

**Organisers:** Zejdlík, Katie (Western Carolina University) - Bethard, Jonathan (University of South Florida) - Nyárádi, Zsolt (Haáz Rezső Múzeum, Odorheiu Secuiesc)

**Format:** Regular session

Perpetual fission and fusion of people and ideas have characterized the lived experience of Carpathian Basin inhabitants. In contrast to this constant change, Hungarian-speaking Székely have maintained relative stasis in the eastern portion of the region since they arrived a millennium ago. The stability offers a unique, foundational perspective to explore the lifeways of a steadfast culture as well as the ever-changing milieu within which they have been ensconced. This symposium seeks to connect scholars examining the lives of past Székely, and the people with whom they interacted, through a regional perspective as well as by using different disciplinary approaches and at various scales. Insight into migration through ancient genetics, broad patterns of diet through isotope analysis, and lifeways and mortuary practice through materials and landscape studies help with understanding the connection of the Székely to the larger Carpathian Basin and European context, while studies of refined contexts of single individuals or family groups deepen our understanding of personal relationships. We welcome regional and interdisciplinary contributions that explore medieval, early modern, and contemporary Székely lifeways and interactions with inhabitants

of the Carpathian Basin. Ultimately, the purpose of this session is to explore cutting-edge approaches to the dynamic interconnectedness of people in this area.

## ABSTRACTS

### 1 INVESTIGATING THE ARCHAIC AND MODERN-DAY SZÉKELY GENE POOL AROUND SZÉKELYUDVARHELY

**Abstract author(s):** Borbély, Noémi (Institute of Archaeogenomics, Research Centre for the Humanities, Budapest) - Szeifert, Bea (Institute of Archaeogenomics, Research Centre for the Humanities, Budapest; Doctoral School of Biology, Institute of Biology, ELTE Eötvös Loránd University, Budapest) - Kerestély, Koppány (Institute of Archaeogenomics, Research Centre for the Humanities, Budapest) - Pamjav, Horolma (Laboratory of Reference Samples Analysis, Institute of Forensic genetics, Hungarian Institute for Forensic Sciences, Budapest) - Egyed, Balázs (Department of Genetics, Faculty of Natural Sciences, ELTE Eötvös Loránd University, Budapest) - Nyárádi, Zsolt - Sófalvi, András (Haáz Rezső Museum, Odorheiu Secuiesc) - Gál, Szilárd Sándor (Muzeul Județean Mureș, Târgu Mureș) - Benkő, Elek (Institute of Archeology, Research Centre for the Humanities, Budapest) - Szécsényi-Nagy, Anna (Institute of Archaeogenomics, Research Centre for the Humanities, Budapest)

**Abstract format:** Oral

We examine DNA from archaic and modern-day Székely samples from the region of Székelyudvarhely to expand our knowledge about Hungarian population genetics relationships and complete the genetic map of the Carpathian Basin with high quality uniparental (whole mitogenome and 17-23 Y-STR data) and full-genome data.

The modern sample set we analyzed includes more than a hundred Hungarian-speaking Székely individuals from isolated villages near the town Székelyudvarhely. The donors' maternal and paternal ancestry was thoroughly documented in order to exclude the effect of population migration in the last 100-150 years and to avoid sampling of close relatives. The archaic sample set contains nearly a hundred medieval (12- 15/16. century) individuals from the region of Székelyudvarhely (Székelyudvarhely, Székelykeresztúr, Fenyéd, Kányád, Nagyalambfalva, Patakfalva, Máréfalva, Bögöz) mostly from church-related burials.

We analyzed maternal lineages with whole mtDNA next-generation sequencing, and the results were compared to published modern and ancient mitogenomic datasets. The majority of the modern and archaic Székely population can be assigned to European mtDNA haplogroups, but the presence of Asian haplotypes is not negligible either. Phylogenetic analyses confirmed the presumed eastern origin of certain lineages and in some cases, they can be linked to ancient DNA data of early Hungarians.

In the modern data set, we found mostly European-related Y-haplogroups and the smaller proportion of the samples belonged to haplogroups with Asian-origin. These are the few Y-haplotypes that may reflect a Central Asian connection. Further observations are aimed to achieve from comparative analyses of the paternal lineages and the thorough analysis of whole-genome data. Through these studies, we can monitor the continuity and relationships of the region's populations.

This study was funded by the NKFIH FK-127938 research grant.

### 2 UNDERSTANDING SZÉKELY LIFE THROUGH BURIAL PRACTICES FROM A MORTUARY CONTEXT IN TRANSYLVANIA

**Abstract author(s):** Reinman, Lauren (George Mason University) - Bethard, Jonathan (University of South Florida) - Nyárádi, Zsolt (Haáz Rezső Múzeum, Odorheiu Secuiesc)

**Abstract format:** Oral

Through the study of burial contexts, bioarchaeologists can identify patterns of burials to understand the lives of people in the past. This work focuses on a mortuary context from the present-day city of Cristuru Secuiesc (Székelykeresztúr), Romania. Historically, this town was inhabited by Hungarian-speaking Székely people and remains so today. During salvage excavations in 2021, the remains of 16 well-preserved individuals were excavated from a mortuary context adjacent to one of churches in Cristuru Secuiesc. Burial patterns of the interments were broadly consistent with Christian burials across Europe during this time. Three of the thirteen individuals were middle-aged or older adult females, while all the other individuals were non-adults ranging in age from birth to early adolescence. This presentation will highlight general description of the site and its historical context. Additionally, a description of isotopic analysis will provide insight into the broad dietary practices of these individuals. Ultimately, this presentation aims to provide a better understanding of Székely life and death rituals through a combination of bioarchaeological and historical research.

### 3 UNDERSTANDING THE USE OF COINS IN SZÉKELY BURIALS, 12TH TO 17TH CENTURY

**Abstract author(s):** Privette, Cameron - Zejdlik, Katie (Western Carolina University) - Nyárádi, Zsolt (Haáz Rezső Múzeum, Odorheiu Secuiesc)

**Abstract format:** Oral

Coins recovered as grave offerings provide insight into a community's mortuary beliefs beyond the typical information concerning temporality or political influences. The most common interpretation of coins in burials relates to the tradition of Charon's Obol, the coin placed in the mouth of the deceased to pay for passage to the afterlife, or some variant of that practice. Coins may also serve as charms against evil or as a type of almsgiving to the dead. They have been found on eyes, in mouths, hands, and remnants of purses; and simply scattered alongside the body. Coins are frequently associated with females and children. This paper will consider the importance of coins in mortuary practices, across different times and regions, as well as break down the assumptions surrounding Charon's Obol. Then, using a case study of burials from the Papdomb site in Patakfalva, Romania, it will approach the interpretation of coin presence in Székely graves. In the Székely region of Transylvania, coins found in burial contexts from the 12th to the 17th century are usually assumed to be a form of Charon's Obol, however, this area has been subject to drastic political and religious changes throughout history and this general interpretation may not get at the nuanced meaning of these coins. In particular, the introduction of Christianity may have had considerable influence on the use and meanings of coins.

### 4 FORGED IN BAIÁ MARE: SOCIAL RELATIONSHIPS AND THE EMBODIMENT OF MEDIEVAL GOLD MINING IN A 14TH-17TH CENTURY TRANSYLVANIAN CEMETERY

**Abstract author(s):** Mollard, Priscilla - Zimmer, Adam (Rivulus Dominarum Bioarchaeology; University of Massachusetts Amherst)

**Abstract format:** Oral

Maramureş was the metallurgical epicenter of Transylvania for almost 3,000 years and Baia Mare, present-day capital of Maramureş county, was among the most important Transylvanian gold-mining towns in the medieval Kingdom of Hungary. In return for their skilled labor, citizens enjoyed special privileges granted by royal charter, which gave Baia Mare political and social freedoms denied non-mining towns. From the 14th century onwards, the town functioned as an entity set apart from others, giving its citizens unique political and social benefits at a relatively small cost and attracting diverse groups of workers. Cultural diversity has always been a hallmark of mining towns, whose working conditions tend to force laborers to intermingle in ways they otherwise may not. Within the exceptional complexity of relationships that coalesce around contemporary mining projects, structural inequality, harsh working conditions, and social isolation tend to produce conflict, opposition, and dispute among workers, leading to power hierarchies rooted in ethnicity. Were these same structures in place in medieval Baia Mare? The economic and social autonomy granted royal Transylvanian mining towns attracted diverse groups of laborers throughout Europe but we have little knowledge of how those individuals navigated social relationships within a society brought together by occupation rather than familial or ethnic unity. Few bioarchaeological studies of pre-industrial mining exist, and fewer still consider the biosocial role that mining played in mortality, community health, and social identity outside the mines. The research presented here places the embodiment of mining, and its biosocial consequences, at the center of a community-engaged bioarchaeological study of the medieval Piaţa Cetăţii cemetery from 14th-17th century Baia Mare. The project employs bioarchaeological methods to investigate social relationships at Piaţa Cetăţii, and the role that mining played in shaping adult mortality, community health, and social identity both historically and into the present.

### 5 DEMOGRAPHIC VARIATION AMONG MULTI-PERSON, CEMETERY INTERNMENTS IN MEDIEVAL AND BAROQUE SZÉKELY TRANSYLVANIA

**Abstract author(s):** Zejdlik, Katie (Western Carolina University) - Bethard, Jonathan (University of South Florida) - Nyárádi, Zsolt (Haas Rezső Múzeum, Székelyudvarhely) - Kulhavy, Kathryn (University of Tennessee, Knoxville)

**Abstract format:** Oral

The interment of multiple people in a single burial context is rare when evidence of widespread disease or warfare are absent, and the practice is not part of standard mortuary treatment. When found, individuals are typically females with children or children together. Interpretation of multi-person burial is often espoused as biological or kin relationships and is sometimes related to non-natural catalysts. Despite the seemingly unusual occurrence of multiple burial in Europe and Eurasia through time, multi-person burial is not an uncommon practice among medieval and baroque individuals in the Székelyföld with investigations reporting interment of several children with an elderly female or family members interred together in a family crypt. The range of variation in multi-person interment at the Papdomb site ranges from the interment of an adult male with a pre-term infant, to two children interred holding hands, to two males buried together but immediately on top of one another. Location within the Papdomb landscape also varies with individuals recovered from within the church proper to outside the church yard wall. This paper provides an overview of type, period, and location of multi-person interments at the Papdomb site and then places it within

the larger context of Transylvania and Europe. The paper concludes with a discussion of the in-progress ancient DNA work being conducted.

## 6 UN-ERASING THE INVISIBLE ELDERLY IN BIOARCHAEOLOGY: AN EXAMPLE FROM THE SZÉKELYFÖLD

**Abstract author(s):** Bethard, Jonathan (University of South Florida) - Zejdlik, Katie (Western Carolina University) - Nyárádi, Zsolt (Haáz Rezső Múzeum)

**Abstract format:** Oral

In recent years, bioarchaeologists have noted that demographic reconstructions of past communities have a conspicuous absence of elderly individuals. Does this observation mean that the human lifespan was shorter long ago? Did people not live as long as they do today? Do present-day definitions of who is an elder blur how we define old age in the past? Answers to each of these questions require some understanding of how bioarchaeologists approach the subject of age-at-death estimation from the human skeleton, as well as the methodological shortcomings associated with our most common age estimation methodologies. Additionally, bioarchaeologists often do not have the luxury of working in contexts where documentary sources shed light on social categories of the human lifespan. Despite this obvious shortcoming, how do we proceed without further sidelining elderly individuals from the past? In this presentation, we discuss the problems and pitfalls of age-at-death estimation in bioarchaeology, as well as approaches which might provide improvements for future work on this question. Lastly, we present a snapshot of Székely elders we have identified from our on-going, multi-site bioarchaeological project in the Carpathian basin.

## 7 AN ANALYSIS OF DENTAL-SKELETAL AGE DISCREPANCY IN A MEDIEVAL TRANSYLVANIAN POPULATION

**Abstract author(s):** Bews, Elizabeth (University of South Florida) - Zejdlik, Katie (Western Carolina University) - Nyárádi, Zsolt (Haáz Rezső Múzeum) - Gonciar, Andre (ArchaeoTek Canada, LLC) - Bethard, Jonathan (University of South Florida)

**Abstract format:** Oral

A basic assumption of bioarchaeology is that in non-adult individuals, post-cranial skeletal growth is more sensitive to environmental stressors than dental development. As a result, dental development is a more accurate indicator of chronological age than post-cranial skeletal maturation in non-adult individuals, while skeletal development is a better indicator of frailty and differential health statuses within archaeological populations. What is less clear, however, is the age at which this divergence in skeletal-dental maturation rates begins to manifest, and if specific age cohorts experience this discrepancy more profoundly than others. The medieval church site of Papdomb is notable for its high density of non-adult burials, of which a large subset of individuals has a dental age that is well ahead of their post-cranial skeletal age. Therefore, this site presents an ideal environment in which to investigate the intricacies of dental-skeletal development discrepancies in non-adult individuals from archaeological contexts. The cemetery at Papdomb is associated with a multi-phase medieval church in Harghita county, Romania, near the village of Văleni (Hungarian: Patakfalva) and lies within the Székelyföld. The church cemetery was used from the 11th – 17th century and contains the remains of both male and female individuals ranging in age from perinate to old adult. This study will examine all non-adult individuals (n=239) who have an estimated age of 16.5 years or younger. Each individual's skeletal remains will be analyzed according to age cohort, level of discrepancy between dental and skeletal age estimates, and will be assessed for other skeletal markers of frailty such as linear enamel hypoplasia, cribra orbitalia, porotic hyperostosis, and rickets. Ultimately, this analysis aims to clarify when and how the phenomenon of dental-skeletal development discrepancy manifests in non-adult individuals from archaeological contexts.

## 8 AN EXPLORATION OF STRESS AND DIET THROUGH CARBON AND NITROGEN STABLE ISOTOPE ANALYSIS IN LATE MEDIEVAL-EARLY MODERN ROMANIA

**Abstract author(s):** Watson, Jenna (The University of Tennessee Knoxville) - Constantinescu, Mihai (Francisc I. Rainer Institute of Anthropology, Romanian Academy; Faculty of History, University of Bucharest)

**Abstract format:** Oral

Romania during the Late Medieval and Early Modern period was a feudal society consisting of the wealthy noble and ruling classes, peasants, and serfs. Staple crops such as wheat, rye, and barley (C3 plants) were commonly consumed during this period as well as millet and eventually maize (C4 plants). Terrestrial and aquatic animal protein sources like pork, beef, ruminant milk, and fish were also common food sources. However, the way an individual's social status, age, and sex may have differentially affected access to these food resources and impacted their experiences of stress and disease during the Late Medieval-Early Modern period is not fully understood. This research uses demographic, pathological, archeological, and stable isotope data to explore how age, sex, social status, and diet influenced patterns of stress and frailty in human skeletal remains excavated from three sites in Moldavia (northeast Romania) dating to the 14th – 18th centuries CE. These skeletal collections are currently housed at the Francisc I.

Rainer Institute of Anthropology (FRIA) in Bucharest, Romania. Age-at-death and sex were estimated using standard methods, skeletal indicators of non-specific stress and dental pathology (periostitis, porotic lesions of the skull, linear enamel hypoplasia, caries, and abscesses) were analyzed and documented, and both the ribs and femora were sampled for carbon and nitrogen stable isotope analysis at the University of Bucharest Stable Isotope Laboratory. This research aims to 1) determine the dietary composition of these populations 2) improve our understanding of how dietary composition correlates with age, sex, social status, and skeletal stress, 3) and provide more insight into patterns of stress and dietary composition of human populations in Moldavia during the Late Medieval and Early Modern periods in Romania.

## 9 **TRANSYLVANIA DIET: A COMPARATIVE INVESTIGATION OF A SAXON COMMUNITY FROM BRAȘOV, ROMANIA (14TH-18TH CENT.)**

**Abstract author(s):** Barkmeier, Jonathan (University of Central Florida)

**Abstract format:** Oral

This study investigates a late medieval/early modern Transylvanian skeletal assemblage from Brașov, Romania by assessing dietary tracers through isotopic analysis. During this period, the Transylvanian region was characterized as a multi-ethnic region with intermixing groups such as Hungarians, Székely, Saxons, and Romanians. The skeletal assemblage from Brașov represents an enclave community of high-status Saxons and offers a unique case in which potential dietary practices can be compared to neighboring communities. Isotopic data from sixty individuals were examined from bone tissue for nitrogen ( $\delta^{15}\text{N}_{\text{col}}$ ) and carbon ( $\delta^{13}\text{C}_{\text{col}}$  and  $\delta^{13}\text{C}_{\text{ap}}$ ). Data from  $\delta^{15}\text{N}_{\text{col}}$  and  $\Delta^{13}\text{C}_{\text{col}}-^{13}\text{C}_{\text{ap}}$  are used to investigate protein sources available to those in Brașov. Additionally, these data were combined with demographic analysis to assess intra-community variation between the sex or age cohorts. Isotopic data is compared to other geographically similar groups to understand regional dietary variation in Transylvania. This research helps elucidate dietary patterns within the region and addresses the influence that socio-cultural factors (e.g., ethnic identity, socio-economic status, sex/age) may have on diet at the inter-/intra-population level.

## 10 **SZÉKELY SUBSISTENCE AND SOCIAL STRATIFICATION REVEALED THROUGH STABLE ISOTOPE ANALYSIS**

**Abstract author(s):** Bethard, Jonathan (University of South Florida) - Zejdlik, Katie (Western Carolina University) - Nyáradi, Zsolt (Haáz Rezső Múzeum) - Gonciar, Andre (ArcheoTek, LLC)

**Abstract format:** Oral

Dietary reconstruction from stable isotope analysis of carbon and nitrogen is a routine component of bioarchaeological scholarship. Bioarchaeologists working across time and geography utilize these isotope systems to understand the ways in which people incorporated plant and animal resources into their diets. Moreover, nuanced understanding of how carbon and nitrogen isotopes are routed to different bodily tissues such as collagen and bioapatite provide an even more granular understanding of how dietary practices occurred in the past. Throughout European archaeological contexts, scholars have utilized stable isotope analyses to understand 'big picture' topics such as how dietary resources were linked to social status or how weaning practices shifted with migration from rural to urban locales. Additionally, stable isotope analysis has helped provide rich detail to the interpretation of single individual osteobiographies. Despite these advances, less research utilizing this approach had occurred in the Carpathian basin and even less has focused on Székely communities. This presentation helps close that gap and details medieval and early modern Székely dietary practices by presenting results from a large (n=120) multi-isotope study focused on data derived from both collagen and bioapatite. Results indicates that a majority of Székely adults had a primarily herbivorous diet, most likely derived from cereals grains such as wheat. Additionally, evidence for social stratification related to the availability of foodstuffs is apparent in the Székely community presented in this talk. In sum, stable isotope analysis is a powerful tool for better understanding communities from the understudied region of the Carpathian basin.

---

## 305 **UNRAVELLING THE URBAN PALIMPSEST: THE RE-USE AND INTEGRATION OF URBAN FABRIC IN TIME AND SPACE [URBAN ARCHAEOLOGY COMMUNITY]**

**Theme:** 2. [Re]integration

**Organisers:** Bouwmeester, Jeroen (Cultural Heritage Agency of the Netherlands) - Belford, Paul (Clwyd-Powys Archaeological Trust) - Kolláth, Ágnes (Archaeological Institute Hungarian Academy of Sciences)

**Format:** Regular session

A town is a palimpsest of different periods of building and development. New buildings arise above older ones, and older buildings are reused. A famous example is the Roman Theatre of Marcellus. In many cases re-use was not confined to buildings, but all or part of the urban fabric was re-used as well. Earlier urban forms are preserved in modern street plans. The Roman origins of many places are evident today. Components of medieval town plans – burgrave

plots, market places and town walls – are often embedded in the grain of the modern urban landscape. At the same time parts have been erased. This process of negotiation and compromise continues today: heritage management is often about incorporating older buildings and areas in new developments in order to preserve them.

This main session of the EAA Urban Archaeology Community focuses on unravelling this palimpsest. This can be about modern urban development, but also about urban development in previous ages. We would like to focus on two specific themes:

- The re-use and integration of buildings;
- The re-use and integration of space.

The main questions are how this re-use is manifested and why and when. Are these local or supra-local phenomena? Are connections between towns, regions and periods recognisable and how are they represented? Is there a connection with the landscape? How can we preserve the old urban fabric, but also weave new threads into it, so that it may still serve the inhabitants' needs?

In this session we will explicitly not focus on one specific period and region. Exploring diversity through time and space can help us develop a better understanding of underlying patterns and interconnections. This will also be the focus in the discussion slots of this session.

We welcome papers from within and outside Europe.

## ABSTRACTS

### 1 INTRODUCTION TO UNRAVEL THE PALIMPSEST

**Abstract author(s):** Bouwmeester, Jeroen (Cultural Heritage Agency of the Netherlands)

**Abstract format:** Oral

Like any other settlement, the city cannot be separated from the landscape in which it lies. The city may have come into being when an existing settlement began to flourish and continued to expand, acquiring more and more urban characteristics. At the same time, there are also cities that are deliberately placed in a particular spot, for geopolitical reasons, economic reasons or both. Accessibility is important for a city. It is a gathering place for people and goods and a node in a much larger network. Each node in this network is a connection to the hinterland. This hinterland could provide the city with raw materials for trade and crafts. The node could also be a strategic point to protect the hinterland.

In this lecture, the relationship between the city and the landscape will be explored on the basis of some Dutch examples. Relationships between the structure of the city, the function of the city in relation to the hinterland, and the landscape are explored. How is a city structured? What functions can be distinguished and where are these functions located within the city? It is not only about the origins of the city but also about how it developed further. Think of the shifting city periphery with, for example, polluting and fire hazardous functions, which often moved outwards when the city expanded. What happens in urban decline?

This lecture provides the context for the session Unravelling the Urban Palimpsest.

### 2 THE RECUPERATION AND REINTEGRATION OF MODERN AGE QANATS IN MADRID: AN EXAMPLE OF A HIDDEN BUT ESSENTIAL LANDSCAPE

**Abstract author(s):** Zamora, Aurea (Independent researcher) - Briones Martínez, Cecilia (Ayuntamiento de Madrid) - Arnáiz Barrio, Fernando - González García, Toñi (Cofas 0,00 s.l.)

**Abstract format:** Oral

The qanats are ancestral infrastructures for water supply adapted to arid environments, originating in Iran. In the Iberian Peninsula, the Muslims introduced this particular system in the 8th century, and it is still in use in some regions.

The foundation of Islamic Madrid is related to two water springs still traceable within the urban topography; at this time, few qanats were supplying the small village. However, the exponential growth of Madrid from the 16th century onwards as the Court of the Spanish Empire is historically lacking an explanation regarding the proliferation and importance of these infrastructures. The qanats did not only bring clean water to fountains, convents, or palaces in Madrid but were also the catalyst for the creation of intricate networks of water carriers, inns, and roads. Besides, they were often regarded in Modern Age sources, even though most of the population had never seen it: p.e. the fame of their waters praised in literature, or the popularity of public fountains or water carriers, painted as part of the folklore.

In Madrid, kilometers of 16th-19th centuries qanats remain underground, mostly unknown by the population, and as invisible today as then. However, a synopsis of the topography of the historical city, alongside the distribution of the qanats, unveils that the latter was the backbone of Madrid's Modern Age urban development.

This paper shows the results of ongoing works undertaken by Madrid's City Council since 2018 in collaboration with archaeologists, architects, and heritage specialists. These works have focused on historical research, archaeological



recording, GIS mapping, and restoration of building elements with the aims of reintegrating parts of the Modern Age quarters within the current topography of Madrid, as well as creating accessible knowledge of this crucial landscape, and stress its importance for the enhancement of the lives of others.

### 3 **CROSS, HALF MOON, GUNPOWDER – CHURCHES OF HUNGARIAN CITIES IN THE OTTOMAN-HABSBURG WARS' NORTH-WESTERN BORDER ZONE**

**Abstract author(s):** Kolláth, Ágnes (Bölcsészettudományi Kutatóközpont)

**Abstract format:** Oral

The Ottoman conquest in the middle part of Hungary (1526-1698) brought dramatic changes for the country. The region between the Danube and the Bakony Mountains - called earlier "the Middle of the Kingdom" (Medium Regni) - had become a warzone with ever-changing borders. The old royal and episcopal seats, Buda, Esztergom, Székesfehérvár, Győr and Veszprém had been transformed into fortress-towns, sometimes switching owners within a few years during big military campaigns. These cities had housed quite a few of the most important and most splendid ecclesiastic institutions of medieval Hungary, that all suffered damages, however to a varying extent.

The paper aims to examine, how these institutions, especially the bishopric cathedrals and other major churches were handled by the Ottoman and/or the Habsburg administrations. The buildings' historic and symbolic significance was known to the occupiers and they tried to use these factors to their own benefit by claiming to protect them, by transforming them to their own religious and cultural norms or by profaning them. Some of these edifices were also coveted by the practical military commanders and engineers because of their sheer dimensions, thick stone walls and strategic positions within the settlements.

These clashing interests could result in the complete devastation of a given church, while others were saved because of them. After the reconquering wars had succeeded at the end of the 17th century, people tried to put the fragments of their old cities together. The second half of the presentation explores, how these buildings - or their memory - influenced the development of the renewed settlements.

### 4 **MAKING ROOM FOR SPECTACULA: THE ENTERTAINMENT BUILDINGS IN THE URBAN DEVELOPMENT OF ROMAN THRACE**

**Abstract author(s):** Andreeva, Petya (Austrian Archaeological Institute)

**Abstract format:** Oral

The long-standing archaeological investigations of the ancient cities in Roman Thrace have resulted in several well-documented entertainment districts built up amid dense urban fabric. They have been plausibly recognized by the remains of monumental buildings (theaters, amphitheatres, stadium), which not only embellished the urban area, but also responded to Thrace's newly articulated role as a province arranged in the "Roman urban order".

The interventions in the ancient urban fabric embedded in the modern city planning gave rise to controversy as to the functional interpretation of some of these buildings and structures, yet characterized by a unique architectural layout. However, rescue excavations conducted recently have made it possible to precise the diachronic development of their architectural design and integration into the urban environment: Hellenistic structures beneath some of these monumental buildings have been identified, more light has been shed on their architectural and functional adaptation, and reconfiguration of urban areas to make space for spectacles has been attested archaeologically so far. The latter conceal additional motivations behind the provincial community attitude towards urban environment and the implicit relation to the urban context regarding any changes in the general layout undertaken.

The reconfiguration of urban landscape in Late Antiquity, inside and outside the city walls, so as to integrate such significant public buildings indicated changes to the urban fabric. An amphitheater built within the city walls re-using the urban space (Diocletianopolis) and an extramural amphitheater constructed above theater of an earlier date (Serdica) have been subject to archaeological research.

Last but not least, the buildings designed to stage Roman spectacles were charged with symbolic values and served as monumental symbols of the Roman urban life and way of entertainment. Once they were defunctionalized, their remains were superimposed by buildings and structures related to the process of Christianization of the ancient cities.

## 5 PHENOMENA OF RE-USE AND INTEGRATION OF THE URBAN GRID IN THE CITYSCAPE OF NEA PAPHOS; THE CAPITAL OF HELLENISTIC-ROMAN CYPRUS

**Abstract author(s):** Miszk, Lukasz (Institute of Archaeology Jagiellonian University) - Kubicka-Sowińska, Anna (Warsaw University of Technology) - Papuci-Władyka, Ewdoksia (Institute of Archaeology Jagiellonian University; University of Warsaw) - Brzozowska-Jawornicka, Aleksandra (Wrocław University of Science and Technology) - Ostrowski, Wojciech (Warsaw University of Technology) - Michalik, Michał (Institute of Archaeology Jagiellonian University)

**Abstract format:** Oral

Nea Paphos, which served as the capital of Hellenistic-Roman Cyprus, was a city founded according to the Hippodamian principles of a regular planned urban centre. However, given the 700-year history of the city's existence in antiquity, Paphos is a perfect example of the processes of re-use and integration to primer layout in the successive phases of development.

The phenomenon of the reuse of buildings' space and their disappearance in Nea Paphos cityscape is recorded in many districts of the city. Our research focuses on the analysis of these processes within the residential area of the so-called Maloutena, especially in the area of the buildings of the "Hellenistic" House and the Villa of Theseus, as well as the main square of the city, the Agora. Changes in plans and layouts of the Paphian residences and other buildings may indicate some modifications of their function or the way they were used. However, despite the city's development, the Hellenistic town plan is still preserved in buildings orientation and the course of main roads. The aim of the presentation will be to present the best archaeologically identified examples of the re-use of space in regularly planned towns and their integration into the urban landscape of Paphos.

## 6 SETTLEMENT PATTERN MODELLING AND THE STRUCTURE OF URBANISM OVER TIME AT ANGKOR, CAMBODIA

**Abstract author(s):** Klassen, Sarah (Leiden University) - Fletcher, Roland (University of Sydney)

**Abstract format:** Oral

The Greater Angkor Region contains one of the largest known, agrarian-based, low-density urban settlement in the world. Recent research has modelled the development of this landscape with implications for population growth and agricultural subsistence. This work suggests that the Greater Angkor region reached a maximum population of up to 900,000 at its peak. As part of this process, the urban fabric developed in ways that are consistent with the Alonso-Muth-Mills model of urban land where infrastructure incorporated agricultural production into the urban system. In this paper, we review recent work to map and model the growth of the urban complex. We also investigate the internal structure and the scaling patterns, which emerge in the residential layout and the infrastructure of Greater Angkor. Our results indicate that the Greater Angkor Region displays elaborate, internal development histories, distinct travel-time patterns and internal differentiation of occupation areas by scale and connectivity within the urban complex of Greater Angkor.

## 7 URBAN STORIES FROM A SEVEN HILLS CAPITAL IN EASTERN ROMANIA

**Abstract author(s):** Bolohan, Neculai („Alexandru Ioan Cuza" University of Iași) - Drob, Ana - Asăndulesei, Andrei (Alexandru Ioan Cuza" University, Interdisciplinary Research Institute, Science Department, Arheoinvest Research Center, Iași)

**Abstract format:** Oral

The development of a regional capital involves an interweaving of narratives. Of these, in this case, stands out the way in which a site situated at an important crossroads and on a communication axis has acquired multiple functions. It all starts with the capitalization of a periphery to be found beyond the city walls, continues with the construction of a boyar residence that has undergone renovations, will develop in the form of public institutions and will acquire mundane values in the contemporary period.

The narration developed under the sign of the functional palimpsest, as it resulted from a recent archeological investigation, which confirmed the older cartographic data as well as some of the histories of the place called Casa Canta. At the same time, all these data express the gradual rhythms of urbanization and modernization of the city of Iași, capital of the principality of Moldova, since the end of the 18th century. The proposed case study involves analyzing the relationship between a residence and a „loisir landscape" , a post office located on the main axis of communication with the north of the principality and a succession of re-uses until the current destination. The existence of different stages is supported by the archaeological investigation of the urban context, by the analysis of the materiality and by the association of the written data.

## 8 VALORISATION OF LIVING SPACE IN MEDIAEVAL AND EARLY MODERN CITIES. EXAMPLES FROM CENTRAL EUROPE

**Abstract author(s):** Legut-Pintal, Maria (Institute of Archaeology - University of Wrocław) - Grosel, Mikołaj (Faculty of Architecture - Wrocław University of Technology)

**Abstract format:** Oral

The space within the walls of a mediaeval city was not uniform. Social inequalities in a historic city also had their spatial and architectural dimensions. Some areas of the city were considered prestigious, while others had a bad reputation. Valorisation of space is understood as an assessment of the level of fulfilment of the needs of residents - due to its location and functional and spatial features. The quality of the residential spaces in a city could be determined by a distance from the centre and other important landmarks, including main squares, but also important infrastructure elements affecting the quality of life (main roads, water supply networks). The value of space could be lowered by unfavourable and burdensome neighbourhoods. The value of a specific real estate depended on its function, size, technical condition of the building and many other factors, sometimes difficult to identify. In this paper, we would like to propose a simplified model of the valorisation of residential space, understood as a space built up with buildings with predominantly residential functions, in a historical city. Our considerations are based on examples from two Central European cities, Prague and Wrocław, for which we use historical, archaeological, iconographic data and geospatial analysis. We perform value assessment for several different time periods, trying to track changes that occurred as a result of the evolution and development of space and various historical events. We assume that the approach we propose can be applied to valorising space of other historical cities.

## 9 URBAN ARCHAEOLOGY IN DURRËS (ALBANIA) – PROBLEMS AND THE FUTURE

**Abstract author(s):** Lafe, Ols (Center for the Development of Ancient and Medieval Albanian Heritage; University)

**Abstract format:** Oral

The development of urban centers quite often takes place on the same location where the earlier traces of that settlement are located. This immediately brings forward an inevitable clash between the desire for development and the need for the protection of traces of the past. Precisely these ruins of various monuments are found separated from the city's development over them and the task of archaeologists (not alone) is to integrate them in the everyday life offering the best possible solutions for their protection and presentation. This is the most important phase, perhaps more important than the excavation itself, it is the moment when the discussion on their in situ or ex situ preservation begins. Durrës, as a millennial city offers the most complete panorama of urban development intertwined with archaeology and where in the last 100 years there are at least 15 monuments and archaeological ruins of all categories (walls, mosaics, towers, roman baths of the city etc.), which have been brought to light and are situated under public or private buildings alike. Our analysis contributes towards the creation of the GIS map of the protected underground of Durrës (the "known" underground), and discusses the 15 locations which today are still visible and elaborates their current conditions. Do they have to stay under such modern buildings and presented to visitors in situ? Do they need to be transferred to the archaeological museum for a better ex situ presentation? Are they all declared cultural monuments, are some of the crucial questions that this presentation discusses.

## 10 A TOWN OF RUINS - REUSE, URBAN INFILL AND DECLINING POPULATION IN LATE MEDIEVAL LÖDÖSE

**Abstract author(s):** Lazarides, Anton (Lödöse museum)

**Abstract format:** Oral

The medieval town of Lödöse, by the river Göta älv, was once the only port in Swedish control with access to the western coast of the Scandinavian Peninsula. Its primary function was to access maritime trade routes towards the European continent and the British Isles between the late 11th century until late 15th century when its functions were moved south down the river to New Lödöse.

This paper will focus on the urban development in Lödöse during the late medieval period through a case study of recent excavations in the port area of town. These results has brought new light to the last centuries of Lödöse as a town and how it continued to survive even after a formal decision was made to move its functions to New Lödöse in 1473. Even though a rapid decline in population occurred throughout the 15-16th centuries, the port area has been subjected to urban infill, notably around the time the town saw an increasing decline. The subject of reuse is evident in the late medieval period in Lödöse. Through the ruins from a greater past, a small but dense town arose, closer to the river.

What prompted the inhabitants of Lödöse to densify the urban area during this time? A likely interpretation is the competitive advantage of a dense urban area with proximity to the port. The urban centre had earlier been in the area east of the port, between the castle Lödösehus and the church of Saint Peter, on both sides of a creek that

was used as an important route for the infrastructure of the town. Towards the end of the medieval period this creek started to sludge and dry up - another reason to densify closer to the river.

## 11 NEW TOWNS RENEWED? DEVELOPMENT AND ARCHAEOLOGY IN THE MEDIEVAL TOWNS OF WALES

**Abstract author(s):** Belford, Paul (Clwyd-Powys Archaeological Trust)

**Abstract format:** Oral

Much of Wales is a landscape of steep hills, river valleys and rugged coastline. Communication can be challenging. Some prehistoric and early medieval settlements may have had urban characteristics, and Roman influence was stronger in the more accessible lands of southern and eastern Wales. However most towns in Wales were founded from the 11th century onwards, either as part of the Anglo-Norman conquest or in response to it. Some were short-lived, but many developed as fully urban centres supporting a wider hinterland. Although small, they had (or aspired to have) all the urban characteristics – defences, markets, civic buildings and well-ordered public and private spaces. The medieval new towns of Wales have been characterised as the imposition of an urban 'colonial' mindset on a resistant rural population. However archaeological work undertaken as part of development process in the last 30 years has shown a more subtle picture. Themes include

- Longevity of medieval urban planning, often incorporating earlier landscape features for symbolic or practical reasons
- Urban centres as places of exchange and communication, as well as foci for domination and resistance
- Similarities and differences between 'English' and 'Welsh' experiences and encounters in the urban landscape

This paper will review some of this evidence, and explore issues of sample bias in a purely development-driven approach to archaeological research – both between towns and within them. Discussion will focus on the value of incremental knowledge gain over many decades, emphasising the importance of regional expertise to aid understanding of development in local context.

## A. CASTLE IN THE HEART OF THE TOWN. THE FUNCTIONS OF TATA CASTLE (HUNGARY) FROM THE MIDDLE AGES TO THE PRESENT

**Abstract author(s):** Kovács, Bianka (Institute of Archaeology, Research Center for the Humanities)

**Abstract format:** Poster

The town of Tata lies on the shore of a lake with a castle in its centre. This building had been constructed between 1397 and 1410 as a summer resort of Hungarian kings and became a favoured residence during the 15th century. In the 16th century the Ottomans conquered the central part of the Hungarian Kingdom. Consequently, the castle became a military border fortress, which brought significant reconstruction and destruction in its life. After the wartime, the area was repopulated and the building lost its former functions. However, its new owners, the Esterházy family, tried to find a suitable role for it and integrate it into the life of the town. The building gave room to a bailiff's house, a prison, a stable, a vineyard and later dwelling houses. The castle was completely built around with a watermill, a mansion and houses during this period, so the building was integrated into the townscape. The need to study, restore and present the original medieval building arose after the Second World War. Nowadays, the building serves primarily as a museum, but also as a space for other cultural and social activities (e.g. restaurant, café, escape room). Its external protection system, the moat and the lake operate as a fish farm. The poster illustrates how the functions of the castle were adapted to the needs of the different periods and shows the demolitions and rebuildings that this entailed.

---

## 306 EARLY IRON AGE LANDSCAPE TRANSFORMATIONS IN THE CARPATHIAN BASIN AND ADJACENT AREAS

**Theme:** 3. The Carpathian Basin: Integration, Mobility and Diversity

**Organisers:** Czajlik, Zoltán (Institute of Archaeological Sciences, Eötvös Loránd University, Budapest) - Črešnar, Matija (Department of Archaeology, University of Ljubljana) - Benediková, Lucia (Institute of Archaeology SAS) - Mele, Marko (Universalmuseum Joanneum) - Czifra, Szabolcs (Hungarian National Museum)

**Format:** Regular session

The period between the 8th–5th centuries BC in the Carpathian Basin is characterised by a slow, yet important transformation that changed the social structure, subsistence strategies, technological/manufacturing approaches and trading. At the same time – especially in the eastern Hallstatt zone – a monumentalized landscape transformation occurred, namely the construction of site complexes of hillforts and tumulus necropolises. The relationship between the communities and the landscape appears to have been changing, as fortifications and cemeteries became much more visible in the landscape, possibly functioning as respected places for future generations. Nonetheless, beyond the glitter of the huge earthen monuments, we know very little about the contemporary villages and farm-

steads, where a significant part of the population lived. Moreover, the transregional differences in land use practices of non-Hallstatt cultural entities to the north, east and south of the Carpathian Basin have never been subject to a detailed analysis. Even though they inhabited many settlements already known to us, and the communities emerging around 650 BC in the eastern part of the Carpathian Basin were far from being exclusively nomadic stockbreeders, they remain mostly unmentioned in the mainstream European discussion. The aim of this session is to bring together various scientific fields to gain insights into the settlement structure/network and landscape utilization of the Iron Age in the Carpathian Basin and the neighbouring regions. Furthermore, modern landscape research methods may shed light on the nature of the Iron Age transformation. Therefore, every aspect of multidisciplinary research is welcome, e.g. past landscape reconstruction employing non-destructive and destructive fieldwork methods; reconstruction of past land cover and environment using palynological and other ecological data; reconstruction of production/consumption approaches at rural and central sites, employing archaeobiological methods; hydrological/geographical reconstruction at a regional level; exploitation of natural resources at local, regional and transregional levels.

## ABSTRACTS:

### 1 WESTERN CARPATHIAN MOUNTAINS LAND-USE DURING THE BRONZE AND IRON AGES : CASE STUDY FROM LIPTOV (SLOVAKIA)

**Abstract author(s):** Benediková, Lucia (Institute of Archaeology of the Slovak Academy of Sciences, Nitra) - Hajnalová, Mária (Constantine the Philosopher University Faculty of Arts, Department of Archaeology, Nitra) - Jamrichová, Eva (Department of Paleoeology, Institute of Botany of the Czech Academy of Sciences) - Barta, Peter (Comenius university Faculty of Arts, Department of Archaeology, Bratislava) - Petr, Libor (Department of Botany and Zoology, Masaryk University, Brno) - Dreslerová, Dagmar (Institute of Archaeology of the Czech Academy of Sciences, Prague)

**Abstract format:** Oral

Western Carpathian Mountains in its northernmost part in the Liptov Basin in Slovakia were used by people since the Palaeolithic. During the time span from the Late Bronze Age till the turn of era they see the heydays of their prehistoric settlement.

In the recent research project(s) the Bronze and Iron Age settlement structure was investigated by the multi-proxy approach combining several scientific disciplines – archaeology, palynology, archaeobotany, AMS dating.

The results show that the employment and combination of several methods enable to shed a new light on the dating and function of particular types of the sites situated in extreme mountain locations as well as to correlate major cultural changes with the palaeoecological data retrieved from the palynological profile(s).

This work was supported by the Slovak Research and Development Agency under the Contract no. APVV-20-0044, by the projects VEGA 1/0399/18, VEGA 2/0035/22, VEGA 2/0018/19, VEGA 1/0100/19 and by OP RDE, MEYS under the project Ultra-trace isotope research in social and environmental studies using accelerator mass spectrometry, Reg. No. CZ.02.1.01/0.0/0.0/16\_019/ 0000728.

### 2 CLIMATIC CHANGES DURING THE LBA – EIA TRANSITION IN THE CARPATHIAN BASIN AND THEIR IMPACT ON HUMAN SOCIETIES

**Abstract author(s):** Magyari, Eniko (Eötvös Loránd University, Department of Environmental and Landscape Geography; MTA-MTM-ELTE Research group for Paleontology) - Buczkó, Krisztina (Research Centre for Ecology; Hungarian Natural History Museum) - Czifra, Szabolcs (Hungarian National Museum) - Fejér, Eszter (Institute of Archaeological Sciences, Eötvös Loránd University) - Szabó, Zoltán (Eötvös Loránd University, Department of Environmental and Landscape Geography) - Czajlik, Zoltán (Institute of Archaeological Sciences, Eötvös Loránd University)

**Abstract format:** Oral

The Late Bronze Age/ Early Iron Age (LBA/EIA) transition period took place around 850-700 cal yr BC in the Carpathian Basin. In the Great Hungarian Plain this is the time of appearance of eastern steppic Prescythian groups, while Transdanubia became part of the Eastern Hallstatt circle. Pollen records covering this transitional period point to increasing land use, forest clearance and an intensifying use of the lowland for grazing. In recent decades the number of lake and peat sediment archive based quantitative climate reconstructions increased in Eastern Central Europe (including pollen, chironomid and stable isotope based temperature reconstructions; diatom and testate amoebae based lake hydrological reconstructions). These data point to a series of abrupt climate fluctuations between 1300 and 800 cal yr BC, with a distinct cooling and moistening trend since 800 cal yr BC that coincides with the onset of the Subatlantic Period in the classical chronostratigraphy. In this lecture we will summarize these results and will compare them with published archaeological records, including 14C-data; "late" LBA-sites, Prescythian and later Scythian migration patterns from the East, and for Transdanubia we will examine the timing of these abrupt climate shifts with the period of eastward expansion of the Hallstatt groups. We thank financial support of SNN-134635 and NKFIH K129167.

### 3 SPATIAL ANALYSIS OF THE SCYTHIAN CULTURE MONUMENTS IN THE EASTERN PODOLIA (PRELIMINARY CONSIDERATION)

**Abstract author(s):** Shelekhan, Oleksandr (Institute of Archaeology, National Academy of Sciences of Ukraine)

**Abstract format:** Oral

Eastern Podolia is the historical area that lay in the forest-steppe part of the Southern Buh and along the left tributaries of the Dniester rivers. For today, it remains the least studied region of the Scythian culture that flourished in Eastern Europe from the early 7th to the late 4th c. BC.

Here I want to discuss preliminary suppositions concerning the spatial arrangement of the archaeological monuments. The mapping shows that the surveyed settlements lay at the high plateau with grey forest soils whereas wealthy kurgans are erected at the edge of this plateau close to the black steppe soils. This could be evidence of the two main components existing within the local community. One – is the indigenous farmer tribes, descendants of the Late Bronze Age peoples, who were closely connected with the Central European cultures. Second – is the nomadic horse riders, namely the Scythians in the strict sense. They originated from the Steppe and dominated over the region possessing high ranks in society.

Also, the third component can be seen in the north of the region. It is about not numerous Milograd culture sites whose main area was the forest landscape zone. But still, it is not clear what reasons pushed them southward close to the Scythian farmers and in what circumstances they lived close to each other.

However, I should note that the culture of the Early-Scythian period is studied mainly on the settlement material while the Classical Scythian culture is known mostly after the burial excavations. Also, no sites of the late 6th – early 5th c. BC are known here but this gap can't be explained persuasively yet. Therefore, a lot of further work waits for the researchers in the future.

### 4 SCYTHIAN AGE SETTLEMENT PATTERNS IN THE MIDDLE TISZA REGION (HUNGARY)

**Abstract author(s):** Czifra, Szabolcs - Mesterházy, Gábor (Hungarian National Museum) - Mali, Péter (Damjanich János Museum)

**Abstract format:** Oral

Traditionally, the appearance of the Scythian influenced Vekerzug culture on the Great Hungarian Plain by the 7th century BC onwards has been interpreted as a spread of nomadic groups and subsistence strategy. Accordingly, the Middle Iron Age communities of the region are often described as stockbreeders nomads, the portrayal initially supported by the relatively low number of published settlements. However, the upswing of preventive excavations brought to light a dozen of Scythian Age sites that contradict this assumption. Roughly covering the northern and central parts of the Great Hungarian Plain, the Upper and Middle Tisza regions are ideal arenas to study Iron Age settlements. Until the mid 19th century these lowland areas were rather watery regions (characterised by meanders and marshes), which undoubtedly influenced the prehistoric settling strategies. Combining archive information with the results of systematic field surveys and large scale excavations, this paper draws a sketch of the Scythian Age settlement pattern in the Upper and Middle Tisza regions.

With the focus on Vekerzug sites in Polgár and Tuszazug (micro)regions, general Middle Iron Age settling strategies will be analysed and modelled. Environmental and social factors of settlement locations, their route network between habituated locations will be examined in order to gain a better understanding of the Scythian Age settlement patterns. Next to the microregional scale, the inner structure of the settlements will be also presented based on excavation datasets. Additionally, the interpretation possibilities of the Vekerzug „house” and „household” remains will be dedicated special attention.

### 5 A BIRD'S EYE VIEW BEYOND THE CARPATHIANS: THE FUNERARY LANDSCAPE IN FERIGILE ARCHAEOLOGICAL GROUP

**Abstract author(s):** Mandescu, Dragos (Arges County Museum)

**Abstract format:** Oral

The late stage of the Early Iron Age south of the Carpathians is defined by the Ferigile archeological group, which has evolved over almost three centuries (the 7th-5th centuries BC). In the absence of imposing settlements or easy to spot in the field, archaeological research has focused on the study of cemeteries (where only cremation was practiced). In my paper I will try to argue that there was a well-defined relationship between these Iron Age communities and the peculiarities of the landscape, natural resources (especially salt) and geographical and hydrographic conditions. Regarding the funerary landscape specific to this archeological group, my field researches in Argeş and Vâlcea counties showed that there was a constantly respected pattern in the choice of burial places, strictly dependent on the hydrographic network. What did these necropolises look like? What did the mounds that made them look like? Is it possible to detect a relationship between them, possibly a hierarchy within the cemeteries, in the manner of occupying the land? In this “democratization” of the mound as a common form of funeral expression, can the graves of elites

still be distinguished? In addition to revisiting previously known necropolises (i.e. Ferigile, Tigveni, Cepari), the answer will be sought in the clues provided by the Stâni Valley necropolis, the most recently explored cemetery within the Ferigile group (since 2014 and ongoing).

## 6 LANDSCAPE TRANSFORMATIONS AND LAND USE ON THE MIDDLE MUREŞ VALLEY (SOUTH-WESTERN TRANSYLVANIA) DURING THE EARLY IRON AGE

**Abstract author(s):** Rustoiu, Aurel (Institute of Archaeology and History of Arts Romanian Academy Cluj-Napoca) - Berecki, Sandor (Muzeul Judeţean Mures Tg. Mures)

**Abstract format:** Oral

The Mureş River was the main route of communication between Transylvania and the westward areas in Central Europe throughout history. The river was already mentioned among the major waterways by Herodotus (IV.48), who was writing that the Măpîş has its source in the territory of the Agathyrsi and flows into the Danube.

Since prehistory until the modern times, the Mureş facilitated the transportation of Transylvanian salt to the plains of the Tisza River and to the north-western Balkans. Both regions lacked this kind of resource which was essential for human subsistence, animal husbandry and a number of manufacturing processes. Therefore, the access, exploitation and distribution of the mineral resources from Transylvania (primarily salt, but also some nonferrous metals, like copper, silver and gold) attracted the interest of both local and more distant communities, often becoming the subject of complex social-political and economic interactions. Due to their value, Transylvania in general, and its south-western area in particular, also experienced an increased human mobility, both at the individual and the collective level, the former frequently involving different categories of skilled artisans. Likewise, the particular lifestyle, practices and social organization of these communities had a significant impact on the local physical, economic and ritual landscape through time.

Therefore, the paper is going to discuss the manner in which human mobility contributed to the transformation of the landscape throughout the Early Iron Age (primarily during the 8th – 5th centuries BC), and the nature of these transformations from one chronological stage to another based on the analysis of the economic, social and ritual practices of different communities. The analysis is based on a range of archaeological, aero-photographic, archaeozoological, anthropological and palynological data.

## 7 SETTLEMENT DYNAMICS IN THE IRON AGE LANDSCAPE OF SOUTHERN STYRIA (AUSTRIA)

**Abstract author(s):** Mele, Marko (Universalmuseum Joanneum)

**Abstract format:** Oral

One of the most famous European Early Iron Age sites, tumulus cemeteries and settlement of Großklein in southern Styria (Austria), will be the starting point for uncovering the settlement dynamics, land use and communication routes in the wider region. In no time period the region of Großklein had such a central role and an impact as in the Early Iron Age. The hilltop settlement on the Burgstallkogel and the monumental tumulus cemeteries in the surrounding dominated a region for almost 400 years. Domination should be understood as governance, interaction, exchange and control.

In our paper we would like to present new results of the research in the region of Großklein conducted in the recent years. In the presentation the known facts about the site will be considered in the light of the new landscape research and recent excavations conducted by the Universalmuseum Joanneum and the University of Graz. This includes also new results from archaeobotanical analysis, will be presented in a wider regional context. The models developed for the micro-region of Großklein, will be attested in a wider macro-regional context, including contact and exchange with the Carpathian basin."

## 8 IS THERE ANY PATTERN IN THE EARLY IRON AGE LANDSCAPE FORMATION? A CASE STUDY OF SÜTTŐ AND POŠTELA

**Abstract author(s):** Czajlik, Zoltán (Eötvös Loránd University) - Črešnar, Matija (Department of Archaeology, University of Ljubljana) - Novinszki-Groma, Katalin (Eötvös Loránd University)

**Abstract format:** Oral

The authors of this paper collaborated in „Iron Age Danube” European project. In this transnational framework they investigated some of the most important and complex Early Iron Age monumental landscapes of the Eastern Hallstatt circle. One of the case study areas was Süttő, located on the Danube River, and the other one is Poštela, situated on the SE fringes of the Alps. From 2020, a Hungarian-Slovenian bilateral project (SNN134635 and N6-0168) support the researches in these EIA sites.

The monumental Early Iron Age landscapes are complex systems; often build up from different settlement and burial features, corridors of movement, extraction areas etc. Until recently, the topographical knowledge of these site complexes was based only on the most evident archaeological features and on excavated areas. Following these

research methods it was generally accepted that fortified settlements were accessed by pathways aligned by burial mounds. In the last decade the new non-destructive methods, especially ALS and geophysics gave us a chance to gain even more complex

multi-layered information especially about the surrounding landscapes. Therefore, we should go one step back and try to re-evaluate the topographical and other data. Only in this way, we can further search for similarities and differences at these huge site

complexes and therewith go one or two steps forward from where we are now.

Our paper focuses mainly on the monumental landscapes of Süttő and Poštela, both also well investigated with modern methods. Our aim is to compare their geographical characteristics and the placement of typical settlement and different burial features in the landscape with a special attention to the chronological role of each of the elements, e.g. flat cremation cemeteries, burial mounds, settlements and fortified settlements.

## 9 THE EARLY IRON AGE LANDSCAPE AROUND THE SOMLÓHEGY

**Abstract author(s):** Soós, Bence (Hungarian National Museum, Archaeological Department; Eötvös Loránd University, Institute of Archaeological Sciences)

**Abstract format:** Oral

Due to the tumulus burials and the exceptional finds in them that were unearthed in the late 19th and early 20th century, the prominent butte Somlóhegy has long been considered as one of the most important Early Iron Age centres in western Hungary. The burials situated to the south and north of the butte clearly indicate that in the Ha C period a strong new elite group emerged here that maintained an extensive contact network towards various regions in Central Europe. The burial mounds of this elite group have been significant elements of the landscape surrounding the butte for the last 2700 years.

This paper sets out to present the results of the research of the Early Iron Age landscape around the Somlóhegy. Contrary to the burial mounds situated south of the butte, information about the exact structure of the mounds near the modern village Doba have been largely unknown. The geophysical survey conducted in recent years at Doba have clarified the structure of the tumuli and we gained information about how the structural properties of these mounds signify the close relationship between the aforementioned elite and the Somlóhegy. In addition, with the help of satellite images and aerial photography our research showed that the cemetery north of the butte is more extensive than previously thought.

This paper also intends to show how the Early Iron Age centre of the Somlóhegy integrates into a larger landscape of the Pápa-Devecser Plain that includes several Early Iron Age burial mounds, so-called flat cemeteries, and settlements.

This research is supported by the ÚNKP-21-3 New National Excellence Program of the Ministry for Innovation and Technology from the source of the National Research, Development and Innovation Fund.

## A. IRON AGE COMMUNITIES IN THE LOWER DANUBE AREA: ARCHAEOLOGICAL AND ARCHAEOZOOLOGICAL DATA ON THE FOOD ECONOMY AND PALEOENVIRONMENT

**Abstract author(s):** Stanc, Simina Margareta (Alexandru Ioan Cuza University of Iași) - Ailincăi, Sorin Cristian (Eco-Museum Research Institute of Tulcea) - Mototolea, Aurel Constantin (Museum of National History and Archeology Constanța)

**Abstract format:** Poster

One of the most famous cultural manifestations from the beginning of the Iron Age on the Lower Danube is the Babadag culture (11th-8th centuries BC). The main vestiges left by these human communities are the settlements, identified especially on the high loessoid terraces on the Dobrudja bank of the Danube or the ponds and lakes adjacent to it, but also in the Razelm-Sinoie lagoon (ancient Halmyris bay). A similar arrangement can be noticed on the left bank of the river, where the sites are located mainly along the main affluents (Prut, Siret, Ialomița). Over time, this landscape has undergone many anthropogenic and natural transformations (the evolution of the Danube Delta and the Black Sea coast), a partial reconstruction of which is possible through the analysis of faunal material from several sites of Babadag culture, such as Enisala, Niculițel, Jijila, Garvăn or the eponymous settlement. Our approach intends to compare contemporary sites, but located in different landscapes, in terms of animal resource exploitation. Interdisciplinary analyses play an important role in understanding the organization of human communities in the North Dobrogea area at the beginning of the first millennium BC. Our synthesis takes into account the studies referring to the sites from Enisala-Palanca, Rasova-Malul Roșu, Telița-Amza, Babadag, Niculițel-Corneț, Jurilovca-Capul Dolojman and Satu Nou-Valea lui Voicu. In all the studied settlements, the most important role for the procurement of animal food products was played by animal husbandry (especially cattle, ovicaprids, pig); fishing and hunting were much less important. Domestic mammals predominate in all analysed sites, while wild animals (especially red deer, wild boar) represent about 10% of all identified mammals. In terms of fishing, the Babadag communities exploited only



the nearby resources (small rivers, ponds and the coastal area of present-day Lake Razelm) and used little or no at all marine resources.

## **B. IMPRINT IN THE LANDSCAPE THE MONUMENTAL LANDSCAPE OF SÜTTŐ AND ITS CONTACTS ALONG THE RIVER DANUBE IN THE EIA**

**Abstract author(s):** Novinszki-Groma, Katalin (Eötvös Loránd University)

**Abstract format:** Poster

The late prehistorical Süttő archaeological site is situated westward from the today settlement on a high loess plateau above the bank of the river Danube, in Hungary. The better known part of this complex landscape are the hillfort settlements on the north and the tumuli field southward from that. The first burial mounds were already excavated in the 1920's, 1930's, and the modern field works started in the end of the 1970's. During these later researches Éva Vadász excavated a tumulus with a dromos-art entrance corridor, which is well known from the archaeological literature.

The biggest surprise during the excavation of Éva Vadász and Gábor Vékony was the turning up of a flat, cremation cemetery of the Hallstatt period. Some of the 82 excavated burials contained rich metal assemblages, while the appearance of the 6 skeletal graves was truly unexpected.

The material of the Early Iron Age burials of Süttő is the topic of the author's phd-thesis. Many of the analysed objects show parallels from sites along the river Danube and its affluents in the south, from the nowadays Slovenia, Croatia, Serbia and Romania.

Among them, we can mention fibulae, pins, but also some forms of pots, like the deep bowls with pointed rim. The above mentioned extraordinary traits make Süttő unique among the other flat, cremation cemeteries of the northern part of Transdanubia. It also suggests that not only the local elite buried under tumuli, but the other inhabitants of the Süttő monumental landscape should have an outstanding social position compare to the communities used the flat, cremation cemeteries in the surrounding area.

The here presented research proved by SNN 134635 project (Early Iron Age Land Use between the Alps and the Danube; comparative landscape archaeological analyses of Süttő and Poštela site-complexes).

---

## **309 FROM THE PRESENT TO THE PAST AND BACK: CROSSING DISCIPLINARY AND TIME BOUNDARIES IN AGRICULTURAL RESEARCH**

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Varalli, Alessandra (CaSEs–Culture and Socio-Ecological Dynamics Research Group, Department of Humanities, Università Pompeu Fabra - UPF) - Lancelotti, Carla (CaSEs–Culture and Socio-Ecological Dynamics Research Group, Department of Humanities, Università Pompeu Fabra - UPF; ICREA) - Biagetti, Stefano (CaSEs–Culture and Socio-Ecological Dynamics Research Group, Department of Humanities, Università Pompeu Fabra - UPF; School of Geography, Archaeology and Environmental Studies - GAES, University of the Witwatersrand) - Gur-Arieh, Shira (Institute for Pre- and Protohistoric Archaeology and Archaeology of the Roman Provinces, Ludwig Maximilian University Munich) - Martin, Lucie (Laboratory of Prehistoric Archaeology and Anthropology, University of Geneva; UMR EDYTEM, CNRS, Université Grenoble Alpes, Université Savoie Mont-Blanc)

**Format:** Session with keynote presentation and discussion

Agriculture has unquestionably been one of the human activities that has heavily shaped environments and landscapes worldwide from the last 10k years up to present day. More and more interdisciplinary research indicates how the understanding of socio-ecological dynamics of past farming systems over time is fundamental to predict environmental and subsistence strategies changes at a multi-scale level.

In this session we explore how archaeological research can both benefit from and inform on present agricultural practices. Currently, the study and reconstruction of past agricultural systems encompass a variety of methodological approaches including, e.g. archaeobotany, biochemistry, modelling. The contributions in this session will span from different geographical, chronological and disciplinary contexts to build a comprehensive picture on current research on long-term agricultural systems. Particular emphasis will be given to the contributions focused on data generated from archaeological and ethnoarchaeological research towards reaching the UN Sustainable Development Goals.

More specifically we invite contributions within, but not limited to, the following topics:

- multi-isotopic investigations of cultivated plants to create past local and regional isoscapes to better understand changes in agricultural practices and their relevance for human subsistence strategies
- multi-proxies studies (geoarchaeology, plant macro and microfossils) to detect the global land-cover and land-use change useful to identify human–environment interactions
- application of modern techniques (e.g. pXRF, molecular footprints) on anthropogenic sediments of different cultural and environmental contexts in order to improve our comprehension of the exploitation of the soil

- modelling approaches to present and past agricultural systems, including the application of spatial-explicit and cross-cultural models
- case studies on the application of knowledge derived from archaeological research for present-day sustainability of agricultural systems.

Transdisciplinary papers drawing evidence from bioarchaeological approaches, ethnoarchaeological evidence, survey and field excavations are especially welcome.

## ABSTRACTS

### 1 A DEEP HISTORY OF AGRICULTURE

**Abstract author(s):** Madella, Marco (Universitat Pompeu Fabra; ICREA)

**Abstract format:** Oral

For thousands of years, human communities have developed complex, diverse, and locally adapted agricultural systems. These ancestral small- or larger-scale agricultural systems constitute the foundation for contemporary and future agricultural innovations and technologies.

For this reason, there is a strong need for a long-term perspectives on how and why agricultural systems have emerged and developed. It is pivotal to appreciate how these systems evolved and how they might have changed under specific cultural or socio-environmental pressures. Such long-term dynamics of experimentation, acquisition, exchange and identity in relation to plants are well observable in current landscapes, which reflect thousands of years of interaction between people and their environments. Understanding the deep history of instances of successful "experiments" as well as maladaptation is key to understand traditional systems that can be well integrated with the environment and involve resilient management practices.

Furthermore, there remains disagreement over the forms, scope, and intensity of prehistoric land use and the degree to which early land use and land cover affected the global climate system. All agree that the intensity and extent of human land use increased with early pastoral and agricultural societies. However, some studies indicate that land cover change was fairly minor at global scales prior to the Industrial Revolution. Others have argued that the Holocene carbon cycle and climates were strongly influenced by early agricultural and pastoral activities. This uncertainty is fostered by the lack of high-quality, data-based syntheses of global land use and anthropogenic land cover change for the Holocene.

Archaeology of agriculture and the methodological approaches that can raise our understanding of early human use of plants and land can be pivotal in helping modern societies in facing current changes in the Earth system, especially those connected to climate change.

### 2 A MULTIPROXY APPROACH TO PAST AND PRESENT AGRICULTURE IN DRYLANDS

**Abstract author(s):** Biagetti, Stefano (CaSEs – Culture and Socio-Ecological Dynamics Research Group. Departament d'Humanitats, Universitat Pompeu Fabra; School of Geography, Archaeology and Environmental Studies - GAES, University of the Witwatersrand, Johannesburg) - Jiménez-Arteaga, Carolina - Ruiz-Giralt, Abel (CaSEs – Culture and Socio-Ecological Dynamics Research Group. Departament d'Humanitats, Universitat Pompeu Fabra) - Madella, Marco (CaSEs – Culture and Socio-Ecological Dynamics Research Group. Departament d'Humanitats, Universitat Pompeu Fabra; ICREA – Institució Catalana de Recerca i Estudis Avançats; School of Geography Archaeology and Environmental Studies - GAES, University of the Witwatersrand) - Varalli, Alessandra (CaSEs – Culture and Socio-Ecological Dynamics Research Group. Departament d'Humanitats, Universitat Pompeu Fabra) - D'Agostini, Francesca (CaSEs – Culture and Socio-Ecological Dynamics Research Group. Departament d'Humanitats, Universitat Pompeu Fabra) - Lancelotti, Carla (CaSEs – Culture and Socio-Ecological Dynamics Research Group. Departament d'Humanitats, Universitat Pompeu Fabra; ICREA – Institució Catalana de Recerca i Estudis Avançats)

**Abstract format:** Oral

Agriculture in drylands, especially where rainfall is scarce and erratic, is often deemed unfeasible in the absence of irrigation. However, there exist modern ethnographic instances of rainfed agriculture of millets in areas where annual rainfall is well below the supposed lower limit for cultivation. These examples hint at the possible occupations of areas, in the present and in the past, that were up to know thought to be uninhabitable. Therefore, being able to detect this type of agricultural practices in the past has the potential to change the established narratives of drylands.

This paper illustrates the results of experimental, ethnoarchaeological, archaeobotanical and modelling approaches to the study of millets cultivation, from the present to the past and back, carried out within the Resilience and Adaptation to Drylands project (RAINDROPS). In particular, it centres on: (i) results of ethnographic interviews conducted in Sudan, Ethiopia and Pakistan with local millet farmers, which highlight the preference towards local crops and the relatively little importance of irrigation; (ii) the modelling of worldwide ethnographic information collected on millets cultivation practices, which indicates how modern local ecological knowledge can be used to approximate past

land use patterns; and (iii) the creation of a "reference collection" of archaeobotanical proxies to detect plant water availability directly from archaeobotanical remains.

We maintain that the combination of modelling, based on Traditional Ecological Knowledge, and the analysis of phytoliths and stable isotopes from grains and phytoliths, can provide a suitable frame of reference to reconstruct dryland agricultural practices.

### 3 **NEW TECHNIQUES ... FOR OLD PURPOSES. THE MODERN FAO'S LAND EVALUATION SYSTEM FOR RECONSTRUCTION OF THE ANCIENT AGRICULTURE LANDSCAPE**

**Abstract author(s):** Sotgia, Agostino (Sapienza - Università di Roma; RUG - University of Groningen)

**Abstract format:** Oral

Agriculture represents one of the most complete expressions of rational exploitation of the landscape by the communities that have inhabited it. Therefore, its study plays a central role in historical reconstructions, especially as regards prehistory in which agriculture is the most evident sign of the action of human groups.

Even from the point of view of the study of the ancient economy, one cannot in any way disregard agricultural exploitation. For this reason, to reconstruct and analyze the agricultural dimension of a landscape - over time - different and various methodologies and approaches have been proposed.

Among these - although little known - is the use of the Land Evaluation. This technique - developed by the FAO (Food and Agriculture Organization of the United Nations) in '70s for contemporary agriculture - aims to quantify the suitability of a land for agricultural exploitation with a system of quality classes generated by the analysis of some fundamental factors for these practices.

These factors are analyzed both based on the specific needs of the cultivated plants and on the degree of development of agricultural techniques and knowledge of the communities examined.

Through small modifications this modern technique can be applied "backwards" even to ancient contexts with excellent results, especially if combined with modeling in a GIS environment.

This contribution therefore presents the application of these techniques to the ancient archaeological context of Southern Etruria (Central Italy) in the Late Bronze Age between 1150 and 850 BCE. Through this approach, thanks also to the simulation possible with the developed GIS model, it is possible to better understand not only the ancient agricultural landscape but also the human communities that lived there and their transformations, both ecological and social over time.

### 4 **HISTORIC RURAL LANDSCAPE AND SOIL SUSTAINABILITY: A RUSLE MODELLING APPROACH**

**Abstract author(s):** Brandolini, Filippo - Turner, Sam (McCord Centre for Landscape, School of History, Classics and Archaeology, Newcastle University)

**Abstract format:** Oral

Developing more sustainable agricultural systems represents a challenge and urgent global venture. Over the long term, rural activities have given rise to a wide variety of historic landscapes. Historic Landscape Characterisation (HLC) uses a qualitative but formalised method to map historic landscapes' chronological and spatial complexity. Meanwhile, in environmental studies, the diachronic land-use-land cover (LULC) analysis has helped illustrate how different anthropogenic activities have altered the soil erosion rate in specific areas. Modelling can provide a quantitative and consistent approach to estimating soil erosion under a wide range of conditions. GIS integration with the RUSLE (Revisited Universal Soil Loss Equation) model has been applied to estimate soil loss at a regional scale. In previous HLC studies, LULC has been evaluated from the perspective of cultural heritage. In contrast, RUSLE modellers have used it as a proxy to estimate the soil erosion of an area.

This study proposes an innovative methodology that combines both the historical/cultural and the environmental values of LULC to inform the development of a model to evaluate the increasing/decreasing soil erosion rate. From a cultural heritage point of view, the diachronic analysis of historical features (mapped as HLC types) informs understanding of the LULC, which characterised a landscape. At the same time, these features had an impact on local soil erosion rates. In this study, the HLC types have been employed to define the C and P factors, the two most challenging factors to be determined in the RUSLE equation.

The methodology proposed has been tested in the Tuscan - Emilian Apennines historical landscape (Vetto - Italy). Environmental sustainability and historic landscape conservation are typically treated as two separate fields. Still, this research proposes a new way to embrace cultural and natural values as components of the same landscape management plans.

## A MULTI-DISCIPLINARY MODELLING APPROACH FOR UNDERSTANDING HUMAN AND AGRICULTURAL NICHES IN THE WESTERN MEDITERRANEAN AREA DURING THE NEOLITHIC

**Abstract author(s):** Castiello, Maria Elena (Department of Natural Sciences, German Archaeological Institut - DAI, Berlin) - Russo, Emmanuele (Institute for Atmospheric and Climate Science, ETH Zurich) - Martinez-Grau, Hector - Prats, Georgina - Jesus, Ana (Integrative Prehistory and Archaeological Science - IPAS/IPNA, University of Basel) - Antolin, Ferran (Department of Natural Sciences, German Archaeological Institut - DAI, Berlin)

**Abstract format:** Oral

According to the most recent research results, the first Neolithic farmers, arrived in the Western Mediterranean (WM) area, established their settlements in different ecological regions and, over time, migrated to more favourable environments, adapting to changing environmental conditions quickly as the need arose. Farming practices and the nature of settlements differ greatly from those known from the Eastern Mediterranean. The WM area offers a wide topographic and bioclimatic diversity and as such it represents an excellent case study to investigate the influence of climatic fluctuations that challenged both the ecosystems in which the first farmers lived, both their agricultural system and strategy.

In this research, based on a multi-proxy and machine learning (ML) approach, we coupled and connected an increased amount of heterogeneous data, available at multiple scales, to investigate the impact of ecological and climate constraints on the first Neolithic niches of humans and crops. We used high-resolution and downscaled paleo-climate data, absolute dated archaeobotanical and archaeological information, as well as computed environmental variables, to model and estimate the potential areas suitable for settlements location and for discriminating distinct types of crop cultivation under changing climate scenarios that characterized the period cal. 5900 – 2300 BC.

The results of this study have helped understanding not only the past climate variability and its influence on settlements distribution and crops adaptation in the WM area, but also to pointing out sensitive parameters for a successful application of ML procedure, from continental to regional scale.

## PRESENT AND PAST AGRICULTURE IN ARID ENVIRONMENTS: A MULTI-PROXI APPROACH TO RECONSTRUCT THE HISTORY OF THE MASAFI OASIS (U.A.E.)

**Abstract author(s):** Djerbi, Hatem (Université Côte d'Azur, CNRS-CEPAM UMR 7264; Eveha) - Garnier, Aline (Université de Paris Est-Créteil, Département de géographie; LGP-CNRS UMR 8591) - Costa, Sophie (Université Côte d'Azur, CNRS-CEPAM UMR 7264) - Herveux, Linda (Archéorient-CNRS UMR 5133, Maison de l'Orient et de la Méditerranée) - Charbonnier, Julien - Carré, Alain - Purdue, Louise (Université Côte d'Azur, CNRS-CEPAM UMR 7264)

**Abstract format:** Oral

Oases are anthropogenic landscapes which have been occupied and exploited for several millennia in South-east Arabia. Today, they are subject to strong climatic and socio-economic stresses. To assess their capacity of resilience through time, it is important to understand their genesis and their evolution. The first step to do so requires to identify ancient cultivated soils, understand practices and characterize the diversity of agricultural productions. Modern environmental references were created in different anthropized areas (irrigated, amended and abandoned palm cultivation, fruits and cereals cultivation) of the Masafi oasis (U.A.E.) within the framework of the ANR OASIWAT (Dir L. Purdue) and the French archaeological mission in the United Arab Emirates (Dir. S.Méry). A multi-proxy sampling for ecological (malacology, phytolithology, anthracology) and pedological (physico-chemistry, geochemistry, micro-morphology) studies allowed us to identify signatures in soils of current agrosystems. The results reveal a differential preservation of these proxies and taphonomic biases in the interpretation of the ecological assemblages, demonstrating the need to combine them with pedological studies to identify irrigated, amended and degraded areas. These results were applied to a long geoarchaeological sequence in the oasis of Masafi and have allowed us to reconstruct the evolution and management of this oasis for the last 5 millennia.

## OASIS LANDSCAPES AND LONG-TERM AGRICULTURE IN ARID ENVIRONMENTS: AN ASSESSMENT FROM THE OASIS OF ALULA (SAUDI ARABIA)

**Abstract author(s):** Purdue, Louise (CNRS CEPAM-UMR 7264) - Lespez, Laurent (Université Paris 12; LGP-UMR 8591) - Djerbi, Hatem - Davtian, Gourguen (CNRS-CEPAM UMR 7264) - Girard, Jean-François (Institut de Physique du Globe) - Carré, Alain (CNRS-CEPAM UMR 7264) - Rouvier, Claude (Independent Researcher) - Andrieux, Eric (Durham University) - Costa, Sophie - Villa, Valentina (CEPAM-UMR 7264)

**Abstract format:** Oral

The political, socio-economic and spatial organization of agricultural societies in arid environments has and still relies on the development and management of oases, artificially irrigated and cultivated landscapes. Oasian agro-ecosystems are currently fragilized by decreasing resources and changing human activities. Due to their rich heritage, their preservation and revitalization is currently implemented in the Arab world. While archaeological studies of these

spaces have increased for the last decades, their holistic study from a socio-environmental perspective remains under-explored. In order to provide keys for their management, it is necessary to better understand the links between settlement pattern, socio-economic dynamics and soil and water resource availability/management through time.

In the framework of the ArcAgr-AU project (Dir. L. Purdue), which aims at reconstructing oasian landscapes and hydro-agrosystems in the fluvial oasis of AIUla (Saudi Arabia), we propose a systemic field and laboratory approach to study oases as research objects, combining geoarchaeology, geomorphology, chronology, geophysics, paleoecology, agronomy and spatial analysis.

Our results, which include the study of nearly 30 agricultural sequences, have revealed the preservation of circa 4 meters of sediments and paleosoils in the oasis, dated from the Neolithic onwards. Taking the example of 4 of these sequences, we illustrate the complexity of oasis landscapes and provide keys on how to study and interpret them. Phases of landscape artificialization (eg. Iron Age, Islamic Periods) alternate with episodes of agricultural abandonments and geomorphological events characterized by uncultivated alluvial or dune deposits (eg. Bronze Age). Our results highlight that the oasis of AIUla is and has been a dynamic and mobile territory through time, but has been facing a drastic social and ecological collapse for the last 60 years.

## 8 TRANSHUMANCE IN ICELAND: SUCCESSFUL HISTORICAL LAND MANAGEMENT OR A VECTOR FOR LAND DEGRADATION?

**Abstract author(s):** Erlendsson, Egill - Gísladóttir, Guðrún (Institute of Life and Environmental Sciences, University of Iceland)

**Abstract format:** Oral

Iceland was settled by mainly Scandinavian peoples around 870 CE. This process saw the emergence of a society in which pastoral farming was emphasised. Since then, Iceland has lost virtually all of its native birch woodlands and perhaps half of the pre-settlement carbon stock stored in the volcanic dryland soils. Active to severe soil erosion characterises almost half of the island. A key feature of the historical pastoral farming was the seasonal relocation of workforce and livestock (mainly milking cows and ewes) to rangelands over summer. Around 2100 recorded sites with ruins of small turf houses that characterised the sites are scattered across the Icelandic landscape, which underscores the possible significance of transhumance for environmental change.

Through palynological and sedimentary analyses, we examine the trajectories of terrestrial ecological responses to concentrated grazing pressures exerted by transhumance activity. The data derive from three sites from Kjarardalur in W-Iceland, a valley that was used predominantly for transhumance in the past. Historical sources and archaeological features show that two of the three are former shieling sites. Key questions include whether land management was successful in preserving the land quality and resources necessary for the operation of the shielings or whether grazing pressures were of sufficient magnitude to initiate and/or precipitate ecosystem decline.

Our results show: 1) Onset of grazing from the time of settlement set in motion woodland decline and soil erosion; 2) continued degradation, but management of woodland resources, until the 18th century AD, interrupted by 3) reversal from ecological regression to succession during the 15th century CE in response to the plague; 4) a final phase of rapid decline from c. 1800 CE, probably in association with increased sheep numbers and changed emphasis in agricultural production. The results highlight a vulnerability of the island's terrestrial ecology to grazing.

## 9 UNDERSTANDING PAST WATER AVAILABILITY IN RAIN-FED CONTEXTS THROUGH THE USE OF PHYTOLITHS: AN EXPERIMENTAL APPROACH IN SELECTED C<sub>4</sub> CROPS

**Abstract author(s):** D'Agostini, Francesca (CaSEs – Culture and Socio-Ecological Dynamics Research Group. Departament d'Humanitats, Universitat Pompeu Fabra; UMR DIADE, Université de Montpellier) - Vadez, Vincent (IRD - Institut de Recherche pour le Développement, UMR DIADE, Université de Montpellier; ICRISAT – International Crops Research Institute for Semi-Arid Tropics) - Kholova, Jana (ICRISAT – International Crops Research Institute for Semi-Arid Tropics) - Ruiz-Pérez, Javier (Department of Ecology and Conservation Biology, Texas A&M University) - Madella, Marco - Lancelotti, Carla (CaSEs – Culture and Socio-Ecological Dynamics Research Group. Departament d'Humanitats, Universitat Pompeu Fabra. Barcelona; ICREA – Catalan Institution for Research and Advanced Studies)

**Abstract format:** Oral

In drylands the interpretation of water management practices and the use of irrigation for agricultural intensification has been central to the archaeological debate. Traces of water managements are difficult to detect as a consequence of the ephemeral strategies put in place to water. In contexts with low rainfall, rain-fed cultivation -when water is provided by rainfall alone- is often considered to have a minor role in human livelihood. We argue that rain-fed cultivation might have played an underestimated role in the development of food production in arid areas.

No direct strategy has been presented for the discrimination of water regimes in C<sub>4</sub> crops, which represent the main components of the agricultural assemblage in drylands in the past as in the present. The objective of this research is to test phytoliths as a proxy to reconstruct past crops water-management of C<sub>4</sub> species. We carried out two experimental cultivations of ten traditional landraces each of sorghum (*Sorghum bicolor*), pearl millet (*Pennisetum glaucum*)

and finger millet (*Eleusine coracana*), simulating irrigated and rain-fed scenarios. Experiments were conducted in lysimeters, which allowed us to keep a control of water regimes while plants grew in field-like conditions.

We present the results of analyses on phytolith concentration and morphotype assemblages. Phytoliths –inorganic silicified bodies produced in plant tissues– and indices based on morphotypes ratios have been tested because phytolith formation is related to the plant's transpiration stream, which in turn depends on water availability. We found that both millets produced more phytoliths in well-water conditions, whereas sorghum biosilica response was independent of the water regime. Elongated cells, bulliforms and stomas are the morphotypes that better respond to different water treatments. Stomata are more abundant in well-water condition. This allows for a consideration of phytoliths production of C<sub>4</sub> as proxies for environmental reconstruction and water managements.

## 10 ASSESSING THE EFFECTS OF CHARRING ON C AND N STABLE ISOTOPE VALUES OF C<sub>4</sub> PLANTS FOR RECONSTRUCTING PAST AGRICULTURAL PRACTICES

**Abstract author(s):** Varalli, Alessandra - D'Agostini, Francesca (CaSEs–Culture and Socio-Ecological Dynamics Research Group, Department of Humanities, Universitat Pompeu Fabra - UPF) - Fiorentino, Girolamo (Laboratory of Archaeobotany and Palaeoecology, Department of Cultural Heritage, University of Salento) - Madella, Marco (CaSEs–Culture and Socio-Ecological Dynamics Research Group, Department of Humanities, Universitat Pompeu Fabra - UPF; ICREA) - Vadez, Vincent (Institut de Recherche pour le Développement - IRD, Université de Montpellier – UMR DIADE; International Crops Research Institute for Semi-Arid Tropics - ICRISAT) - Lancelotti, Carla (CaSEs–Culture and Socio-Ecological Dynamics Research Group, Department of Humanities, Universitat Pompeu Fabra - UPF; ICREA)

**Abstract format:** Oral

Previous experimental studies on C<sub>3</sub> species have shown that charring has an effect on stable isotope values of archaeobotanical material. In this contribution, we explore the effects of charring on  $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$ , %C, %N and C:N ratios in seeds of two C<sub>4</sub> species, *Sorghum bicolor* and *Pennisetum glaucum*, grown under two water treatments. For each treatment, sorghum and pearl millet seeds were charred for 1, 2 and 3 hours at 200, 250 and 300°C.

Our analyses show that the different water treatments affect the isotopic results more than the charring in both species. Second, heating temperature has a higher impact on the preservation, mass loss, %C, %N, C:N ratios and on the  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  values than the time of charring. Every 50°C increase resulted in an increase of 0.41‰ for  $\delta^{15}\text{N}$  and 0.08‰ for  $\delta^{13}\text{C}$ , while increasing the duration of charring by 1 hour resulted in an average increase of 0.07‰ for  $\delta^{15}\text{N}$  and 0.06‰ for  $\delta^{13}\text{C}$ . Major variations, particularly in terms of mass loss, are recorded between 200°C and the higher temperatures than between 250°C and 300°C. The heating at low temperatures for prolonged times (200°C for up to 3h) is conducive to well preserved, undistorted charred grain, with a mass loss lower than 14% and with no/low impact on the %C, %N and C:N ratios. Increasing the heating up to 300°C preservation deteriorates, with a mass loss higher than 54%, and with %C, %N and C:N ratios strongly affected. Therefore, this study highlights the importance of experimental studies for correctly assessing the isotopic results offered by archaeobotanical analyses.

## 11 INVESTIGATING THE GROWING CONDITIONS OF BROOMCORN MILLET (*Panicum miliaceum* L.) IN NORTHERN GERMANY IN THE LATE BRONZE AGE

**Abstract author(s):** Filipovic, Dragana (Institute for Pre- and Protohistoric Archaeology, Kiel University) - Herrscher, Estelle (Aix Marseille University, CNRS, LAMPEA, UMR7269) - Schlütz, Frank (Niedersächsisches Institut für historische Küstenforschung) - Schneeweiß, Jens (Zentrum für Baltische und Skandinavische Archäologie, Stiftung Schleswig-Holsteinische Landesmuseen Schloss Gottorf; Cluster of Excellence ROOTS, Kiel University) - Kirleis, Wiebke (Institute for Pre- and Protohistoric Archaeology, Kiel University)

**Abstract format:** Oral

Archaeobotanical evidence suggests that early cultivation of millet in northern Germany took place on light sandy soils that warm up fast during summer months and were, therefore, beneficial for the growing of this crop. However, these soils are relatively poor in nutrients and improvement of their properties may have been practiced – for example, through fertilisation. Stable isotope analysis of archaeologically preserved grains reveal field conditions under which crops were grown in the past, such as soil water status and fertility levels. This method has been widely used in archaeology and has enabled reconstructions of the field management of wheat, barley and leguminous crops. However, it has not yet been applied systematically to broomcorn millet. Only a few small-scale isotopic studies of archaeological millet grains in Eurasia have been conducted so far and they pointed out difficulties in understanding and interpreting the results due to the different photosynthetic pathway of broomcorn millet (C<sub>4</sub>) compared to that of wheat, barley and pulses (C<sub>3</sub>). This paper introduces a new German-French collaborative project aimed at exploring the growing conditions of broomcorn millet (*Panicum miliaceum* L.) in northern Germany in the Late Bronze Age. Following the methodology and procedures applied in similar and related studies, the practical aims are to: (a) produce stable carbon and nitrogen isotope values for millet grains recovered from several 2nd-1st millennium BC sites in northern Germany; (b) produce these values also for the modern grains of millet, grown under controlled conditions in several locations in central and northern Germany; the isotopic content will be measured for fresh and

experimentally carbonised grains; (c) compare the isotopic measurements of archaeological and modern grains, in order to identify the carbonisation effect, which will be taken into account when assessing the values obtained from archaeological specimens.

## 12 INFERRING AGRICULTURAL PRACTICES IN SOUTHWESTERN NORWAY USING STABLE ISOTOPE ANALYSIS OF CHARRED CEREAL GRAINS

**Abstract author(s):** Fredh, Erik Daniel - Bishop, Rosie (University of Stavanger)

**Abstract format:** Oral

The agriculture known from historical times in Norway used permanent fields, which required a regular supply of nutrients, commonly from the manure of livestock, which grazed in grasslands close to the farms. Essentially all the nutrients added to the arable land came from the land belonging to the farm, which created a certain balance between livestock numbers and different land-use types within this unit. This contrasts to modern agriculture, which relies on imports of artificial fertilizers from outside the local farms. The practice of regular manuring to permanent fields is commonly assumed to have started during the Iron Age when archaeological evidence suggests that agriculture expanded, and the land was more clearly divided between infield and outland. The preceding Neolithic and Bronze Age agriculture may instead have used a type of shifting cultivation that regularly exploited new land and did not require significant manuring for cultivation. Although some have suggested that the pollen and archaeobotanical record supports this development, the origins of manuring and the nature of the soil amendment practices employed over the longue durée is still poorly understood. In this study, we explore this long-term development in crop management practices in South-Western Norway using stable carbon and nitrogen isotope analysis of charred cereal grains dating from the Neolithic to the Iron Age. In particular, we consider the nature of the manuring practices used by the earliest farming communities and the extent to which manuring strategies changed during the Iron Age expansion.

### A. PRELIMINARY DATASET ON CARPOLOGICAL REMAINS FROM ITALIAN BRONZE AGE

**Abstract author(s):** Cortese, Francesca (Department of History, Humanities and Society, University of Rome Tor Vergata) - De Angelis, Flavio (Centre of Molecular Anthropology for Ancient DNA Studies, University of Rome Tor Vergata) - Bontempo, Luana (Edmund Mach Foundation, Food Quality and Nutrition Department – Traceability Unit) - Carrara, Nicola (University of Padua) - Dalla Longa, Elisa (Independent researcher) - Moggi Cecchi, Iacopo (Anthropological laboratories – Department of Biology, University of Florence) - Silvestri, Letizia (Department of History, Humanities and Society, University of Rome Tor Vergata; Durham University, Department of Archaeology) - Rickards, Olga (Centre of Molecular Anthropology for Ancient DNA Studies, University of Rome Tor Vergata) - Rolfo, Mario (Department of History, Humanities and Society, University of Rome Tor Vergata)

**Abstract format:** Poster

Agriculture spread in Europe during the Neolithic, bringing new techniques to improve soil productivity. Molecular studies demonstrated that in the Italian peninsula, agriculture developed intensively only during the Bronze Age. New applications of carbon and nitrogen stable isotope analysis on carpological remains show their potential in identifying soil management practices, such as manuring and irrigation. Published works revealed that animal manuring raises nitrogen values of cereals and legumes, while water availability is related to increasing carbon values. This work provides the first preliminary dataset of stable isotope analyses on domesticated seeds from Bronze Age Italian sites, i.e., Grotta di Pastena, Grotta Nuova, and Molina di Ledro. The first site, located in central Italy, dates back to the Early-Middle Bronze Age; it is a funerary and ritual cave that provided one of the largest carpological deposits of Italian Protohistoric contexts. Grotta Nuova, also in central Italy, is a cult cave dated to the Middle Bronze Age. It revealed several burnt seeds into vessels found along the shores of an inner stream. Molina di Ledro is a pile-dwelling in northern Italy, which was occupied between the Early Bronze Age and the first phases of the MBA. About 60 seeds of broad beans, emmer, wheat, and barley have been analyzed. The results appear to vary based on sites of provenience, suggesting different local isotope signatures of soil and the different use of agricultural practices. Stable isotope analyses on seeds are not common in Italian protohistoric contexts, unlike other European sites (e.g., Spain, Switzerland, and Greece); therefore, it is imperative to make crops values available, in order to reconstruct agricultural practices, past local isoscapes, and local ecological substratum to be useful for future human diet analysis and beyond.

### B. CONSTRUCTION AND PRACTICE OF EXPERIMENTAL PADDY FIELDS IN THE YAYOI AND KOFUN PERIODS IN THE JAPANESE ARCHIPELAGO

**Abstract author(s):** Shiroishi, Tetsuya (Yamagata University) - Yamada, Masahisa (Tokyo Metropolitan University)

**Abstract format:** Poster

In the Japanese archipelago, rice farming was introduced from the continent during the Yayoi period (10-8 C.B.C.). The result was a transition from a hunting and gathering society to an agrarian society. Archaeological research has shown that rice cultivation and agriculture brought about a major transformation in society and culture. In other words, the dietary revolution brought about by rice paddies during the Yayoi period is very significant.

However, it is not clear how paddy fields were operated at that time. Therefore, with the aim of clarifying the operational capacity of rice paddies in the early agricultural period, the presenters have constructed experimental sites in various regions of the long, north-south Japanese archipelago. In the experiment, the paddy fields were excavated with the restored wooden products to measure the excavation force to determine the degree of growth. The harvesting was done with restored harvesting tools (stone knives) to examine the harvesting time, yield, etc., and the number of people per unit area calculated. Then, the harvested rice was cooked with the restored earthenware to clarify the cooking method through comparative analysis with the use marks on the earthenware. Thus, we aim to elucidate the food system of the paddy field in the Yayoi period through a multi-faceted and comprehensive survey of the various events related to the paddy field.

In this report, we present the specific experimental process and results obtained for the experimental paddy fields in Yamagata Prefecture, which started in FY2020, and Kanagawa Prefecture, which are currently under construction, and we discuss future research prospects.

---

311

## COMMUNITY ARCHAEOLOGY OF THE EDGES: CHALLENGES AND SOLUTIONS

**Theme: 1. Archaeologists and Archaeology Here and Now**

**Organisers: Todaro, Simona (Catania University) - Kyriakidis, Evangelos (The Heritage Management Organization)**

**Format: Round table**

In the past 15 years, the engagement between archaeology and the public has intensified and, as a result, a growing number of countries have moved from top-down approaches that aim to increase community awareness of cultural heritage through modification of dissemination practices, to more dynamic and inclusive approaches that entail the active collaboration of citizens and archaeologists.

The new path has inevitably forced practitioners to rethink how and why we do archaeology and has eventually led to a shift of focus from top-down, often enforced, box-ticking exercises, to projects aimed to empower local communities.

While the outcomes of archaeological research are regulated by specific legislation and publication responsibilities, the truly collaborative practice poses often unresolved location specific challenges. True collaboration requires the permeability of boundaries between "professional" and "community member", which can become extremely difficult to transcend when working with marginal groups, even in cases in which researchers are both community members and professionals.

Yet, marginal groups, i.e. communities that can be regarded as critical for socio-economic reasons (e.g. peripheries of urban centres, groups characterized by a lack of access to facilities, that have not been integrated, are illiterate or new), are those that could benefit more from collaborative research projects in which the cultural heritage can become a trigger for creating and/or reinforcing integration. The aim of this session is to bring together researchers who have been working with such communities so as to address, through specific cases studies, challenges and attempts at overcoming them.

---

312

## CONTINUITY AND DISCONTINUITY OF TRANSPORT SYSTEMS FROM ANTIQUITY TO THE PRESENT

**Theme: 4. Polis, Empire, League and Beyond – Living in Interconnected Societies**

**Organisers: Rajala, Ulla (Stockholm University, Sweden) - Fulminante, Francesca (UCL; University of Bristol; Roma Tre University) - Lewis, Joseph (University of Cambridge) - Stamerra, Laura (Roma Tre University) - Citter, Carlo (University of Siena)**

**Format: Regular session**

Recently Danish economists have combined data on Roman roads and historical data on dwellings in Europe to assess the enduring effect of the Roman transportation network (Daalgard et al. 2018). Such research indicates that these roads created a united Europe that was an outcome of much older traditions. Pre-Roman Europe was not a blank slate but already highly interconnected. The Iron Age network of proto-urban and later urban centres (oppida) into which the Mediterranean world latched onto allowed the whole Western European network to "take-off" within the Roman system. The network also affected areas that were not even part of the Roman Empire, for example in Scandinavia. This Roman infrastructure was so robust that it could survive even the end of Roman Empire, for example in Britain. Even today, the roads may run along the same routes used for millennia. However, the centres and their connectors were not immutable and sometimes disrupted more notably. For example, the Roman road network incorporated in some instances old routes, but in the others diverted from them.

Urban networks and networked cities are becoming an increasingly dominant theme of research and international planning and understanding the routes and effects of these networks is vital for making informed decisions for the present and future. The modern planning tries to save old heritage and avoid historic routes. Thus, we encourage



papers that discuss the connections between centres and the continuity and discontinuity of ancient transport networks. The potential topics include:

- diachronic approaches to transport
- settlement networks and connectivity
- road networks
- harbours and marine networks
- transhumance
- modelling past networks and least cost routes
- imports and exports
- modern road planning and heritage

Dalgaard, C.J., et al. 2018. On Roman roads and the sources of persistence and non-persistence in development. <https://voxeu.org/article/roman-roads-and-persistence-development>

## ABSTRACTS

### 1 NETWORKS AND RESILIENCE: USING SOCIAL NETWORK ANALYSIS AND AGENT-BASED MODELLING TO EVALUATE THE SIGNIFICANCE OF MESOPOTAMIAN HOLLOW WAYS

**Abstract author(s):** Priß, Deborah (Durham University)

**Abstract format:** Oral

Understanding the connectivity of past complex societies and its impact on their ability to cope with significant disturbances can help us to address modern issues like climate change; if we know what helped ancient civilisations to increase their resilience, we can use this knowledge to shape our future. I aim to investigate how and to what extent relationships and connections between settlements helped past societies to overcome crises.

My research focuses on so-called hollow ways in northern Mesopotamia to assess ancient route networks. They date back to the Late Chalcolithic/Early Bronze Age (c. 4000 – 2000BC) and were still visible on satellite images from the 1960s, before most of them were eventually destroyed by development and irrigation measures.

The hollow ways build the foundation of my studies which draw upon a mixture of open-source and non-public data to characterise the hollow ways and the location of settlements. As with all archaeological data, the evidence of the hollow way system and the settlements is fragmentary and incomplete. Hence, the issue of missing data is one of the essential problems to be resolved. In collaboration with experts from disciplines including neuroscience and computer science, I aim to find a method to account for incomplete data and to test the resilience of the system.

I use innovative, network-based approaches including social network analysis (Exponential Random Graphs Models) to assess the dominant processes that led to the system as it presented itself until a few decades ago, and agent-based modelling to trace the evolution of the network through time.

This paper will give an overview of my research and present the first steps of data preparation and the use of computational methods to handle missing data as well as the first results of the Exponential Random Graph Models.

### 2 ROADS AND RIVERS. THE IMPORTANCE OF REGIONAL TRANSPORTATION NETWORKS FOR EARLY URBANIZATION IN CENTRAL ITALY (1000-500 BC)

**Abstract author(s):** Fulminante, Francesca (University College London; Bristol University; University Roma Tre) - Prignano, Luce - Cozzo, Emanuele (Departament de Física de la Matèria Condensada, Universitat de Barcelona; Universitat de Barcelona Institute of Complex Systems - UBICS) - Candelas, Pablo (Departament de Física de la Matèria Condensada, Universitat de Barcelona)

**Abstract format:** Oral

Ancient regional routes were vital for interactions between settlements and deeply influenced the development of past societies and their "complexification" (e.g. urbanization). For example, terrestrial routes required resources and inter-settlement cooperation to be established and maintained, and can be regarded as an epiphenomenon of social interactions. Similarly, navigable rivers provided a complementary inter-settlement connectivity, which conditioned the development of roads and pathways.

In this sense, fluvial and terrestrial connections can be seen as the two layers of an integrated regional transportation system, which was the product of social relations and of the interplay between past societies and environment. This paper discusses transportation networks and interaction in central Italy (1000-500 BC ca) at a time of changes and developments in the Italian Peninsula, which led to the creation of regional ethnic and political groups and to the formation of the first city-states in Western Europe.

To better understand the emerging Latin and Etruscan urban polities and the mechanisms underlying their variable success, we adopt a novel network approach (modelling, multiplex networks). In particular we propose to understand the interplay between both infrastructures by exploring the navigability of such multi-layered transportation

networks when varying the parameters that model (1) the relative maintenance cost of fluvial and land connections and (2) the additional harbour maintenance costs associated to each node in the fluvial layer. The results shed new light on how the Latin and the Etruscan polities emerged and functioned, and also suggest potentially why, in the end Rome prevailed over its rival.

### 3 CONNECTING LANDSCAPES ON THE LONG DURÉE. THE CASE OF CENTRAL SICILY

**Abstract author(s):** Citter, Carlo (University of Siena) - Mazza, Michele (Soprintendenza Archeologia, Belle Arti e Paesaggio per la città metropolitana di Reggio Calabria e la provincia di Vibo Valentia)

**Abstract format:** Oral

This paper focuses on the central Sicily's historical road systems, through a diachronic analysis of ancient cartography, historical sources and data from recent researches carried out in the area.

A long lasting Mediterranean tradition stresses the role played by the towns in shaping the countryside and its connections' network. On the contrary, we stress the bottom up process of connecting communities over time.

Routes and paths can be rooted in the Proto-history, when the movement used to be constraint by the geographical settings. They were transformed, according to the needs of local communities. They were abandoned, reshaped, reused many times until the present day.

We focus on central Sicily to highlight this rhythm of continuities and breaks on the long term from the Bronze age to the present. We will also stress the role that this network played in the transformation process of the selected area and its settlement pattern.

Finally, we will evaluate, through a GIS based approach, how much the recorded paths are influenced by environmental and/or human agents.

### 4 THE CHANGING ROAD NETWORKS OF THE FALISCAN AREA: ASSESSING ROAD NETWORKS AND ROAD CUTTINGS

**Abstract author(s):** Rajala, Ulla (Stockholm University, Sweden)

**Abstract format:** Oral

In his recent PhD thesis Juha Tuppi (2015) discussed the road cuttings of central Tyrrhenian Italy. His work contained only a handful of road cuttings from the Nepi area, whereas in my PhD work I found more frequent evidence for these monuments. However, Tuppi's work concentrated on pre-Roman road cuttings, whereas many of the cuttings in the Nepi area can be related to the Roman and Medieval road networks. Even if the road cuttings in the Faliscan area are essential for moving from one canyon-like river valley to another, only those near Falerii Veteres and Novi and Corchiano have been analysed in a more detailed fashion (cf. Quilici 1990; Tuppi 2015).

In this talk I will analyse the road networks reconstructed in previous research (e.g. Frederiksen and Ward-Perkins 1957) and compare this data to those of Tuppi (2015) and to the main settlements connected. I will discuss my own observations during my PhD work and identify the key areas for fieldwork and analysis within the new project 'From protohistory to the Middle Ages: the road cuttings in the south-eastern Etruria', financed by the Amos Anderson Fellowship. I will also outline the computer modelling related to the project.

References:

- Frederiksen, M.W., and Ward-Perkins, J.B., 1957. 'The ancient road systems of the central and northern Ager Faliscus (notes on southern Etruria, 2)', *PBSR* 25, 67–203.
- Quilici, L., 1990. 'La cava buia di Fantibassi e le vie cave del territorio falisco'. In G. Maetzke, O. Paoletti och L. Tamagno Perna (eds.), *La civiltà dei Falisci*, 61-102. Florence.
- Tuppi, J., 2015. *Carving Territories: Road Cuttings as Part of Early Socio-Political and Urban Development in Central Tyrrhenian Italy with Special Reference to Crustumerium*. Academic dissertation, the faculty of Humanities, University of Oulu.

### 5 MINDING THE GAP: SITUATING THE LANDSCAPES OF THE VIA AMERINA AND VIA FLAMINIA IN SOUTHERN UMBRIA

**Abstract author(s):** Harder, Matthew (University of Missouri)

**Abstract format:** Oral

The landscape of Southern Umbria in Central Italy is characterized by mountain ranges, rolling hills, and the Tiber River Valley. This region was an important crossroads for millennia thanks to the network of transhumance routes, two Roman roads (the Via Amerina (c.241 BCE) and Via Flaminia (c.220 BCE)), and of course, the Tiber River. Despite the importance of these two Roman roadways for the continued development of urban centers in the region (Ameria, Narni, Oriculum), our understanding of their exact routes and relationship with the surrounding landscape is limited. This paper seeks to fill this gap in our knowledge and reconstruct the ancient road network of Southern Umbria Tiberina through a combination of historical and archaeological data with Least Cost Path analyses. A fundamental

component to this project was the digitization of disparate strands of data (aerial photography, distribution maps, DEMs, excavation data) into a GIS database to assist in the analysis of the landscape over time. Other data comes from publications concerning the communal museum collections, primarily in the form of disparate finds, reports of scatters of material on the surface. Through this sort of investigation, we can develop hypotheses about how the route network affected regional and supra-regional trade networks over time. In particular, we can analyze the evolving relationship between urban and rural sites, brick production facilities, and port sites during the Roman period. For the first time, the interconnected landscape of Southern Umbria, an important crossroads for centuries thanks to the proximity to the Tiber River, the Via Flaminia and the Via Amerina, can be analyzed together. In sum, this paper argues that this multifaceted approach can serve as a model for understanding the functions and characteristics of these important Roman roads in Republican and Imperial Central Italy.

## 6 INNER MOBILITY, LOCAL MOVEMENT AND WIDER CONNECTIONS IN THE LONG-TERM LANDSCAPE OF THE NUCLEATED SETTLEMENT OF BOEOTIA (CENTRAL GREECE)

**Abstract author(s):** Stammera, Laura (Roma Tre University) - Farinetti, Emeri (Department of Humanities – RomaTre University)

**Abstract format:** Oral

Mobility is an essential aspect of human behaviour. It affects the way we perceive and conceptualize space and time, our relationships and interactions with people and even our own identity. For its role in human evolution and in the circulation of ideas, cultural behaviors and innovations, it is frequently a subject of focused archaeological research.

A way to understand human mobility is through the study of viability, which constitutes its physical embodiment. Along with settlements, roads and pathways represent how societies control and organize their territory. On one hand, they fulfil functional needs of human communities; on the other hand, they embody a series of ideological, socio-political and identity-related issues, hence closely influence the definition of space, as well as the significance and values of human landscapes, and their changes or permanence over time. Therefore, pathways act as material places for communication, contacts, trade and cultural exchanges, and play a leading role in shaping human societies.

In this paper, we present some case studies from Boeotia, in central Greece. Employing a GIS-based approach, enhanced by spatial analysis, cost-surface analysis, least cost path and network analysis, social and cultural effects of mobility and movement patterns at different scales will be examined. We will investigate regional mobility in a long-term perspective, the inner mobility at the urban scale, with a focus on the role of the city gates in the movement patterns between town and countryside (polis-chora) in the Greco-Roman period, as well as examples of long-term on-site mobility on significant sites.

## 7 ROMAN FRONTIERS CONNECT RATHER THAN DIVIDE

**Abstract author(s):** Rummel, Christoph - Hofmann, Kerstin - Rasbach, Gabriele - Schröer, Sandra (RGK - Romano-Germanic Commission DAI)

**Abstract format:** Oral

The Frontiers of the Roman Empire are often seen and portrayed as an exclusive, fortified outer edge of the Roman world, designed to withstand incursions and attacks from outside the Empire. Recent research has shown, however, that they were not only porous and frequently designed to concentrate movement and communication across them at certain points (often pre-existing Iron Age routes), but also served as a major artery of communication along their course, connecting military camps, cities, provinces and socio-economic spheres. Rather than the commonly found dividing element, *limites*, as the origin of the word suggests, and *ripae* also served to connect – by land and by water.

While Roman roads and their impact on later transport and communication networks are commonly studied, this paper therefore seeks to lay out the impact of the Roman frontier on European connectivity, in Antiquity as today. Using several case studies from different parts of Europe and the theoretical concept of past dependencies, it will show how they served and facilitated movement, often along pre-existing prehistoric routes, and how they echo in transport systems and communication networks to this day.

## 8 EVEN MORE FROZEN IN TIME: AN ANALYSIS OF POMPEII'S STREET NETWORK TO COMPARE METROLOGICAL PRACTICES BETWEEN THE CITY AND HINTERLAND

**Abstract author(s):** Picker-Kille, David (Florida State University, Department of Classics)

**Abstract format:** Oral

Over the past fifteen years, research on Roman city street networks have significantly expanded our ability to engage with questions of movement, space, and infrastructure in ancient urban centers. This increasing wealth of data, however, has yet to be sufficiently considered in its applicability to address social and economic questions about life outside the city. In Pompeii, where there is a marked dichotomy between the archaeological record of the city and

the surrounding countryside, a closer investigation of the city's well-preserved street network reveals important differences in daily practices across the two environments. Dividing Pompeii's street grid into discrete "units of movement" enables us to map topographically and chronologically a collection of wheel-rut measurements onto patterns of vehicular movement into and out of the city. Using this model, we are then able to visually consider how the response to the early-Augustan introduction of Roman metrological standards may have differed between city-dwellers and those living beyond its gates. Such patterns provide crucial insight into how inhabitants of the Campanian countryside engaged with social, economic, and cultural developments within the city. Going forward, more extensively excavated sites such as Pompeii may remain more conducive to a GIS-intensive study of ancient urban-rural movement. Nonetheless, the underlying tenet of such an approach – that the street surface is no less an archaeological resource as the places it interconnects – offers much potential for research on a variety of ancient sites and settlements seeking to better understand the social, cultural, and economic relationships of their occupants with the inhabitants and topography of the surrounding hinterlands.

## 9 **POSTAL RELAY SYSTEM IN MONGOLIA ACCORDING TO THE CHINESE TRAVELERS OF THE 13TH CENTURY**

**Abstract author(s):** OGUZ, Anil - Özsoy, Nusret (Erzurum Technical University)

**Abstract format:** Oral

In world history, the Mongolian Postal System, known as Jam or Yam, was the most important catalyst that led to the formation of Pax Mongolica by facilitating the east-west interaction of Eurasia. Postal routes, which probably were first laid before the Chinggis Han and started to extend from Mongolia since the Chinggis Han, were the main tracks, through which personalities such as Zhang Dehui, Changchun, Yelu Chucui, Chang De passed in the 13th century. In fact, there were three postal routes (called Morin, Tergen and Narin) connecting North China with Mongolia since the Ogodei Ka'an Period, and Tamir-Altay postal routes leading to the postal tracks extending around Lake Balkash and north of Jungaria. Changchun in 1221, Zhang Dehui in 1247, and Yelu Chucui in 1218 were travelling from North China to the vicinity of Karakorum, using the oldest postal relay tracks in Mongolia.

Thanks to the narratives of these travelers, we learn that the postal stations in Mongolia were tent camps to which nomads provided food, horse, employee etc., that the tracks was built in the steppe and semi-desert land, the distances between the stations, the speed of the postal relay system in Mongolia and the routes. This information allows us to learn that the postal relay routes in Mongolia followed certain places and that the route actually connected the ordos of the Mongolian nobility. With postal companions (ula'achi), authority tablet and document (gerege), horse stamps (tamga) etc., it is possible to re-create the transportation system in 13th century Mongolia and also to understand the interconnectedness of settlements such as Karakorum, Bitigtu, Yisu Buqa's Palace in Inner Mongolia, and Khirkhira in Yenisei.

## 10 **THE CONTINUITY OF ROMAN ROAD TRANSPORT INFRASTRUCTURE IN LATER MEDIEVAL ENGLAND: THE GOUGH MAP OF C. 1400**

**Abstract author(s):** Oksanen, Eljas (University of Helsinki) - Brookes, Stuart (University College London)

**Abstract format:** Oral

The Gough Map of c.1400 (and revised in the 15th century) is one of the oldest surviving maps of Great Britain and unparalleled among its predecessors in detail and scope. One feature of the map that has excited great interest among historians of the Middle Ages are the so-called 'red lines' that connect together many of the settlements depicted. Some scholars believe these red lines to represent a network of contemporary routes; others have suggested they simply indicate distances and a sense of connectedness between settlements. In this paper we will argue that the red lines do in fact depict routeways. Utilising digital GIS mapping of routes of Roman and early medieval date, we will show that in almost every instance a red line can be matched with a historical road; in one case a navigable river. While the Gough Map by no means contains a full and comprehensive depiction of the medieval travel network, the historical importance of its red lines lies in their representation of the most comprehensive single depiction of contemporary travel routes across the kingdom, as chosen by its creator. Using the red lines as a proxy we can quantify the contribution Roman roads made to the medieval road network, evaluate some of the spatial characteristics of the surviving sections, and assess their continuity into the Early Modern period. Used in this way the Gough Map provides important insights into the evolution of transport systems in England and Wales.

## NEW OR OLD? EXPLORING THE CONSTRUCTION AND CONTINUITY OF THE ROMAN ROAD NETWORK IN THE SOUTHERN LEVANT

**Abstract author(s):** Pažout, Adam - Brughmans, Tom (Centre for Urban Network Evolutions - UrbNet, Aarhus University) - de Soto, Pau (Universitat Autònoma de Barcelona)

**Abstract format:** Oral

This presentation explores a new highly-detailed and spatially accurate model of the Roman road network in the Levant. The model offers an opportunity to study the development of the Roman-period road network, its relation to pre-Roman roads and its continuity into the Islamic period. Selected case studies from the southern Levant will be discussed, exploring the influence of settlement patterns and Roman expansion on the shape of the road network in the region. It is argued that very few 'Roman' roads are new constructions dated to the Imperial period, and these often become disused in the Early Islamic period due to different socio-political circumstances and changing settlement patterns.

This Roman road digitisation is developed within the context of projects MINERVA (<https://projectmercury.eu>) and Viator-e (<https://viatore.icac.cat>). These projects aim to draw on all available historical and archaeological data to develop a highly detailed model of the Roman road system across the entire Empire. The digital data will be made openly available on Itiner-e: an open online gazetteer of ancient roads. It aims to become an online platform for a community of scholars to explore, query, download and edit historical road data, leading to a continually improving resource. This presentation will provide an overview of current work in these projects.

## NEW TECHNOLOGIES, NEW TRENDS, NEW ETHICS IN CULTURAL HERITAGE MANAGEMENT

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Chroni, Athina (Hellenic Ministry of Culture and Sports-General Directorate of Antiquities and Cultural Heritage; National Technical University of Athens) - Hamari, Pirjo (Finnish Heritage Agency) - Nilhamn, Bonnie (University of Helsinki, Doctoral Programme in Geosciences; "Nilhamn" - Dutch Museum and Cultural Heritage consult company)

**Format:** Regular session

The COVID-19 crisis has profoundly affected societies around the world, tearing apart the social fabric and plunging the global economy into a deep recession. Despite its negative impact, the cultural sector has gained new experiences, contributing to the successful management of multiple issues and highlighting the essential role of cultural heritage in communication, social inclusion, and economic regeneration. In recent years new technologies, like remotely sensed imagery, GIS, web databases for remotely managing cultural heritage, VR, AR and MR for highlighting cultural heritage, widening the museum experience for keeping stable the visitors' numbers, social web platforms for sharing cultural experience and gathering the community globally, have prevailed as new trends, thus contributing to a new ethics model which is being formed. The footprint is also visible in tourism, further affecting the sector of economy.

Remote access and remote management, open linked data, common sharing, are some of the "new normality's" main aspects. People's cultural and social experience is moving from the physical to the virtual. As a result, the term "virtual collective memory" might be considered rather appropriate.

Considering the pandemic as a catalyst for change, reinventing, through new practices, the common values that connect people worldwide, this session addresses issues like: "Where does the cultural sector really stands today? Have the new technologies worked out? What is in fact the new cultural heritage management model arising? Should we consider linked open data and crowdsourcing as the new scientific framework? How would the role of professionals in the cultural sector be shaped? How might the respective economic footprint be shaped? Should we talk for a virtually based future in the cultural sector?" Protecting, re-evaluating, revitalizing our common heritage, interpreting society's needs and supporting tourism, should form our priorities for gaining back the balance between the physical and the virtual and achieving people's re-integration.

### ABSTRACTS

#### 1 PERCEPTIONS OF CULTURAL HERITAGE IN POST-COVID TIMES: IASIS FOR RE-ORIENTATING CH MANAGEMENT

**Abstract author(s):** Chroni, Athina (Ministry of Culture/Hellenic Republic, National Technical University of Athens) - Georgopoulos, Andreas (National Technical University of Athens)

**Abstract format:** Oral

"Space is not static, material as a whole and empty, as is often defined in the sciences. It is artificial, as an imprint in space, and social, as a field of human life, absolute or abstract." (Lefebvre, 1974)

Further accepting that the urban environment is conceived through the notion of the urban assets, both tangible and intangible, a three-dimensional notion for architecture is quite expected: the function, i.e., religious or secular, public or private, the space, i.e., location, size and type, the time, i.e., dating.

In this framework, "IASIS" has focused on tracing and 3D digitally approaching specific lost landmarks of Ioannina city, Greece, thus studying and pointing out the alterations of the city's urban web during its Byzantine and Post-Byzantine/Ottoman period, consequently figuring out and rediscovering Ioannina's pluralistic profile and cultural palimpsest, as it was shaped, mainly, after the year 1430, resulting from the city's Christian, Jewish and Muslim cultures' osmosis.

The research project proposes an integrated workflow, ranging from remote heterogeneous data collection and digital processing, to communicating information to the people's community by applying new technologies, mainly GIS and 3D visualization via web-based platforms, as well as QR coded interactive labels integrated in the urban web, thus overpassing extreme situations, like the lockdowns. The short-term target is to share cultural heritage information, while the long-term goal is to keep on backfilling and updating the related web database, thus rendering IASIS a never-ending project. Under the perspective of increasing the public's involvement, citizen interviews highlighted topics such as cultural/historic context, significance, heritagization process, intangibility and associative values, living history/living heritage, community needs, cultural mapping, authenticity, also, studied in this paper.

Open source, open data, open access form the project's foundation stones, thus proposing new ways for cultural and social inclusion and re-orientating CH management to a values-based approach.

## 2 RETHINKING HISTORICAL COLLECTIONS AND MUSEUM PRACTICES: PROSPECTS AND CHALLENGES FROM THE SPINELLI ARCHAEOLOGICAL COLLECTION PROJECT AT MANN

**Abstract author(s): Savelli, Sveva (Saint Mary's University) - Santaniello, Emanuela (Museo Archeologico Nazionale di Napoli)**

**Abstract format: Oral**

The "Spinelli Archaeological Collection Project" was born in 2021 as a collaboration between the MANN and Saint Mary's University (Halifax, Canada) aimed at conducting a comprehensive study of the Spinelli Archaeological Collection and promoting its dissemination to the broad public. The initiative is a direct offspring of the COVID pandemic that, benefitting from the Museum's temporary closure and consequent slowdown of everyday activities, created opportunities for self-reflection in curatorial and heritage protection practices. The collection originates in the archaeological excavations carried out between 1878 and 1886 by the Marquis Marcello Spinelli in the necropolis of the ancient city of Suessula (Naples, Italy) and represents crucial testimony of peoples living in the "Piana Campana" long in advance of the arrivals of Etruscans, Greeks, and Romans and reveals their interactions with the broader Mediterranean region. It comprises 2300 ceramic vessels and 3000 bronze and iron implements dated between the end of the Bronze Age and the Roman conquest (3rd c. BCE). The original nucleus of the assemblage was donated by Spinelli's heirs to the Italian Government after World War II and is conserved at the MANN; other finds were dispersed across international Museums.

This paper will discuss objectives, strategies, and accomplishments of "Spinelli Archaeological Collection Project" and will address the challenges of studying and disseminating to a vast public a complex and extensive context in such a challenging period. The goal is to recast the history of the Museum as a place of knowledge of Ancient Campania, from its prehistory to the birth of Capua, Kyme, Neapolis, Puteoli, and the very rich surrounding area.

## 3 REMOTELY MANAGING AND COMMUNICATING ARCHAEOLOGICAL INFORMATION TO THE PUBLIC: GIS FOR DOCUMENTING ANCIENT QUARRIES IN GREECE

**Abstract author(s): Chroni, Athina (Ministry of Culture/Hellenic Republic, National Technical University of Athens) - Megalooikonomou, Pavlos-Stylianos (National Technical University of Athens)**

**Abstract format: Oral**

GIS has become a human science research tool virtually eliminating the distance of physical space. Georeference is now considered necessary for the integrated documentation and management of every archaeological site and its finds; GIS, as a new documentation methodology for cultural heritage, mirroring analogue documentation principles, constitutes a methodical challenge strongly related to the massive digital and technical development globally.

The rapid increase in the number of ancient quarries located in Greece, many of them not yet excavated or mapped, calls for an urgent plan concerning the related documentation, under the perspective of rendering the study of their techniques more systematic and comprehensive, as well as the interactions with other centres, thus allowing to draw conclusions about stone mining in the ancient Greek world, its movement across the Mediterranean and the resulting inter-local contacts, revealing commercial, political and cultural networks, sea and land routes.

The digitization of spatial information in combination with the introduction of qualitative and quantitative data for each of the digitized points, in distinct layers of information, allows the flexible and accurate management of a large volume of data.

Integrated cultural data management is further enhanced by the adoption of standardized models and controlled vocabularies for the documentation of cultural assets, thus multiplying the possibilities of interoperability and communication with a wider network of cultural content databases at a transnational level.

Ultimate goal, a web-based platform, under a regular status of updating, revealing buffer zones for the located archaeological sites, as well as site details such as condition, threats, and other monitoring updates, freely available to the public, in order to remotely protect, preserve, and assess the potential impact to irreplaceable and non-renewable archaeological resources within the context of encouraging and promoting sustainable development, thus overpassing extreme situations of crisis, like the pandemic COVID-19.

#### **4 NETWORKED LEARNING AND ONLINE ARCHAEOLOGICAL TRAINING: THE DIGITAL HORIZONS PROJECT**

**Abstract author(s): Romanis, Thomas (Australian Archaeological Institute at Athens)**

**Abstract format: Oral**

The COVID-19 lockdowns throughout Australia left tertiary heritage students with few avenues for practical archaeological experience and career development. Field schools were cancelled, and many internship programs were suspended throughout 2020 and 2021. Without these vital opportunities to attain skills training and professional experience, a real concern for students becoming a 'COVID Generation' without experience arose.

Recognising this void, the Australian Archaeological Institute at Athens (AAIA) adapted its Digital Horizons Project (DHP) to redress it. The project has two aims: 1), providing engaging and practical experiences in archaeology to enhance interdisciplinary skills development and career prospects, and 2), preparing archival field data excavated at the Greek Iron Age site of Zagora, Andros (1971-1974) for open-access publication. The initiative employed Zoom and shared online databases to create a social environment for student-led teams to easily access to archaeological training and archival content. This team structure and online model proved highly popular and effective, seeing rapid expansion in the project despite the limitations of COVID-19. The DHP now provides training to over seventy-five volunteers from six Australian universities and continues to grow.

This online and onsite approach has provided significant research advantages for the AAIA. Over 23,000 legacy archaeological records, photographs, and sketches have been digitised and input into a Heurist database within two years. With such a wide variety of archaeological processed and structured, progress towards publication has accelerated. This has allowed the DHP to develop more sophisticated roles to teach advanced vocational skills, including: stratigraphic interpretation and query, digital illustration, GIS mapping and spatial analysis, and artefactual analysis. Multidisciplinary skills, including communication, data management practices, and public engagement, are also instilled to aid students in being adaptable to a changing, ever digital working environment. This networked, flexible volunteer program model demonstrates the educational and research benefits to online volunteering.

#### **5 THE CAST PROJECT. EXPLORING THE KNOWLEDGE OVER THE DARK. ADVANCED MULTIDISCIPLINARY ARCHAEOLOGY INVESTIGATIONS FROM PERTOSA CAVES, ITALY**

**Abstract author(s): Di Meo, Andrea - Minelli, Antonella (Università degli Studi del Molise) - Caprioli, Federico (Independent Researcher) - La Greca, Giuseppe (Independent Researcher)**

**Abstract format: Oral**

The CAST project (Caves through Archaeology, Science and Technology) is configured as a methodological intervention program, which makes use of innovative technologies, enabling the acquisition of significant information on timeframes and on how the caves of Pertosa-Auletta (southern Italy) can be used.

If on the one hand the objectives are the continuation of historical and archaeological research, on the other we want to develop an integrated museum system between nature and high impact popularization models using virtual survey technologies.

Using innovative methodologies, the aim is to make the information acquired during the interventions available through a platform for continuous monitoring of the progress works.

The direction marked by this pandemic phase has made the use of these methodologies even more urgent, favoring the spread of a New Digital Humanism that can determine a social impact capable of guiding future approaches to the management and scientific treatment of data.

In this regard, through the web platform dedicated to the Virtual Reality Experience it is possible to carry out a virtual tour of the 3D reconstruction of the pile-dwelling settlement, identified at the entrance to the Caves, developed on the basis of archaeological data and the high-resolution three-dimensional survey carried out through the integration

between laser scanner and photogrammetry. During the virtual tour it is also possible to interact with the 3D models of the finds that can be explored obtaining information of a different nature.

This platform contains virtual reproductions connected to the archaeological and natural history of the Caves, with diversified levels of access to information, which constitute a model of virtual experience with a strong scientific and social impact.

The purpose of the platform, constantly implemented and updated, is also to allow you to check the progress of the research in a single environment that is easy to access.

## 6 CLICKBAIT HERITAGE

**Abstract author(s): Nilhamn, Bonnie (Helsinki University)**

**Abstract format: Oral**

Some museums only exist in the virtual world, while most museums interact online with their audience. The degree can vary from only presenting a website to having elaborate online exhibitions and virtual tours.

For many years, this digital development has been on but took a high flight with the Covid-pandemic. In a rapid tempo, we have seen that museums had to adapt to survive the last two years.

The heritage experience has become only one click away from our smartphones. This 24/7 accessibility of searchable and browsable collections has become a blessing for researchers. Still, has it really increased the experience of enjoying heritage or has the virtual access just become a fast means to collect a number of visitors for the museum statistics.

In this paper, we discuss the fast-changing heritage landscape. The blessings and the drawbacks for the heritage institution itself as for the individual visitor. It will also include some inspirational "best-practices" examples of some heritage institutions that have embraced the new technologies as essential tools, not as "the solution".

## 7 THE ROLE OF 3D TECHNOLOGIES IN HEALING THE LOSS OF ARCHITECTURAL HERITAGE

**Abstract author(s): Denker, Ahmet (-)**

**Abstract format: Oral**

Since the Renaissance period, when the value of architectural heritage and the respect for its value were laid, unearthing and comprehensive research of ancient monuments have been one of humanity's primary obligations and interests. As a result, archaeological excavations of monumental buildings became common practice from the 18th century onwards and intensified in the 19th century. However, what these excavations revealed most of the times were completely destroyed architectural structures. Awareness of the lost architectural heritage is the necessity and result of the self-consciousness of contemporary society. Healing the pain of deprivation caused by the loss of ancient monuments today concerns not only the past, but also the present and the future. Understanding how valuable these monuments are depends on revealing and sharing information about their importance and splendor in the periods they were standing. Making such information visible to everyone is one of the main challenges and opportunities of 3D technologies. The ghost images of the lost monuments of our architectural heritage created in the virtual world are examined with a focus on the character, origins and uses of the virtual models of the architectural heritage. Emphasis is placed on the healing role of ghost images as meta-representations of architectural heritage. In all cultures on our globe, ghost images have a significant role in connecting people with the past, with the lost. In light of this cultural reference, the role of 3D ghost images in sustaining the lost architectural heritage and alleviating the pain of the loss is discussed.

## 8 REVIEW OF YOUTH PARTICIPATION PRACTICES IN CULTURAL HERITAGE MANAGEMENT THROUGH DIGITAL TECHNOLOGIES

**Abstract author(s): Zhang, Yingxin (Eindhoven University of Technology)**

**Abstract format: Oral**

Youth, aged between 15 to 24, has been increasingly involved in the decision-making process of cultural heritage management. The UNESCO, the European Commission, and other international heritage organizations have undertaken various projects and events in arising youth awareness and willingness in heritage conservation practices, promoting their engagement in heritage management projects. Despite the growing attention on youth participation, little research has been done so far that summarizes and assesses different digital tools that have been used by heritage professionals for engaging young people in heritage projects. This paper aims to fill the gap by providing an assessment that indicates the effectiveness of the varying digital participatory tools for engaging young people in heritage management, as well as a recommendation of a potential set of digital tools. Based on qualitative analysis of empirical case studies worldwide, a systematic literature review was conducted to critically assess the existing participatory methods, steps in heritage management process, and degrees of participation. Both top-down and bottom-up approaches have been critically assessed with special attention to the application of digital technologies.



This review concludes that educative methods which often incorporate immersive and visualization technologies (e.g. virtual reality, augmented reality, and gamification) have been largely adopted by government, schools, and other educational institutions, while digital platforms and social media are more accepted by local communities as grassroots approaches to empower young people in decision-making process. However, in general, youth participation is still limited to a low participatory level and is mostly dominated by institutions and experts. The result of this review will contribute to the construction of a theoretical conceptual framework of youth engagement in cultural heritage management. This framework can be informative and consultative for heritage professionals regarding policy-making process and development of bottom-up strategies.

## 9 NEW TECHNOLOGY AS A TRUE ENRICHMENT IN THE MEDIATION OF CULTURAL HERITAGE

**Abstract author(s):** Toulouse, Catherine - Lengyel, Dominik (BTU Brandenburg University of Technology Cottbus-Senftenberg)

**Abstract format:** Oral

New technologies not only keep communication going in the pandemic. To a certain extent, thanks to the pandemic, new trends are finding new acceptance worldwide. And this acceptance can be used to communicate cultural heritage in ways that depend on VR, simply because they would not be possible in the physical world. Then VR does not only expand the museum experience by transferring it one-to-one into VR. Purely virtual experiences are then not simply moving from the physical to the virtual, but instead are original virtual experiences that more than justify a virtual collective memory. Considering this potential, new technologies have definitely not yet worked out. And likewise, a future that is not virtually based, but enriched, can already be predicted. After all, not only will society's and tourism's needs be fulfilled, but entirely new needs will be raised. This form of enrichment naturally causes a shift towards more virtual experience and thus towards a new balance between the physical and the virtual, but explicitly not at the expense of the physical world. As an example of such enrichment, we would like to present a cultural heritage project that was developed and exhibited in cooperation with historical building research and art history, and which already contains virtuality in itself: the hypothesis that the extensive building programme of several hundred parish churches, which despite their consistently individual appearance are at the same time amazingly similar in principle, had an underlying idea. To make this idea not only perceivable as an ideal building, but at the same time to make the architectural design practice, from the composition of the building masses to the colourful ornamentation, experienceable and thus learnable, is a unique and purely virtual experience that opens up completely new paths for the museum.

## 10 REMOTE SENSING, CLIMATE CHANGE, NATURAL HAZARDS: ASSESSING OBELISKS OF EASTERN EURASIA

**Abstract author(s):** Langer, Christian (Peking University)

**Abstract format:** Oral

The pandemic has accelerated the digitization of research methods across the board. This paper explores the benefits of remote sensing in research on cultural transmission and cultural heritage management. Taking modern obelisks of eastern Eurasia – whilst focusing on China and the Philippines – these monuments can be conceptualized as global cultural heritage beyond the dominant western narrative. Remote sensing applications like Google Earth allow the identification of individual monuments as well as their mapping in GIS software. What ultimately surmounts to an atlas of obelisks can be amended with publicly available data to compile comprehensive geodatabases. This not only assists research into cultural transmission, here of the concept of the obelisk, but also allows to assess to what extent the given monuments may constitute heritage at risk. Rising sea levels – although likely in the more distant future – would pose a danger to the numerous obelisks located in coastal eastern Eurasia. Yet one also has to consider urban sprawl and volcanism in this rapidly developing and geologically highly active part of the world. Remote sensing, public data, and computing can help raise questions concerning research and heritage management and develop responses to these issues.

## 11 SOCIAL LANDSCAPES: NEW APPROACHES TO QUALITATIVE DATA FOR INCLUSIVE PLANNING AND DEVELOPMENT

**Abstract author(s):** Tenzer, Martina (University of York)

**Abstract format:** Oral

Archaeology, history, and heritage play a crucial role in developing a sense of place, identity, and belonging. The question of how much local heritage in the everyday environment matters to people has become a focus of research and practical approaches to social values over the past 50 years. The unfolding events of the Covid-19 pandemic in the past two years, restricting people's interaction, movement, and way of socialising, also impacted on approaches and methods in academic research and how museums and heritage organisations had to operate. The internet as a means of data collection, communication, and a medium for distributing information has become more important for the development of new approaches, practices, and ethics.

This paper will present the AHRC/UKRI funded PhD research project, aiming to explore a practical approach to social value evaluation, integration into the planning process, and the visualisation of 'everyday heritage' in a new era of heritage management. To overcome the restrictions to in-person contact, online surveys, interactive web map applications, and social media research were applied to integrate local knowledge and communicate between academia, practitioners, and the public. An automated process allows processing of qualitative data in a new time-effective way. Interactive web maps support the communication and information exchange for an inclusive and transparent process of change and development in the heritage sector. This methodology shows a new way to include subjective, qualitative data, such as people's perceptions and social values into official local authority maps as a tool for planning and development to facilitate sustainable change. Visualising people's place attachment based on their individual connection to the past in present landscapes may lead to a new way of heritage management as inclusive and immersive storytelling.

## 12 **ENGAGING WITH ARCHAEOLOGICAL LANDSCAPES: NARRATIVES FROM BRITISH NATIONAL PARKS**

**Abstract author(s):** Bowyer-Kazadi, Emily (University of Liverpool)

**Abstract format:** Oral

How can engaging with archaeological landscapes impact both our wellbeing and our sense of identity? Is the impact of this engagement positive or negative and why might this be? It is of great importance to take into consideration issues such as access, diversity, inclusivity and equality, as well as the way they are affected by the Covid-19 pandemic. This is one of the main lines of enquiry of the related PhD research authors, aiming to find answers by taking interviews from focus groups and by submitting questionnaires to a variety of stakeholders, such as British National Parks' representatives, estate owners, farmers, visitors etc. As part of the PhD research methodology, the photographic method of «deconstructed photography», introduced by photographer Niall Benvie, will be applied to create a series of images of different elements of heritage sites within British National Parks, which will be used as discussion points in focus groups. This photographic method breaks normal landscape photography conventions as it focuses on individual elements rather than the landscape as a whole, providing a different view of archaeological landscapes. This presentation shall discuss the relevant data already collected and analysed in relation to the way they provide answers to the questions afore-mentioned. The results of the specific PhD research project have the potential for a variety of applications in several areas of cultural heritage management.

---

## 316 **SMALL OBJECTS REFLECTING GREAT CHANGES**

**Theme:** 2. [Re]integration

**Organisers:** Rácz, Tibor (Ferenczy Museum Centre) - Fedorina, Anastasia (-)

**Format:** Regular session

Middle Ages may be described as an epoch of continuous changes in respect of political power, social and cultural settings, some of them pronounced, some barely palpable. Among such changes, one could mention the formation of states, the adoption of a new religion, or the introduction of new agrarian and industrial technologies. Transition periods comprise key events in the life of a population and have always been of particular interest. The exact ways of transformations, the spatial and chronological context may be highlighted with archaeological methods.

Material culture stands at the base of our session proposal. We can use medieval artifacts as instruments for tracking social, cultural, or economical transformations. This session is aimed to discuss and explore the effects of political and cultural changes at the level of objects. How much time does it take to change behavior or beliefs? How did fashion or ideology affect everyday life? How do people adapt to changes? How can an idea materialize? Are there environmental changes, only the objects can tell?

Processing of new excavation materials, typology-based studies, comments on metal detector finds are particularly welcome from all across the European Continent covering the periods of the High and Late Middle Ages.

## **ABSTRACTS**

### 1 **CERAMICS CHARTING CHANGE IN THE MEDIEVAL COUNTRYSIDE**

**Abstract author(s):** Lewis, Carena (University of Lincoln)

**Abstract format:** Oral

Pottery is often viewed as one of the humbler items of material culture recovered from most excavations, but it can hold clues to some of the most impactful changes in medieval society. This paper will review ceramic evidence from rural settlements in England and beyond to consider how the demographic, cultural and social upheavals of key events on contemporary populations are reflected in the distribution and date of ceramics.

The paper will review and contextualise data from more than 2,500 1m square archaeological 'test pits' excavated in more than 75 different inhabited rural settlements in England to show how ceramics can reveal change in medieval society, showing how communities ebbed and flowed, shifted and relocated, as people responded to changes over which they had little control, but with which they had to live. Firstly reviewing evidence showing how places responded to the eleventh century Norman takeover and the fourteenth century Black Death plague pandemic (both experienced widely across Europe), the paper will then explore what light similar data might be able to throw on even more poorly understood earlier changes including the sixth century Justinianic plague pandemic and the conversion to Christianity.

## 2 CERAMIC VESSELS WITH TWO HANDLES FROM 10THC. AD – A SHORT RECAPITULATION OF DATA

**Abstract author(s):** Czuppon, Tamás (Hansági Museum, Mosonmagyaróvár; Pázmány Péter Catholic University) - Takács, Mikós - Langó, Péter (Research Centre for the Humanities, Eötvös Loránd Research Network)

**Abstract format:** Oral

Our presentation aims to give a short analysis about the form, chronology, territorial spread and the major trends of interpretation of vessels with two handles from 10th century AD. The ceramic vessels with two handles from 10th century form a type of artifacts, which was frequently analyzed. It was usually studied as part of the vessel type, or several vessel types with ribbed neck. Our aim is to give a new approach, by treating not the ribbed neck, but the presence of handles as a main criteria for the separation of the given vessel type. The first part of the interpretative part of our study is going the deal with the question of production, and within this issue with the problem of workshops. The second part of the interpretation will analyze the questions connected with the possible ways of usage. The last part of our study will focus on the issue questions of the origin of the given vessel type. This importance of this issue is emphasized by the fact, that the given vessel form with two handles seems to be not present in the material culture of the 9th century Carpathian Basin.

## 3 MASTERPIECE OF 14TH CENTURY RUSSIAN CERAMIC ART

**Abstract author(s):** Koval, Vladimir (-)

**Abstract format:** Oral

In 1989, in the city of Kolomna (Moscow region), fragments of a light-clay glazed vessel with relief images (hunters, warriors, musicians, bear and camel, monster) were found on the bishop's estate. More than half of the vessel has survived, which suggests that it was an aquamanile, perhaps, with a tubular spout. Today, on the territory of Russia, we know only a few small fragments from similar vessels (most were found in Novgorod) in the contexts of the second half of the 14th - early 15th centuries. The glaze and ceramic mass of the vessel suggest that it was not an import. Probably, the vessel was made by a Russian craftsman who lived in Novgorod or Tver (the largest centers of Northern Russia). The uniqueness of the finds indicates that very few such vessels were made for no more than 20 years, i.e. they were all masterpieces of one man. The vessels made by him, undoubtedly, had a very high cost, and only the richest people (the aristocrats of the upper stratum) had the opportunity to buy and use such vessels. The Bishop of Kolomna was just such a person. It is interesting that there is not a single religious plot on the vessel - all images are exclusively secular, connected with the life of the aristocracy. The vessel has no connection with the European Renaissance, however, jugs with relief images produced in the 12th-14th centuries in Northern Europe could serve as a model for its creation. It testifies to the perception by Russian masters of the artistic achievements of European colleagues already at such an early time.

## 4 THE SOUTHERNMOST EXCEPTIONAL ARCHAEOLOGICAL DISCOVERY FROM THE HUNGARIAN CONQUEST PERIOD: THE SIGNIFICANCE OF SEVERAL FINDS FROM BAČKA REGION (SERBIA)

**Abstract author(s):** Radišić, Milica (Institute of Archaeology, Belgrade) - Uzelac, Viktorija (City Museum, Sombor)

**Abstract format:** Oral

This paper will present several interesting archaeological finds from the period of the Hungarian Conquest, originating from Stanišić in Bačka – a part of a gilded belt set, a golden hoop and a golden finger-ring set with carnelian gem. These objects were discovered on a necropolis located on a mound, which was damaged in intense ploughing activities during the 1980s. After having been sold to the City Museum in Sombor the findings were kept in a safe, without being presented to a wider scientific public. According to their traits they correspond to the material culture of the Hungarian warrior elite from the first half of the 10th century, and they have close analogies in necropolises from the Upper Tisza valley (e.g. Karos). On the other hand, certain similarities can also be noted with sites from the wider area of Eastern Europe. In this paper, we will analyse the origin, symbolism and artistic and crafting milieu of the items from Stanišić, with a special attention given to the interpretation of the gem with representation of a lion carved into it. According to preliminary analyses, the gem is most similar to Sasanian glyptic specimens, which imposes interesting

questions regarding its use. In this sense, a wider social-historical context and routes of long-distance trade in early Middle Ages will also be taken into consideration.

All the data available suggests the possibility that the findings from Stanišić belonged to a prominent member (members) of the military elite. As the southernmost findings with clear emblematic meaning, they bear witness of the invasion routes of the Hungarian army outside of their primary settling zone in the north of the Carpathian Basin, on which there is little archaeological data for the time being.

## 5 THE ADOPTION OF CHRISTIANITY OF THE HUNGARIAN RURAL POPULATION IN LIGHT OF THE MATERIAL EVIDENCE

**Abstract author(s):** Rácz, Tibor (Ferenczy Museum Centre) - Füredi, Ágnes (Hungarian National Museum)

**Abstract format:** Oral

The foundation of the state in Hungary around the year 1000 assumed the adoption of Christianity, a long and complex process itself. It is difficult to reconstruct the main features of the spiritual life of the rural population, as contemporary written sources inform on the history of the elite and the ruling dynasty. Archaeology however has the means to research the material traces of the adoption and practice of the new religion. The emergence of the political and social systems of the Christian state can be understood only in a wide perspective, including the archaeological material of the 10th-century population.

Research focusing on the development of Christianity is a fashionable topic these days; however, it resulted primarily in theoretical foundations and overviews. The elaboration of details and the evaluation of regional archaeological material can bring us closer to the way of thinking of the masses. The present paper focuses on the central part of Medieval Hungary, today's Pest County in the 10-12th centuries, comparing different layers of information on a series of maps.

From the period before the conversion to Christianity, burial customs and grave goods indicate the spiritual life of the population. The cognitive antecedents of the use of amulet-like or superstitious objects in the popular belief that are clearly identifiable in the post-11th century Christian period must be related to the concepts of the "pagan" ancestors, as the population was clearly continuous in the 10-11th centuries. The spread of non-Christian amulets and Christian liturgical objects (primarily discovered by intensive metal detecting surveys) will be contextualized in the network of early settlements, row and field cemeteries, as well as church sites. Statistical and network analysis may help to clarify the details of this long and contradictory process of transmittance and adoption.

## 6 PORPHYRY OBJECTS, EARLY CHRISTIAN BURIALS IN BORGUND, AND THE IMPLEMENTATION OF CHRISTIAN PRACTICE IN NORWAY

**Abstract author(s):** Hansen, Gitte (University Museum of Bergen, University of Bergen) - Laugerud, Henning (Department of Linguistic, Literary and Aesthetic Studies, University of Bergen) - Jansen, Øystein (Dep of Natural history, University Museum of Bergen, University of Bergen) - Lørvik, Katharina (NIKU, Norwegian Institute for Cultural Heritage Research)

**Abstract format:** Oral

During excavations in Borgund in the 1960's an early 11th century Christian burial ground was found and more than 300 graves uncovered. An early 11th century Norwegian Christian graveyard is a rather unique find since at this time Christianity was barely established yet in this country. Borgund is a deserted 10th-16th century town in western Norway and according to written sources there were three or four churches there during the Middle Ages. The ruins of two or three 12th c. stone churches are known archaeologically in addition to a fourth which is incorporated in the still standing parish church. No church ruin has been identified in the vicinity of the 300 graves. During excavations in the 1960's the burial ground puzzled the archaeologists, was this an early Christian burial ground without a church or what? In the cross disciplinary Borgund Kaupang Project (2019-2025) legacy data from decades of excavations in Borgund is re-assessed and studied. Among 18th century pottery a stone-fragment classified during the 1960s' as a 'possible stove tile' was recently found. The fragment is a piece of an object of green porphyry. This stone type is in current research associated with sepulchral stones. It is furthermore seen in travelling altars 'altare portable', which have survived in European collections of medieval church art. The paper discusses the significance of the porphyry fragment from Borgund as an object, which may reflect the introduction - and implementation - of Christian practice in Norway.

## 7 LITERACY IN MEDIEVAL RUS' TOWNS: EVIDENCE FROM SUZDAL'

**Abstract author(s):** Fedorina, Anastasia (-)

**Abstract format:** Oral

Conceptions of level of literacy of the medieval population largely depend on the source base. As for Rus', before the discovery of numerous birch bark documents in Novgorod, the narrative culture in between the 11th century and

the first half of the 13th century had been believed to be sporadic and infrequent. There is no doubt now that literate people in Novgorod were quite common. Paradoxically, this notion is rarely extrapolated to other Russian lands.

The main reason for this is the lack of birch bark manuscripts. For the majority of towns, however, it is explained mostly by the fact that bark is not preserved in their soil. This is especially true for the North-Eastern Rus'.

So, one of the possible ways of research is the analysis of archeological finds dealing with narrative culture like styluses and book buckles. It seems advisable to analyze not only on the quantity of all the finds that belong to the above-mentioned categories but also to take into consideration archeological context of the households these items came from. The spatial analysis of styluses and book buckles from Suzdal excavations would let us assess the literacy of a Russian town population of the 11th-13th centuries. Suzdal seems to be a suitable place for dealing with such issues, because all of its districts were explored equally: periphery of the medieval town is known as well as the central part. So the urban structure, as well as social image of different areas of Suzdal in its prime in the 12th-13th centuries, are quite fully documented.

## 8 TRACING POSTHOLES – A CHANGING SOCIAL LANDSCAPE AND A PUZZLING METAL DETECTOR FIND

**Abstract author(s):** Hakansdotter, Lina - Johansson, Thomas - Aldén Rudd, Petra - Azzopardi, Amanda (Rio Göteborg)

**Abstract format:** Oral

The archaeology around Vårgårda, a small inland town in the southwest of Sweden, was until recently known mostly through monuments visible above ground. Recent road construction work created a need for large-scale archaeological excavations along European highway E20, resulting in a wide variety of settlement material including more than 40 longhouses. Although relatively few artifacts are preserved, a gradually transforming material culture can be traced through a vast amount of settlement structures such as post holes.

Evidently, the Vårgårda area was intensely populated during Roman and Late Iron Age, corresponding to European Early and High Middle Ages. The scale of these settlements have exceeded expectations. Moreover, they are located in a striking landscape position. Vårgårda is situated on a fertile plateau between two rivers, giving it a prime location with access to trading routes with the Swedish West Coast and the emerging centres of political power in Eastern Sweden.

The lack of artifacts have highlighted the method of dating longhouses typologically, based on shape and size. Among the few artifacts found in Vårgårda, however, is a small gilded and enameled object uncovered using a metal detector. Possible interpretations range from Roman seal box to Medieval jewellery, but its origins have yet to be identified. Either way, it serves as an example of how one piece of material culture highlights economic and social change.

While excavation results are still being processed, our work evolves around such questions as: what was the drive behind the development of these settlements? How did the settlements evolve chronologically? Did trading commodities such as iron play a crucial role?

## 9 CONTACTS OF THE OLD PRUSSIANS WITH THE ANCIENT RUS' IN THE EARLY POST-VIKING PERIOD – NEW EXCAVATIONS IN PRIVOL'NOE-1

**Abstract author(s):** Prassolow, Jaroslaw Aleksei (Centre for Baltic and Skandinavian Archaeology - ZBSA; Institute of Archaeology of Russian Academy of Sciences - IA RAN) - Skvortsov, Konstantin (Institute of Archaeology of Russian Academy of Sciences - IA RAN)

**Abstract format:** Oral

The results of a field survey on the territory of a recently discovered medieval unfortified settlement Selišče Privol'noje-1, situated in the vicinity of the northern shore of the modern Kaliningrad (former Sambian) Peninsula, were reported in frames of the EAA 2021 conference. In the fall of the same year, the research was continued and first full-scale archaeological excavations of this monument were performed. An excavation area of 100 qm provided 2021 an unusually high number of individual finds as well as numerous ceramic fragments and settlement stone constructions. New finds perfectly prove and complete the initial preliminary conclusions: they provide evidence of a long-distance trade activity as well as of a presence of a gold- and blacksmithing manufacturing center on the settlement dated so far into the second half of the 11th - 12th centuries. Archaeological material predictably witnesses intensive cultural contacts with the Curonians, whose tribal area laid further to the North-East over the Curonian Bay. Quite unexpectedly in the local context but consistent with the discovery of the first Ancient Russian finds on the monument back in the year 2016 a further lead seal of the Drogičin type, several Ovruč spindle whorls and a fragment of an orthodox cross-pendant with enamel were found in 2021. Thus the in the recent years accumulated observations make it necessary to review traditional ideas on the role and cultural influence of the Ancient Rus' in the Baltic Sea region already in the early post-Viking period. Further planned archaeological field investigations in the northern part of the Kaliningrad Peninsula are intended to provide new insights into this exciting topic of supraregional significance.

## A. THE NON-CERAMIC MATERIAL CULTURE OF THE MEDIEVAL CENTRAL SITE OF PRÁCHEŇ (CZECH REPUBLIC)

**Abstract author(s):** Pták, Martin (University of South Bohemia; Charles University)

**Abstract format:** Poster

The contribution presents an ongoing project The early medieval hillfort Prácheň near Horažďovice (Czech Republic), which represents an important central place within the Přemyslid castle system in the younger phase of the Early Medieval period. In the High Middle Ages, a castle was built on the acropolis and the sub-settlement was transformed into a High Medieval village. The paper presents the most interesting small non-ceramic finds that were obtained during all research seasons. These are small silver, bronze, iron, lead, bone, and glass artifacts. Recently their number has been significantly expanded due to a detailed sampling and wet sieving of object fillings (e.g. fragments of metal objects, fragments of glass rings, small fish bones, charred plant macro-remains) and also due to a metal detector prospection of the hillfort and its surroundings (e.g. coins, scabbard capes, flat circular-shaped lead objects with a hole, metal ingots). All these findings prove the exceptional position of the site within the South Bohemian area in the Middle Ages. The targeted metal detector research appears to be an effective tool not only for exploring the site but also becomes a necessity in the case of preventive protection of the site from illegal metal detector prospecting.

## B. "EASTER EGGS" OF OLD RUSIAN PERIOD FROM THE TERRITORY OF BELARUS

**Abstract author(s):** Makouskaya, Viktoryia (Belarusian State University; Belarusian State Museum of Folk Architecture and Rural Lifestyle)

**Abstract format:** Poster

Egg-shape artefacts made of different materials are widespread on the territory of East-Central Europe. The most well-known objects from this category are ceramic glazed eggs with a ceramic ball inside usually named "Easter eggs", "egg-shape rattles" or "pisanki". The distribution area of glazed eggs covers the territory from Scandinavia to the Lower Danubian region and from the West Slavic territories in modern Germany to the Kama river basin, but these items are mainly concentrated in the territories occupied by the Slavs. They are dated back to a second half of the 10–13th centuries, but the peak of their popularity in the Old Rus' was in the second half of 11th century.

Only five glazed ceramic eggs are known from the excavations of Old Rusian towns on the territory of Belarus (Biaros'cie, Hrodna, Navahradak, Lukoml' and Mscislaw). They are dated from the first half of 12th to the first third of 14th centuries. They appear in the region at the same time with their wide spread in the West Slavic territories. We can say that the territory of present-day Belarus had a function of transit regions in the distribution of glazed eggs.

Not only ceramic eggs, but also egg-shape objects made of horn, wood and stone are known from the Old Rusian towns on the territory of Belarus. They are also dated to the 12–13th centuries. From the 13th century finds of "pisanki" become very rare. But we could say that the idea of "Easter egg" continues to exist in subsequent centuries. The finds of egg-shape rattles without ornament from Pskov (13–16th centuries) or an ornamented egg from Polack without glaze (14–15th centuries) could be a confirmation of such assumption.

---

## 320 ARCHAEOLOGIES OF DISPLACEMENT HERITAGE, MEMORY, MATERIALITY

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Munawar, Nour A. (Brown University) - Symonds, James (University of Amsterdam - UvA)

**Format:** Regular session

Displacement and forced migrations were a major feature of the 20th century in many regions of the world and are increasing rather than decreasing in the second decade of the 21st century. Civil wars, conflicts and political unrest have all created movements of refugees and internally displaced people. Other people have fled their homes due to famine, environmental disasters, nuclear or chemical disasters, or major development projects, such as dam building. Currently, the seemingly endless cycle of violence and conflicts in the Middle East has served to create a humanitarian catastrophe. More than 10 million people have left their homes and have been internally displaced or sought refuge in neighbouring countries. Others have made their way through the Mediterranean to reach Northern Europe, stirring up political tensions and debates about the rights of migrants and refugees.

Many displaced refugees and migrants seek to safeguard their cultural identities by attempting to maintain contact with their homeland. This can lead to the creation of 're-invented ethnicities' where nostalgic memories of a homeland are added to and embellished in a place of sanctuary. In some cases, the assertion of alien identities can lead to ethnic tensions and hinder integration into new communities. It can also lead to distrust and the segregation or ghettoization of incoming migrants and refugees.

This session aims to understand how and why the voices of displaced people are so often forgotten in the narratives of globalisation. We will focus on how the trauma of forced migration creates interconnections between material objects, memories, oral histories and people and explore the potential for creating sustainable archaeologies of dis-

placement. Finally, we will examine how the authentic voices and testimonies of refugees can be used to revive the forgotten and unexplored narratives of global displacement.

## ABSTRACTS

### 1 GERMANS ON THE RUN. ON GERMAN DISPLACEMENT DURING WORLD WAR II AND ITS AFTERMATH

**Abstract author(s):** de Vos, Julie (Museum Skanderborg)

**Abstract format:** Oral

When World War II was lacking to its end, and in its immediate aftermath, hundreds of thousands of Germans were displaced from their homes in the North-eastern part of Germany as a consequence of the Soviet offensive since the autumn of 1944. About 250.000 German refugees crossed the Baltic Sea and ended their traumatic journeys in Denmark.

After passing by temporary internment at seized schools and other public buildings, the refugees were interned at a variety of camps all around Denmark until the last ones left Denmark in 1949. Many of these camps were infrastructures left by the German soldiers who left Denmark during the month of May 1945, while other bigger camps were habilitated for the purpose in a later moment.

In this paper, I will present the preliminary ideas and field work results of my recently commenced post-doc project DIS/PLACE based on archaeological fieldwork that will be done in the refugee camp in Dyrehaven (Skanderborg, Denmark), where Luftwaffe had had their headquarters during the last year of the war, in April and May 2022. The German refugees in post-war Denmark have mainly been ignored and thereby forgotten. The main objective at the time was to prevent any contact between the local population and the refugees, impeding any attempt of integration. The camps served as a waiting room to be sent back to Germany. Their memory was deliberately erased together with their material traces and this project seeks to reinstall their memory, not as "evil Nazis", but as what they were: human beings.

### 2 ENVISIONING MIGRATION FLOWS IN THE LANDSCAPE: MATERIAL CULTURE AND ORAL TESTIMONIES FROM THE MIGRANT HOLDING FACILITY "REGINA PACIS" SOUTHEASTERN, ITALY

**Abstract author(s):** Farina, Emma - Iacono, Francesco (Dipartimento di Storia Cultura e Civiltà, University of Bologna)

**Abstract format:** Oral

In the early 1990s, as a consequence of the fall of the eastern bloc, the Italian region of Apulia has experienced the arrival of immigrants on its coasts. Thousands of migrants crossed the Adriatic Sea to reach Italy in the first mass migration phenomenon experienced in western Europe in decades. While the first waves of migrations were handled almost autonomously by the local communities, from the end of the decade to the early 2000s the State and the Catholic Church managed the emergency. In this climate, the "Regina Pacis" temporary holding facility was inaugurated in 1998 in San Foca (Lecce), one of the earliest examples and the largest of its kind.

Located in a former holiday camp for children, it hosted migrants from Eastern Europe and Northern Africa and functioned also as expulsion centre. The facility was closed in 2005 due to accusations of abuse, and corruption pressed against the management. The centre deeply affected the community: it led to a quasi-militarization of the area and a radical protest movement objecting to the treatment of migrants. For the past ten years, a private firm has tried to turn the former facility into a luxury resort: yet the building still lies abandoned and dominates the surrounding landscape due to its considerable size and position. On the other hand, the people who passed through the centre mostly moved to another area of Italy or the EU.

This research aims at investigating the migrant experience through the landscape and spatialities of the centre: how space was used to detain/subjugate the immigrants and how, in return, they adapted and reshaped it through resistance and material culture strategies. Finally, we will seek to assess the impact on the local communities while tracing the political and sociological shift concerning the migration emergency.

### 3 "EVERYTHING WAS LOST, BUT GIMMICKS REMAINED" MEMORIES AND LIVELIHOOD OF KARELIAN INTERNALLY DISPLACED PEOPLE AFTER WW II

**Abstract author(s):** Kauhanen, Riku (University of Turku)

**Abstract format:** Oral

This paper discusses the material culture of Finnish Karelian internally displaced people (IDP), especially those who were fishermen in parishes of Koivisto and Säkijärvi. Karelian Isthmus was the center of Finnish fishing industry, with over thousand fishing families and many more families to which fishing provided supplementary income. For several reasons after the war resettlementing of these evacuated families was especially difficult.

Representation has two focuses. First, I will discuss the memory of lost homes as seen and processed through material remains, such as old and recent mementos like nails or locks from homesteads, maps, and photos. During the research project "Effects of Swedish speaking minority, law and local circumstances on resettling Finnish speaking internally displaced persons in Finland after WWII Project" large amounts of data was gathered with interviews, archival research and going through contemporary magazines. Several clear ways of remembering the lost Karelia were recurrent, and in homes of the IDPs mementoes signifying identity as Karelians are highlighted.

Second, I will take a look at the subsistence of evacuated Karelians, which is a neglected subject in studies of accommodation of displaced people. Many Karelians managed to take their agricultural tools and fishing equipment with them, and this played an important part in their resettlement after the war. This material point of views is often forgotten when rather discrimination and political turmoil is highlighted. However, material reality and it's limitations rather than attitudes explain stories of many Karelian families. This also brings forth IDP's as subjects with a voice of their own rather than as objects of official procedures.

These two fields are not separated, but together they explain the history, accommodation and the interpretation of identity of these Karelian people.

---

## 321 HUMAN RESILIENCE DURING EURASIAN PALEOLITHIC AND MESOLITHIC FROM A BIOARCHAEOLOGICAL PERSPECTIVE [PAM]

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** MARIN-ARROYO, ANA (EvoAdapta Group. University of Cantabria) - Cristiani, Emmanuela (DANTE Group - Sapienza University of Rome)

**Format:** Regular session

Understanding how climate change affected past environments and resource availability are vital for disentangling how ancient human populations adapted biologically and technologically. It is well-known that local and regional climatic and environmental changes affected the development of fundamental biological, cultural, and economic human behaviours between the Late Pleistocene and the Early Holocene. These periods are marked by critical transitions, such as the Middle to Upper Paleolithic, which documents the encounters of different human species and their specific technological adaptations, while the transition from the Upper Paleolithic to the Mesolithic attests to human resilience to postglacial changes.

In this session, the most recent advances in bioarchaeological science will be presented and discussed in relation to how they can obtain broader and higher-resolution data about past subsistence strategies, mobility, technological uses and applications, and local and regional climatic and ecological conditions. We welcome interdisciplinary contributions which combine vertebrate archaeozoology to technological and use-wear studies of material culture, the application of stable isotopes, dental macro/microwear and dental calculus analysis, proteomic and ancient DNA studies on humans and animal archaeological remains. We aim to promote discussions regarding the resilience of Neanderthal and Homo sapiens in different Eurasian climatic phases and ecological contexts throughout the Paleolithic and Mesolithic.

## ABSTRACTS

### 1 MODELLING ENVIRONMENTS AND CLIMATIC CONDITIONS DURING THE MIDDLE TO UPPER PALEOLITHIC TRANSITION IN NORTHERN IBERIA

**Abstract author(s):** Fernández García, Mónica - Vidal-Cordasco, Marco (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Jones, Jennifer R. (School of Natural Sciences, University of Lancashire; Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Marín-Arroyo, Ana B. (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria)

**Abstract format:** Oral

Climate and environmental changes have been commonly proposed as possible driver factors for the disappearance of Neanderthals in Europe. The Cantabrian Region, in northern Iberia, offers a natural access route from the Pyrenees, where abundant late Middle and Early Upper Palaeolithic sites containing rich archaeological sequences are preserved. This is a key area for understanding the replacement of Neanderthals by Anatomically Modern Humans. To evaluate how climate during late Marine Isotope Stage 3 might have influenced human behaviour, an accurate palaeoecological characterisation is required. This work offers a synthetic and complete review of the regional environmental trends observed during this period based on the available terrestrial proxies link to archaeo-paleontological sites, mainly considering pollen sequences, charcoal data and small vertebrate assemblages. Some relevant records from macrofaunal assemblages and stable isotope studies are also considered.



In our analysis, pollen and small vertebrate sequences are transformed into quantitative climatic data (temperature and precipitation), to standardise the information and allow inter-sites comparison. Results show highly variable climatic shifts between archaeological levels, which is consistent with the marine and ice records climatic fluctuations during MIS3. A mosaic landscape of open meadows and forested areas predominate in the Cantabrian region throughout the study period. Some records indicate a progressive trend towards greater aridity during the Middle to Early Upper Paleolithic transition, reflected by changes in vegetation, faunal composition, and existing stable isotope evidence from hunted ungulate remains accumulated by Neanderthals and Modern Humans in the region. Our review indicates that there is a fragmentary environmental record for the region during this key period for human evolution, restricting our knowledge about the effect of climate on human adaptations and survival. Further research, by acquiring high-resolution palaeoenvironmental and paleoclimatic data, is needed and here we present our ongoing research methods to overcome these limitations.

## 2 FLUCTUATIONS OF TROPHIC RESOURCES DURING THE MIDDLE TO UPPER PALAEOLITHIC IN IBERIA

**Abstract author(s):** Vidal Cordasco, Marco (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Ocio, David (Mott MacDonald Ltd) - Marín-Arroyo, Ana (EvoAdapta I+D+I Group, Dpto. Ciencias Históricas, Universidad de Cantabria)

**Abstract format:** Oral

Abrupt climatic changes were common during the Marine Isotope Stage (MIS) 3. However, to what extent these climatic fluctuations affected the productivity of the ecosystems remained largely unexplored hitherto. In this study, we quantified the effects of the stadial and interstadial conditions in the productivity of the ecosystems in Iberia and analysed its association with the spatiotemporal replacement patterns of the Mousterian by the Aurignacian. First, we built Bayesian age models to reconstruct the timing of the Middle to Upper Paleolithic transition; second, we used a generalized dynamic vegetation model to estimate the Net Primary Productivity and, third, we developed a macroecological model to estimate herbivore abundance. Results obtained indicate that in Northern and hinterland areas of Iberia the end of the Mousterian was coeval with a significant drop in the available biomass for secondary consumers. However, the Mediterranean region had more stable conditions and, during the cold stadial moments, a higher biomass of medium and medium-large herbivores. Accordingly, we propose an ecological driver for the hiatus between the Mousterian and Aurignacian in Northern Iberia, and the longer persistence of Neanderthals in southern latitudes.

## 3 THE EARLY UPPER PALEOLITHIC OCCUPATIONS AT LA GARMA A (NORTHERN IBERIA): PRELIMINARY RESULTS OF THEIR SUBSISTENCE STRATEGIES

**Abstract author(s):** Sanz Royo, Alicia - Marín-Arroyo, Ana (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Arias Cabal, Pablo (Instituto Internacional de Investigaciones Prehistóricas de Cantabria – IIIPC - Universidad de Cantabria, Santander, Gobierno de Cantabria) - Agudo Pérez, Lucía (Grupo de I+D+i EVOADAPTA, Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Ontañón, Roberto (Museo de Prehistoria y Arqueología de Cantabria; Instituto Internacional de Investigaciones Prehistóricas de Cantabria – IIIPC - Universidad de Cantabria, Santander, Gobierno de Cantabria)

**Abstract format:** Oral

Investigating the early Upper Paleolithic groups that occupied Northern Iberia is crucial for a better understanding of the dispersion process and adaptations that Anatomically Modern Humans (AMH) carried out in a region where Neanderthal populations had disappeared only a few millennia earlier.

La Garma (Cantabria, Spain) is a karstic complex divided into several passages with a long sequence of human occupations, from the Lower Paleolithic to the Medieval Period, where a relevant paleolithic rock and portable art have been documented. One of these passages, called La Garma A, contains Proto/Early-Aurignacian dated levels with abundant faunal remains.

In this work, we present the preliminary results of the archeozoological and taphonomical analyses of these early Upper Paleolithic layers.

The faunal assemblage is characterized by the predominance of prime age ungulates, where complete body skeletal elements are represented, being *Cervus elaphus* the most abundant species, followed by *Bos/Bison* and *Equus ferus*. Carnivores and their activity, although very scarce, are also present.

Human activity at the cave is proved by different anthropic modifications on the bone assemblage, such as butchering marks, percussion marks, impact points, fresh fractures, some retouchers and bone tools, and termoalterations.

This work provide new insights about the subsistence strategies and human behaviour of the Proto/Early-Aurignacian groups in the region, which will allow a better understanding of the dispersion and adaptations of the first AMH populations in Northern Iberia.

#### 4 **LATE NEANDERTHAL SUBSISTENCE AND PALEOECOLOGY STRATEGIES AT SAN BERNARDINO CAVE (NE ITALY) DURING MIS 3**

**Abstract author(s):** Terlato, Gabriele (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria; Università degli Studi di Ferrara, Dipartimento degli Studi Umanistici, Sezione di Scienze Preistoriche e Antropologiche) - Marín-Arroyo, Ana - Fernandez Garcia, Monica (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Jones, Jennifer (University of Central Lancashire, School of Natural Sciences; Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Peresani, Marco (Università degli Studi di Ferrara, Dipartimento degli Studi Umanistici, Sezione di Scienze Preistoriche e Antropologiche)

**Abstract format:** Oral

San Bernardino cave, located in the northeastern region of Italy, is a key archaeological site for studying Neanderthal behaviour. The site preserves a discontinuous sedimentary sequence, spanning from Marine Isotope Stage (MIS) 7 to 3, and is culturally represented by the Mousterian technologies in all the stratigraphic units. Here we present the data about the paleoeconomic behaviour undertaken by Neanderthal and the paleoenvironmental setting they faced, through the study of Unit II faunal assemblage, recently dated to the first half of MIS 3. Macrofaunal remains were analysed from an interdisciplinary perspective: taphonomy, archaeozoology and stable isotope analysis in bone collagen. The results indicate that Neanderthal groups were the primary mammal accumulator, mainly focused on red deer and roe deer hunting, whereas the procurement of large ungulates and chamois was sporadic. Neanderthal groups adopted a notable degree of energetic efficiency in carcasses processing, with a selective prey transport – even for roe deer – which might have implied a long-distance transportation from the hunting site to the cave. Seasonality data indicates summer and autumn human occupations. The excellent preservation of bone collagen allowed us to measure carbon and nitrogen isotope ratios in herbivores and carnivores. The isotopic data indicate that, during the first half of MIS3, the Neanderthal groups at San Bernardino lived in a mosaic-like landscape where they exploited different ecological niches.

#### 5 **FAUNAL EXPLOITATION AT RIPARO MEZZENA (VERONA, ITALY)**

**Abstract author(s):** Thun Hohenstein, Ursula (University of Ferrara)

**Abstract format:** Oral

This study aims to investigate the role played by the ecological settings and the economical sources management during the crucial OIS 3 stage in the Lessini Mountains in order to investigate Neanderthals behavioural choices. The analysis of the faunal remains coming from Riparo Mezzena (Verona, North-eastern Italy). Palaeontological and archaeozoological analysis have been carried out revealing a great uniformity of composition in the faunal assemblage from the whole stratigraphic sequence of Riparo Mezzena: cold environment taxa are rare opposite to red deer and roe deer which are dominant. An analysis of the bone surface has been carried out in order to identify the different taphonomical agents that have altered the assemblage. The specimens were affected by different post-depositional factors but some modifications of anthropic origin have been recognized too. Particularly the taphonomical analysis shows an intensive anthropic activity mostly in layer III which is especially testified by the increased number of cutmarks, notches, bone retouchers and burned remains. Carnivore specimens are few and gnawing marks are absent in all the layers as a possible consequence of the intense anthropic occupation of the site. Furthermore, no cutmarks on carnivore bones have been identified.

## HOW TO ASSESS HUMAN RESILIENCE THROUGH THE PALEOLITHIC DIET

**Abstract author(s):** Marin-Arroyo, Ana - Terlato, Gabriele (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Vettese, Delphine (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria; Università degli Studi di Ferrara, Dipartimento degli Studi Umanistici, Sezione di Scienze Preistoriche e Antropologiche) - Fernández-García, Monica (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Jones, Jennifer (University of Central Lancashire, School of Natural Sciences; Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Vidal-Cordasco, Marco (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Peresani, Marco (Università degli Studi di Ferrara, Dipartimento degli Studi Umanistici, Sezione di Scienze Preistoriche e Antropologiche)

**Abstract format:** Oral

During the Paleolithic, human resilience could be defined as the ability to overcome distressful episodes that might have caused a reduction in the resources within the ecological niches to be exploited and, therefore, affecting human subsistence. If we focus on the ungulate exploitation during the different stadial and interstadials along the Upper Pleistocene is not an easy task to evaluate quantitatively how those episodes affected the animal populations and then, the hunting decisions and human diet. Here, we propose several measurable indices be applied in the archaeofaunal assemblages that permit evaluating stressful nutritional episodes suffered by human groups. Hunting pressure could be noticeable on the high presence of energetically-low prey types, a higher ratio of juveniles vs adults, more intense carcass processing, animals selected from further catchment areas from the central place or a prey competition with carnivores. Whether resource intensification might have an active engagement with the climate and environment changes, with demographic pressure or other socio-cultural factors are factors that must be considered and analysed particularly in each studied region. Here, we apply these theoretical indices to the animal diet carried out by Neanderthals and AMH in Fumane cave (Italy) and compare them with the environmental conditions they had to face.

## NEANDERTHAL ECOLOGY AT LAPA DO PICAREIRO: A STABLE ISOTOPE STUDY OF UNGULATE TOOTH ENAMEL

**Abstract author(s):** Carvalho, Milena (University of New Mexico; Interdisciplinary Center for Archaeology and Evolution of Human Behaviour - ICArEHB, Universidade do Algarve) - Jones, Emily (University of New Mexico) - Ellis, M. Grace (Colorado State University; Interdisciplinary Center for Archaeology and Evolution of Human Behaviour - ICArEHB, Universidade do Algarve) - Cascalheira, João - Bicho, Nuno (Interdisciplinary Center for Archaeology and Evolution of Human Behaviour - ICArEHB, Universidade do Algarve) - Benedetti, Michael (University of North Carolina Wilmington; Interdisciplinary Center for Archaeology and Evolution of Human Behaviour - ICArEHB, Universidade do Algarve) - Friedl, Lukas (University of West Bohemia; Interdisciplinary Center for Archaeology and Evolution of Human Behaviour - ICArEHB, Universidade do Algarve) - Haws, Jonathan (University of Louisville; Interdisciplinary Center for Archaeology and Evolution of Human Behaviour - ICArEHB, Universidade do Algarve)

**Abstract format:** Oral

Neanderthals adapted to a series of environmental changes during the Late Pleistocene and may have sought refugia in the southern reaches of Europe in response to environmental degradation. Heinrich events, especially H5 and H4, however, may have created harsh climatic conditions that may have reduced Neanderthal populations below survival thresholds. Thus, reconstructions of paleoenvironmental conditions to which Neanderthals were subjected are key to understanding human resilience and whether Neanderthals periodically sought refuge in Iberia. This paper presents additional data from an ongoing paleoenvironmental study using stable isotopes analysis of carbon and oxygen of red deer and ibex tooth enamel from Mousterian levels from Lapa do Picareiro (Portuguese Estremadura). These data are then compared to previous isotopic data recovered from ungulate tissues as well as other paleoclimate indicators from Picareiro to assess whether central Portugal acted as a refugia during periods of unfavorable climates and to assess the severity of Heinrich events in westernmost Iberia.

## 8 LATE PLEISTOCENE SUBSISTENCE STRATEGIES AT ABRI KONTIJA 002 SITE (ISTRIA, CROATIA)

**Abstract author(s):** Radović, Sinisa (Institute for Quaternary Palaeontology and Geology, Croatian Academy of Sciences and Arts, Zagreb) - Janković, Ivor (Institute for Anthropological Research, Centre for Applied Bioanthropology, Zagreb) - Marín-Arroyo, Ana B. (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria)

**Abstract format:** Oral

Abri Kontija 002 is a small rockshelter, located on the north side of Lim Channel in Istria, Croatia. It was initially recognized as an Upper Palaeolithic site in 2007, but the systematic excavations were conducted between 2014 and 2021. The site yielded numerous vertebrate remains associated with the Upper Palaeolithic lithic assemblage and other finds (e.g traces of burning, ochre etc.). Here we present the results of zooarchaeological study of the mammalian remains in relation to their chronostratigraphic position within the deposits of the site. The most abundant throughout the sequence are the remains of wild horses, followed by cervids (mostly red deer), and large bovids. Other taxa, including carnivores and small size mammals are also present. Detailed taphonomic analysis suggests that humans were the primary accumulators of the assemblage, which is in agreement with rare modifications resulting from carnivore activity. Certain changes in the relative frequency of medium to large herbivores probably correspond to palaeoecological conditions. The field work at Abri Kontija and analysis of the material is supported by the Croatian Science Foundation grant (IP-2019-04-7821 – PREHISTRIA) and comparative work has been done within the scope of the ERC grant 818299 (SUBSILIENCE).

## 9 THE ROLE OF MARINE RESOURCES DURING THE LAST GLACIAL MAXIMUM IN N IBERIA: RECONSTRUCTING THE SEASONAL SHELLFISH COLLECTION PATTERNS

**Abstract author(s):** García-Escárcaga, Asier (Department of Human Sciences, University of La Rioja; Department of Archaeology, Max Planck Institute for the Science of Human History, Jena) - Arniz-Mateos, Rosa - Suárez-Revilla, Roberto - Gutiérrez-Zugasti, Igor (Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria, Gobierno de Cantabria, Grupo Santander) - Duarte, Elsa - de la Rasilla, Marco (Department of History, University of Oviedo)

**Abstract format:** Oral

Variations in past climate conditions had very important implications for human behaviour, as well as for the subsistence strategies developed by human groups. Previous studies have revealed that N Iberian Peninsula acted as a refugia area during the Last Glacial Maximum (LGM), thus highlighting that this coastal location is a key place for understanding the impact of this harsh environmental condition over the modus vivendi of forager groups. Colder conditions during this time provoked changes in economic hunting strategies and mobility patterns along this coastal platform. Despite marine resources were continuously consumed by Upper Palaeolithic groups, information on the relevance of this food supply for human subsistence strategies during the LGM is still very scarce. To better understand the role played by littoral resources during this time is crucial to decipher if marine molluscs were intensively exploited during this cold climate period. To achieve this objective, stable oxygen isotope analyses on shells recovered from an archaeological site located in N Iberia and dated to the Solutrean period have been applied. Stable oxygen isotope ratios can act as powerful recorders of the seasonal seawater temperature variations experienced by a mollusc in the past, enabling us to accurately establish the period of the year when it died/was collected by humans. Here, stable oxygen isotope analyses on *Patella vulgata* (Linnaeus, 1758) limpets from the cave of Llonín (Asturias, Spain) were carried out to determine if this species was collected year-round, which would suggest a pattern of certain intensity in the collection of molluscs. Additionally, isotope data was used to reconstruct climate conditions during the LGM with an inedited seasonal resolution.

## 10 USE OF PEPTIDE MASS FINGERPRINTING TO ASSESS HUMAN SUBSISTENCE BEHAVIOUR AT LA VIÑA ROCK SHELTER DURING MIS 2

**Abstract author(s):** Torres-Iglesias, Leire (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Marín-Arroyo, Ana B. (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - Welker, Frido (Section for Ecology and Evolution, Globe Institute, University of Copenhagen) - de la Rasilla, Marco (Área de Prehistoria, Departamento de Historia, Facultad de Filosofía y Letras, Universidad de Oviedo)

**Abstract format:** Oral

Palaeolithic faunal assemblages are generally highly fragmented due to different taphonomic processes, including human activities. This bone fragmentation prevents an accurate taxonomic identification following morphological criteria. Zooarchaeology has solved this issue by attributing non-identifiable bone remains to a series of mammal size classes according to mainly bone cortical thickness. However, a vast amount of valuable data to interpret palaeo-economic behaviour is still lost. ZooMS is a proteomics method for taxonomic identification, based on collagen peptide

mass fingerprinting, and it is being increasingly used to provide information on a wide range of aspects of past societies: human evolution, paleoecology and animal-human interaction and artefact manufacture, among others.

In this study, we combine ZooMS and traditional zooarchaeological and taphonomic data to infer the subsistence strategies of the human groups that occupied La Viña rock shelter (northern Iberia) during the Solutrean and the Magdalenian. During both Upper Palaeolithic periods, human societies had to cope with the harsh climatic conditions of the Last Glacial Maximum and Greenland Stadial 2, which might influence their resources exploitation patterns.

The combined results provide information about subsistence strategies and paleoecology. The prey ranking is dominated by cervids, mainly red deer, and complemented with horse, large bovids and caprids. ZooMS results are consistent with the morphological identifications and identify horse as the main species included in the large mammal size, whereas large bovids are a minor component. In terms of paleoecology, ZooMS results also confirm the presence of cold-adapted taxa, such as reindeer and elephantids (likely mammoth).

The combination of this biomolecular method with zooarchaeology is useful to obtain a higher resolution of faunal identification, especially in contexts with high bone fragmentation or with morphologically similar species, and therefore, to increase the information available to infer past human behaviour.

## 11 MIDDLE AND UPPER PALEOLITHIC SETTLEMENT OF THE BALKANS INTERIOR DURING THE COLD PERIODS

**Abstract author(s):** Mihailovic, Dusan (University of Belgrade, Faculty of Philosophy) - Bogićević, Katarina (University of Belgrade - Faculty of Mining and Geology) - Dimitrijević, Vesna - Milošević, Štefan (University of Belgrade - Faculty of Philosophy) - Nenadić, Draženko (University of Belgrade - Faculty of Mining and Geology) - Roksandić, Mirjana (University of Winnipeg)

**Abstract format:** Oral

New dates obtained for the Middle Paleolithic and Upper Paleolithic sites in the Balkans indicate that Neanderthals and modern humans inhabited the central parts of the Balkans intensively only at the end of warm periods. Unlike the peak of interglacials - from which very few sites originate, sites dating to the end of the warm and early cold stages are relatively numerous, primarily the transition period from MIS 5 and MIS 4 and the period immediately before the beginning of the Last Glacial Maximum. Localities dated to the peak of cold phases (MIS 4, MIS 2) are also very rare. All this indicates that the Balkans interior did not represent a Paleolithic refuge at the peak of the glaciations, and that climatic changes had a similar effect on population density both in the Middle and Upper Paleolithic. Consistent with this suggestion are the indications of both Mousterian and Gravettian population movements from Central Europe to the south into the northern and central parts of the Balkans. Here we present sites, dates and environmental information available for the region. We outline the directions for further research.

## 12 EDGE DELINEATION AS A CLUE FOR THE EVOLUTION, ADAPTATION AND SPECIALISATION OF QUINA SCRAPERS IN THE LEVANT AND WESTERN EUROPE

**Abstract author(s):** Zupancich, Andrea (Archaeology of Social Dynamics Institución Milá y Fontanals, Barcelona; DANTE - Diet and ANcient TEchnology Laboratory, Sapienza Università di Roma) - Barkai, Ran - Gopher, Avi (Department of Archaeology and Near Eastern Cultures Tel-Aviv University)

**Abstract format:** Oral

Representing one of the main techno complexes within the European Middle Palaeolithic, Quina stone tool assemblages are dominated by scrapers exhibiting a specific edge retouch made of a succession of scaled and stepped enlevements. Recent research in the Balkan and the Levant leads to a rethinking of the Quina industry as a specific facies of the Mousterian of Western Europe. For example, scrapers exhibiting the same Quina retouch of their Western European counterpart have been unearthed at several Acheulo Yabrudian Levantine sites such as Qesem Cave. From a functional perspective, any significant difference in the primary use of these tools is recorded between Western Europe and the Levant, where Quina scrapers were used in tasks associated with the processing of hide. A major difference instead resides in the morphology of the tools, specifically in the delineation of the scrapers' active edge. Straight edges characterise Levantine Quina scrapers while their Western European counterparts show instead convex delineations. In this contribution, we argue that such differences in edge delineation can differences role played by Quina scrapers in the Levant and Europe. An integrated techno-functional study, combining use wear and techno-morpho functional analyses, of Quina scrapers coming from Qesem Cave, Roc de Marsal and Cueva de El Esquilleu, suggest that the role of Quina scrapers might have changed between the Acheulo Yabrudian and the Middle Palaeolithic - from multipurpose to specialised, task-specific tools. We show how techno-functional results, together with other strands of evidence from the studied contexts, allow us to trace the possible "evolution" of a specific kind of tool (i.e., Quina scrapers) and how a successful technology could adapt different needs, behaviours and environments.

## ON TEETH, STONES, AND PLANTS. EVIDENCE OF PLANT FOOD CONSUMPTION AMONG PALAEOOLITHIC AND MESOLITHIC FORAGERS OF ITALY AND THE BALKANS

**Abstract author(s):** Cristiani, Emanuela (Depart. of Odontostomatology and Maxillo-Facial Sciences; DANTE-Diet and Ancient Technology Laboratory, Sapienza University of Rome) - Zupancich, Andrea (DANTE-Diet and Ancient Technology Laboratory, Sapienza University of Rome; Institución Milá y Fontanals, Barcelona, Consejo Superior de Investigaciones Científicas - IMF-CSIC) - Carra, Marialetizia (DANTE-Diet and Ancient Technology Laboratory, Sapienza University of Rome) - Borić, Dušan (Department of Environmental Biology, Sapienza University of Rome; New York University)

**Abstract format:** Oral

Until recently, the significance of green foods in the diet of Late Pleistocene and Early Holocene foragers of southern Europe has remained elusive due to the poor preservation of macro-botanical remains. At the same time, the role of animal proteins in the diet of prehistoric foragers in this region is well understood based on the analysis of stable isotopes in human bones and zooarchaeological investigations. The study reported here presents complementary lines of evidence for the consumption of plant foods during the Palaeolithic and Mesolithic in Italy and the Balkans in order to contribute to the old debate about prehistoric foragers' reliance on plant species before the arrival of agriculture in these regions. We combine technological, use-wear, and residue studies of material culture and the analysis of human dental calculus. Plant micro-structures, such as starch granules and phytoliths, were recovered in dental calculus and stone tools in a sample of Upper Palaeolithic and Mesolithic sites in Italy and the Balkans. So far, these micro remains constitute the most reliable line of evidence to unveil the use of plants in ancient foragers' diets. Specific use-wear traces were also identified on stone artifacts, suggesting the existence of a particular technology for plant processing in these regions during the Palaeolithic and Mesolithic. Overall, our results challenge a deeply rooted idea of the "palaeo" diet primarily based on protein intake. Our data are further supported by the recovery of macro-botanical remains and specific dental macro/microwear on human teeth from the same sites.

## DIETARY RECONSTRUCTION FOR NEANDERTALS AND UPPER PALEOLITHIC MODERN HUMANS: A REVIEW FROM OCCLUSAL MOLAR MICROWEAR TEXTURE ANALYSIS

**Abstract author(s):** Estalrich, Almudena (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria; Department of Anthropology. University of Arkansas)

**Abstract format:** Oral

Diet has been recognized as one of the main factors that determine the behavioral and ecological differences among primates, which means that diet influences group size and composition, habitat range, activity patterns, and so on. One of the proxies that have been proved to be a valuable technique for inferring the diet and behavior of fossil and extant taxa is Occlusal microwear texture analysis. Microwear texture analysis is an automated and repeatable approach to the study of dental microwear in 3D, using white-light confocal profilometry and scale-sensitive fractal analysis. Besides, this technique has demonstrated its potential as a tool to differentiate inter-individual dietary variations, and not just in fossil humans.

Five variables are generated: complexity (Asfc), scale of maximum complexity (Smc), anisotropy (epLsar), textural fill volume (Tfv), and heterogeneity (HAsfc), measuring changes in surface roughness at different scales, degree of directionality in surface roughness at a fine scale, or variability of complexity across the surface, among others.

The variables obtained distinguish between Neandertals from cold open-steppe environments, who had a diet that consisted almost exclusively of meat, and those from wooded and mixed environments, who had a diet that, in addition to animal meat, also included an important plant component. Regarding the Upper Paleolithic modern humans, the variables reveal no environmentally driven dietary changes but culturally related ones. The diets for individuals from Aurignacian and Gravettian contexts had a more uniform diet, whereas the Magdalenian individuals had a more varied and abrasive diet, maybe due to different use of food preparation techniques.

## MIGRATION, DIET AND HEALTH OF THE FIRST PERMANENT SETTLERS OF BELGIUM FROM A BIOARCHAEOLOGICAL PERSPECTIVE

**Abstract author(s):** Halbrucker, Éva - Dhaenens, Maarten - Boeckx, Pascal - Costa Rodríguez, Marta (Ghent University) - Vandersloot, Pierre (Agence Wallone du Patrimoine) - De Groote, Isabelle - Crombé, Philippe (Ghent University)

**Abstract format:** Oral

Our new project aims to generate regional-scale insights into the lifeways of the first modern humans to settle permanently in Belgium during the Final Palaeolithic and Mesolithic. It achieves this through multi- and inter-disciplinary analysis of contextualised data from archaeological, palaeontological, and anthropological assemblages whilst developing state-of-the-art analytical techniques in the fields of proteomics and stable isotope analysis. We will present how we combine the complex analysis of different archaeological find types, such as human and animal bones, and

lithic tools in order to understand the life and death of the Mesolithic communities from the Meuse valley. Emphasis will be on the lithic tools and techniques involved in their analysis, such as traditional use-wear and residues analysis, palaeoproteomics, and aDNA. We will present how we connect all find types through the methods that are involved in our project. Preliminary results of experimental and baseline datasets will show our work methodology.

## 16 CARBON AND NITROGEN ISOTOPIC VARIABILITY IN HUMAN DIET AND ITS IMPLICATION FOR EVALUATING RESILIENCE DURING THE HOLOCENE IN NORTHERN IBERIA

**Abstract author(s):** González Rabanal, Borja - Marín-Arroyo, Ana B. (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas. Universidad de Cantabria) - González Morales, Manuel R. (Instituto Internacional de Investigaciones Prehistóricas de Cantabria. Universidad de Cantabria)

**Abstract format:** Oral

Stable isotopes analysis of human remains can provide valuable information about the economic behaviours of pre-historic human groups. Inferring how the human diet evolved is crucial to ascertain how human populations adapted to different climatic and cultural changes. Northern Iberia is a key area for disentangling the economic transformations during the Holocene because it contains a high-resolution funerary record to be used as a framework of human resilience. In the last years, the stable isotope evidence has been highly enriched, enhancing the knowledge about the subsistence strategies of the hunter-gatherer groups and the development of agricultural practices and animal management patterns from farming communities. In this contribution, we debate the evolution of the diet from the Mesolithic to the Bronze Age through the  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  values of human and animal bone collagen. Dietary analysis helps to understand the end of the hunter-gatherer lifestyle and the emergence of social complexity of the first farming societies in Northern Iberia.

## 17 HUMAN DIET AND MOBILITY IN CENTRAL ITALY FROM THE UPPER PALAEOLITHIC TO THE NEOLITHIC: DENTAL REMAINS FROM GROTTA CONTINENZA

**Abstract author(s):** Boric, Dusan (Sapienza University of Rome; New York University) - Cristiani, Emanuela (Sapienza University of Rome) - Price, Doug (University of Wisconsin, Madison) - Nava, Alessia (Kent University) - Bondioli, Luca (Museo delle Civiltà, Roma) - Coppa, Alfredo (Sapienza University of Rome)

**Abstract format:** Oral

Grotta Continenza in the Fucino Basin of central Italy (Abruzzo) represents one of the unique archaeological sequences that has yielded a large collection of human remains from both articulated and disarticulated burials dating to different periods. The cave's largely continuous occupation strata span the late Epigravettian to the Neolithic (c. 15,500–7000 cal BP) and thus document in the setting of the same sequence several major environmental and cultural changes that affected prehistoric human groups—from climatic instabilities at the end of the Pleistocene to the forager-farmer transition. We have applied a suite of methods on this collection's dental remains to obtain information about diet and mobility in a diachronic perspective. Multi-isotope analyses include bulk ratios of  $^{87}\text{Sr}/^{86}\text{Sr}$  as well as  $^{13}\text{C}$  and  $^{18}\text{O}$  on dental enamel to discern mobility patterns in relation to the local baseline of the region, established on the basis of analyzed archaeological and modern animal and plant remains.  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  measurements on human bones from the same individuals analyzed for strontium isotopes are also obtained as indicators of dietary preferences and their changes over time. Previously, dental calculus from the available collection of teeth was analyzed for trapped dietary and non-dietary micro-residues while molars and premolars were analyzed for patterns of macro-wear and buccal micro-wear. We also report new AMS radiocarbon dates made directly on a select number of analyzed human remains.

## 18 PLANT-HUMAN INTERACTIONS AMONG LEVANTINE PRE-AGRICULTURAL COMMUNITIES REVEALED THROUGH GROUND STONE TOOLS AND DENTAL CALCULUS ANALYSES

**Abstract author(s):** Zupancich, Andrea (Archaeology of Social Dynamics Institución Milá y Fontanals, Barcelona; DANTE- Diet and Ancient Technology Laboratory, Sapienza Università di Roma) - Cristiani, Emanuela (DANTE- Diet and Ancient Technology Laboratory, Sapienza Università di Roma) - Gopher, Avi (Department of Archaeology and Near Eastern Cultures Tel-Aviv University)

**Abstract format:** Oral

Plants and plant foods have played an invaluable role in the life of prehistoric humans long before the advent of agriculture. In the Levant, several Epipaleolithic and Natufian contexts have yielded a wealth of material culture evidence (e.g., ground stone tools, mortars and pestles) and macro-botanical remains, suggesting an intensification in the use of wild plants during this period amongst these pre-agricultural communities. In this contribution, we discuss the preliminary results of the analyses carried out on human remains and material culture from the site of Eynan in Northern Israel. Specifically, functional analyses, comprising the study of use-wear and residues performed on ground stone tools and pestles, have been combined to the study of plant micro-remains, namely starch granules

and phytolith, entrapped human dental calculus. Integrating these two different yet related strands of evidence, we provide both direct and indirect clues about the consumption of wild plants and the technology used for processing vegetal foods at this site. Furthermore, we integrate archaeological evidence with the information obtained through a dedicated experimental framework to identify functional markers to characterise ground stones used to process wild cereal grains vs legumes. Overall, we stress how integrating the study of ancient material culture, dental calculus, and experimental activity can contribute to the debate about the intensification in the use of plant foods at the end of the Pleistocene in the Near East.

## 19 FORAGER VS. EARLY FARMER LIFEWAYS IN THE BALKANS REVEALED THROUGH TIME-RESOLVED RECORDS IN TEETH

**Abstract author(s):** Boric, Dusan (Sapienza University of Rome; New York University) - Nava, Alessia (Kent University) - Peripoli, Beatrice (University of Padova) - Price, Doug (University of Wisconsin, Madison) - Bondioli, Luca (Museo delle Civiltà, Roma) - Müller, Wolfgang (Goethe University)

**Abstract format:** Oral

Bioarchaeological studies of agricultural transitions have shown how major changes in dietary practices, mobility, and everyday corporeal conduct between forager and farmer groups can be detected in human skeletal remains cross-culturally. The study reported here uses histological analysis applied to a sample of Mesolithic and Neolithic teeth from the central Balkans in order to establish the temporal patterns of enamel growth following the method outlined in Birch and Dean (2014) and Guatelli-Steinberg et al. (2012). We further identify variation of stress prevalence based on accentuated lines (ALs), correlating these to previously established individual chronologies of enamel growth to discern any patterning of incidences of stress during early life in foragers vs. early farmers. We also utilize the same histological sections to obtain time-resolved continuous strontium isotope ( $87\text{Sr}/86\text{Sr}$ ) profiles along the enamel-dentine junction (EDJ) using laser ablation inductively coupled multi-collector mass spectrometry (LA-MC-ICPMS). The strontium isotope signal is then directly correlated to the established chronology of enamel growth, thus serving as a proxy for determining seasonal/annual mobility rates during early life. Finally, these strontium isotope profiles are compared to the existing bulk strontium isotopic data on the same pool of individuals.

---

## 323 MICROHISTORY AND SOCIAL ARCHAEOLOGY IN WESTERN EUROPE

**Theme:** 2. [Re]integration

**Organisers:** Quirós Castillo, Juan Antonio (University of the Basque Country) - Stagno, Anna (University of Genova)

**Format:** Regular session

The aim of this session is to explore how social archaeology can tackle some major societal topics and changes in postclassical times in the light of the microhistory experience. Developed, through different trajectories, by Italian social historians (Ginzburg, Levi, Grendi, Moreno, Poni, etc.), the Annales French School (Le Roy Ladurie), and other scholars (Davies, West, etc), this approach has been able to balance the tension between very detailed analysis and the discussion of relevant scientific issues (state formation, social identities, territorialities, social memories, landscape and agrarian system transformation, relational agencies, social mobility, etc.) considering a long-term and a multiscale approach.

Not only is it a methodological question about representativeness, but also a theoretical and conceptual one. This "historical microanalysis" is grounded on the context of practices, social relationships, and the cultural production of evidence and material culture. As a result, new avenues to explore the deep meanings of places and temporalities have been opened. Besides this, an explicit microhistorical approach empowers archaeology to overcome the classic contraposition between top-down and bottom-up perspectives, événementiel and longue durée processes, and textual and material sources.

There is an interest in papers centered on topics such as social inequality, local societies, collective action, ownerships and commons, possession and jurisdiction, social mobility, environmental resources management and environmental issues, subaltern studies, and other social issues. Although the interest is placed in long-term approaches, a microhistorical approach is very useful for the analysis of postclassical societies (5th-21st centuries).

The final aim is to promote a discussion about the potentiality of historical micro-history within the archaeological research opening new possibilities for dialogues between different disciplines: archaeology, history, social anthropology, geography, historical ecology, and landscape studies.



## 1 DELUSIONS OF GRANDEUR: CONFUSING SIZE WITH DEPTH IN ARCHAEOLOGICAL PRACTICE.

**Abstract author(s):** Ribeiro, Artur (Christian-Albrechts-Universitat)

**Abstract format:** Oral

With the rising popularity of Big Data, modelling, and data mining, all of which have been sustained by increased funding opportunities, archaeologists have slowly turned their attention to notions of scale. This attention is due to the perception that archaeology is operating on two incommensurable scales – the transregional and sometimes even transcontinental scale and the regional, local, site-level scale. Some of the proposals to bridge these two scales rely on microhistory, Annales School, structuration theory, globalization theory. However, I believe there is much confusion when it comes to the topic of and the solutions to bridging scale.

Despite several ongoing discussion on scale, the true issue is methodological. Underlying large-scale research in archaeology are quantitative methods that are more commonly applied in Economics and Human Geography, whereas the small-scale relies on qualitative methods that are common in Social and Anthropological Theory. In addition to this, there is also the current economic mindset in the western world, where funding tends to be assigned to fast quantitative science, in detriment of slow qualitative research.

This paper will address ongoing work on prehistoric demography, to exemplify that scale is not the issue, and that any attempt at connecting scales, while laudable, is ultimately ignoring deeper-seated issues related to archaeological methodology and funding inequity.

## 2 MICROHISTORY AND HISTORICAL ARCHAEOLOGY. TOWARD A MICRO-HISTORICAL ARCHAEOLOGY?

**Abstract author(s):** Panetta, Alessandro (University of Genoa) - Casimiro, Tânia (Universidade Nova de Lisboa)

**Abstract format:** Oral

Both in the years of its emergence as an autonomous discipline (1970s) and more recently, historical archaeology has often evoked microhistory as an approach with which it shared many aspects. For instance, in its focus on the small things forgotten, James Deetz directly recalled the work of Carlo Ginzburg, while in recent times Charles Orser has approached the microhistorical perspective with the concept of "dig locally, think globally" at the basis of his idea of Historical Archaeology. The crossing of sources, at the basis of the methodology of both, as well as the proximity of some social history themes such as the subaltern classes, and the chronology related to recent centuries are certainly other points of connection.

However, the potential that the lesson of microhistory offers to archaeology has probably not been fully explored. For example, with regard to the methodology of contrasting archaeological and documentary sources, or with regard to the biographical approach, with the possibility of studying the different temporalities of phenomena and reasoning on a history of "places" instead of a history of "sites".

This paper aims to try to reflect on these issues starting from two case studies of the Western Mediterranean, located in Portugal and Italy, and on the possibility of a "Micro-historical archaeology" as a peculiar place for the dialogue between archaeology and history related to the societies of recent centuries.

## 3 THE RISE OF RURAL RENTIERS IN MEDIEVAL NORWAY: APPROACHING A SOCIAL ARCHAEOLOGY OF THE MOST RADICAL SHIFT IN NORWEGIAN HISTORY

**Abstract author(s):** Hill, David (NIKU - Norwegian Institute for Cultural Heritage Research)

**Abstract format:** Oral

From the end of the Viking period Norwegian social structure radically evolved. Chieftain based society with large households and slavery (trelldom) evaporated during a historically short period of time, large post-built structures were replaced by smaller cross-timber buildings suitable for small households. Access to cultivable land came to be regulated by economic rather than social bonds. Previously strong elites weakened, and urban based institutions of the church and crown came to dominate to the economic landscape. Historical documents show that third party ownership of rural production grew by the 13th century to 47%, and that rural producers had become a class of rentiers. Integrating the historical narrative with archaeological data is challenging, but not impossible. Social relationships visible in historical data do not necessarily leave physical traces at a micro level. How can high resolution historical economic data be used with slower, more incomplete archaeological data? - a view from the North.

#### 4 PEASANTS, TRADESMEN AND CAVALRY SOLDERS – ARCHAEOLOGY AND MICROHISTORY OF AN EARLY MODERN FARM

**Abstract author(s):** Heinsonen, Tuuli (University of Helsinki)

**Abstract format:** Oral

In Finland, the written source material concerning early modern rural settlement is quite one sided and tells very little about the everyday life or actions of the peasants and their families. Archaeology offers a great possibility to widen the picture given by the historical sources. Even though the excavated material is often fragmentary, when it is combined in a dialogue with the written sources, it is possible to treat the different fragments as clues, which together can reveal new sides of past social life.

This paper aims to illustrate the possibilities of studying archaeological and historical data together in a manner typical to microhistory by using a farm called Lillas, located in southern Finland, as an example. Using both historical and archaeological data, it is possible to study the history of the farm on a more detailed level than previously. Lillas was a peasant farm, but the inhabitants were also deeply involved in commercial activities during the 16th century, and in the 17th century, they started to equip a cavalry soldier. The farm offers a good example of the varied ways peasants could arrange their livelihoods to enhance their economic and social position. A microhistorical approach to the material concerning Lillas offers a chance to discuss the early modern peasant agency and different identities the peasants could have also on a wider level.

#### 5 MICROHISTORY, LOCAL SOCIETIES AND SOCIAL POWER IN EARLY MEDIEVAL AGE. A BASQUE CASE STUDY

**Abstract author(s):** Quirós Castillo, Juan Antonio (UPV-EHU, Dpto Geografía, Prehistoria y Arqueología)

**Abstract format:** Oral

The goal of this paper is to discuss why people have accepted or tolerated social domination, taxes payments, and political asymmetries in fluid and changeable political contexts. Power is a central concept of social sciences, but historical archaeologists rarely discuss the deep roots of everyday social powers in order to understand practices and customs rather than norms and institutions. Early medieval age is a relevant laboratory to discuss this topic due to the experimental and transformative nature of social power in different scales.

Using a microhistorical and comparison approach, I will discuss social power in different contexts of the Basque country in terms of micropolitics and influence, opposing the concepts of moral and political economies, as well as the Gramsci concept of hegemony. The notion of local societies will be considered as an arena of social competition of different agents where meanings, relationships and entanglement play a role in social life.

#### 6 LOCKS AND THE ACT OF LOCKING WITHIN AN 18TH-CENTURY SWEDISH URBAN TENEMENT

**Abstract author(s):** Qvistrom, Linda (Uppsala University)

**Abstract format:** Oral

Although locks have existed for a long time, the use and practices regarding locks and locking have changed. The actual locking-devices have altered over time, but also what has been locked – whether fixed or portable, chests and drawers or other items of furniture, different types of buildings, or individual doors and rooms.

These changes can be discussed from a number of perspectives. This paper focuses on dwelling-practices and the relations between the people who inhabited or visited the different rooms. What has been locked, in relation to who had access to different spaces in the building? Can locking practices be related to other contemporary changes in dwelling practices?

The discussion is based on a micro-historical study of “Kullzénska gården”, a tenement in Kalmar, south-eastern Sweden, built in the 1770s. A detailed study of the buildings, including spatial analysis, fixtures and fittings, is here combined with written sources, mainly fire insurance documents.

#### 7 ANDRÚAS. MICROHISTORY OF A SPACE FOR COLLECTIVE USE IN THE CANTABRIAN MOUNTAINS

**Abstract author(s):** López, Pablo (University of León) - Carballido González, Elías - Rebollar Flecha, Luis Miguel - Fernández Mier, Margarita (University of Oviedo)

**Abstract format:** Oral

Andrúas is a space for collective use located between 1,000 and 1,500 meters above the sea level on the western side of the Sierra del Aramo. It stands out for being a seasonal grazing area used by the different communities that practice vertical or valley transhumance.

The combined study of textual sources, ethnography and archeology allow us to have an exhaustive knowledge of this small space, from the present management forms to the first occupations of this territory in the 3rd millennium BC.

It is a real archeological palimpsest in which we have documented different occupation moments of the same area, as well as the asymmetric pressure exercised by the communities through different times. From the first prehistoric occupations to the intensification of its use in the High Middle Ages, considering the several attempts to create stable and private settlements at the end of the Middle Ages and the community reactions to maintain their collective rights of use until the present.

Management forms in which the property and rights of use come into tension generating a complex governance system ("facería"), that codifies the local and multifiscal relations through the customary law.

## 8 BETWEEN ARCHAEOLOGY AND HISTORY: THE AMBIGUITY OF THE COMMONS, CASE STUDIES FROM TREBBIA VALLEY (LIGURIAN APENNINES)

**Abstract author(s):** Stagno, Anna Maria (Università di Genova - Laboratory of Environmental Archaeology and History) - Tigrino, Vittorio (Università del Piemonte Orientale) - Beltrametti, Giulia (University of Primorska - Faculty of Humanities)

**Abstract format:** Oral

The hypothesis explored in this paper is that archaeological investigation (in particular of landscape archaeology) can document or ask new questions about the ownership and jurisdictional structures that have occurred in specific areas, while at the same time being able to define and qualify environmental management practices, can find analytical resonance through the use of textual sources. The intersection, on a local scale, of source typologies (ecological, historical, archaeological) poses some problems of method, which also have a theoretical reflection, to which microhistory deeply contributed.

A first issue is that of scale, a second issue concerns the problem of chronology. About scale, the analytical option promoted by the Laboratory of Environmental Archaeology and History has always been that of site research, or at least topographically oriented research to allow a contextual approach, and documentary sources are plentiful right at the sites of the field investigations.

Chronologies, secondarily, are for obvious reasons not perfectly overlapping: the results of a pollinic diagram, the dating of a wall or a documentary production have clear and significant shifts.

History of law and legal anthropology allow us to reflect on the different temporalities of legal actions and norms, a slower temporality in the first case and a decidedly accelerated one in the second. The operations we see on the ground, be they the construction of objects (walls, buildings of various uses), the repetition of practices (grazing, gathering wood, cultivation, or the burning of wood to make charcoal), analysed with an extensive chronology, or the very action of cartographic and textual documentation (production of cartography and reports), concentrated in a few months or years, all speak about negotiation of rights. They are actions, claims, mobilisations, at the same time social, legal, technical and knowledge-producing, which contribute to modify the reality in which the social actors act.

## 9 MARBLE LIME KILNS IN THE POHORJE MOUNTAIN (SLOVENIA): MODERN HERITAGE OF A RURAL INDUSTRY

**Abstract author(s):** Zanier, Katharina - Djurić, Bojan (Department of Archaeology, Faculty of Arts, University of Ljubljana)

**Abstract format:** Oral

The Pohorje Mountain in north-eastern Slovenia is so far especially known for its marble quarries, used since ancient until modern times. The collapse of the economy of ancient quarries resulted in large spoil deposits, covered by vast forests, the perfect place for the arrangement of lime kilns. These extensively show up in LiDAR imaging, surface survey, archival, and oral history sources, being a widespread phenomenon until the Reconstruction after World War II, so far neglected by the scientific community. In 2020/2021 the Department of Archaeology of the University of Ljubljana excavated one of these kilns documenting interesting details of its construction and use. Additional information about this kind of rural industry is provided by typical microhistory sources. Marble lime kilns in the Pohorje region offer a precious insight into practices of the local societies, issues related to property and use, as well as environmental resource management, also in relation to recycling of spoil and unfinished marble elements.

## UNVEILING LOCAL CONFLICTS THROUGH MICROHISTORY: A MULTIDISCIPLINARY AND COMPARATIVE ANALYSIS OF THE COMMON LANDS IN NORTHERN IBERIA (18TH-19TH CENTURIES)

**Abstract author(s):** Cristina, Giovanni - Tejerizo-García, Carlos (Università di Genova) - Menéndez-Blanco, Andrés (Universidad de Oviedo; Università di Genova)

**Abstract format:** Oral

The proposal analyses the complex interweaving of relations between local interests and supra-local powers (e.g. the State and its several legislative, administrative and institutional articulations) in the management of the common lands of two rural areas of Northern Iberia between the 18th and 19th centuries.

In particular, the comparison between the two case studies (e.g. Casayo, Galicia, and the Parzoneria de Entzia, Basque country), which are already investigated by ongoing projects (INPACT and ANTIGONE, respectively) will take place by combining the micro-historical analytical dimension with Bourdieu's concept of "battle arenas".

The perspective is multidisciplinary in the sense that it critically compares historical and archaeological sources in order to reconstruct the dialectical connections between structure and agency in the diachronic evolution of the management of agro-sylvo-pastoral activities in the common lands of these two areas. The comparison will identify some possible turning points (privatization laws, forest enquiries, attempts at rationalization, etc.) through which to measure, both in the documents and in the archaeological surveys, the different interests converging in the same local area and the conflicts opposing several actors in these "battle arenas". At the same time, the analysis of the relationship, also complex and dialectical, between norms and practices in the use and management of resources will also be considered.

### A. THE LIFE HISTORY OF A SMALL TERRITORY OF INNER SICILY THROUGHOUT ARCHAEOLOGICAL RESEARCH

**Abstract author(s):** Lo Monaco, Viviana (UNESP)

**Abstract format:** Poster

From the late 1970s, Landscape Archeology turned its attention to the role of the interior territories in the economic, political and social changes of the different historical epochs. The countryside, which supplies products for consumption and commerce, was populated by a multitude of people who were active part of the development of large urban centers. Archaeological methods and post-processual approaches may offer insightful tools for reading the landscape, interpreting settlement patterns from the past until the present and observing the relationship between the inhabitants and their history.

This presentation shows my post-doctoral research project on a territory of Central Sicily (Caltanissetta). This project, funded by São Paulo Research Foundation (FAPESP), aims to reconstruct the life history of this small territory and to contextualize it in a general framework, from a long-term perspective. The field research will be carried out next summer, between June and August, by me and other colleagues who offered their collaboration. The inquiry will be developed through methodologies of topographic survey, which also includes the use of instruments that allow non-invasive interventions. The elaboration of the data through the GIS system will allow the spatial analysis of the movements of the human groups and their relationship with territory and landscape. The poster presented at the Congress intent to show the very first data collected in the field work and our first considerations about the preliminary results.

---

### 324 ROMAN HOUSING ON THE SHORES OF THE EASTERN MEDITERRANEAN. GLOBAL TRENDS, LOCAL RESPONSES?

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Rekowska, Monika (University of Warsaw) - Gasparini, Eleonora (independent researcher)

**Format:** Session with keynote presentation and discussion

In research on the Roman residential architecture in the East, scholars frequently refer to Roman and Greek (Hellenistic) traditions to be seen as derived from different socio-cultural contexts. In fact, analyses of plans and house décor (including pavements, paintings, and architectural and sculptural decorations) can be successfully used in the "Romanization debate" or in discussion on the scope of disseminating the Roman culture. The houses were quick and easy to read forms of self-presentation. Archaeologically, they have a potential to reveal different identities of their owners. Instead of applying bipolar interpretative schemes, we must be aware, however, that even in the globalized Roman world there were many local responses to global trends coming with Roman authorities, politics, administration and culture. In this respect, the evidence from each provincial context and even each urban context across the provinces can reveal peculiarities connected to specific local conditions, that turn out to be extremely reach in the East, were urban cultures had already found monumental developments since many centuries.

Within this framework, private architecture on the shores of the Eastern Mediterranean deserves special attention, as more susceptible to new ideas and the subject to dynamic exchange processes. The mingling between diverse inputs was the hallmark of a unitary and multi-faced Empire.

All papers exploring different features of the Eastern Mediterranean housing tradition and innovations, with a particular focus on the coastal cities are particularly welcome. The houses architectural language, assimilating new fashions by adapting local tastes and habits would serve as the basis for assessing Romanization. Reflections on individuals and society, expressed in their conscious or unconscious architectural choices would be an important voice in the discussion on the creation of glocal cultures in the global world.

## ABSTRACTS

### 1 READING THE HOUSE OF ORPHEUS AT NEA PAPHOS (CYPRUS)

**Abstract author(s):** **Rekowska, Monika (University of Warsaw) - Michaelides, Demetrios (University of Cyprus, Nicosia) - Gasparini, Eleonora (Independent researcher) - Pensabene, Patrizio (University La Sapienza, Rome) - Kaniszewski, Jakub (Independent researcher)**

**Abstract format:** Oral

The House of Orpheus, an urban residence in the port city of Nea Paphos in Cyprus, discovered and explored decades ago, has, so far, been studied only fragmentarily. Recently, it is being studied again under the project "Residence as self-presentation of urban elites. Architecture and decoration of the House of Orpheus in Nea Paphos, the ancient capital of Cyprus", carried out in 2018-2022 and financed by the National Science Centre in Poland (2017/27/B/HS3/01131). On-site studies with the use of non-invasive methods allowed for updating the old data as well as gathering new data on the architecture. This comprehensive assessment of the house's architecture took into account its multi-faceted decor, in which the architectural decoration played a substantial role. A set of over 200 decorated/worked stone blocks (currently available in the database) helped us redefine the functional spaces of the house. After four years of work, we are able to present the results of in-depth studies on the interplay between the layout, architecture and decoration of the house, in search of an answer to the question of how individual choices made by the owner, apparently a wealthy and educated representative of the city's elite, reflect his identity. Thanks to the possibilities offered by three-dimensional documentation, we can present a credible virtual reconstruction of selected architectural units in order to show a local (Cypriot) response to global (Roman) trends.

### 2 ALEXANDRIAN TRADITIONS AND TRANSFORMATIONS IN THE RESIDENTIAL ARCHITECTURE OF CYPRUS DURING THE IMPERIAL AGE

**Abstract author(s):** **Pensabene, Patrizio (Sapienza University)**

**Abstract format:** Oral

Roman housing in Cyprus represents a well-established research field, that, since the second half of the last century, has benefited from the excavation of residential complexes of great relevance. The architectural features of Cypriot luxury residences represent an excellent instrument for analyzing historical issues, such as the socio-cultural substratum of the main cities and the relation, enhanced by the coastal location of the sites, between local élites and the main centres of the Imperial Mediterranean.

However, these observations must develop on the light of the importance that, during the Imperial Age up to Late Antiquity, Hellenistic roots continue to hold in the architectural language of the island. Starting from the evidence of Alexandrian traditions and transformations in the housing architecture of several urban contexts (Paphos, Kourion, Salamis), this paper is aimed at contributing to the discussion on the legacy of Alexandrian architecture in the Roman Empire and, more generally, on local responses to global trends in Eastern provinces.

### 3 HALLS AND COURTYARDS IN THE HOUSE OF DIONYSOS AT NEA PAPHOS (CYPRUS): INDIVIDUAL RESPONSES TO LOCAL AND GLOBAL TRENDS

**Abstract author(s):** **Gasparini, Eleonora (Independent researcher)**

**Abstract format:** Oral

The House of Dionysos represents one of the most luxurious examples of Imperial élite urban housing not only in Nea Paphos but in the whole island of Cyprus. Its specificity is immediately visible thanks to its extension and the richness of its mosaics, that are dated to the late 2nd-early 3rd century AD. However, further elements of the plan and architectural decoration testify to choices that, although clearly related to local and global trends, turn out to be unique. Between these elements are the halls used for reception and banqueting as well as the main and secondary courtyards. Their uniqueness is perceptible above all by observing their size, distribution and spatial connections.

A multi-layered complex such as the one in question, which shows evidence of occupation since the Hellenistic age, also raises the problem of the conditioning imposed on the building by the pre-existing structures. In fact, these last

could partly lead the design of domestic spaces and the forms of their decoration. Therefore, Cypriot housing as well as the broader scenario that developed on the shores of the Eastern Mediterranean will be the reference for discussing to which extent entanglement and freedom are recognizable in the architectural layout of this Paphian residence.

#### 4 **ORDINARY OR EXTRAORDINARY? ANCIENT RESIDENCES IN NEA PAPHOS AGAINST A WIDER BACKGROUND OF THE EASTERN MEDITERRANEAN CITIES**

**Abstract author(s):** Brzowska-Jawornicka, Aleksandra (Wroclaw University of Science and Technology)

**Abstract format:** Oral

Nea Paphos, an ancient city on the south-western coast of Cyprus, was a flourishing rich town due to its location on the sea routes between the Middle East, Egypt and North Africa, and Asia Minor. Surrounded by stronger empires, the Cypriots were always under the external impacts including those relating to the construction, architecture and art. In Maloutena, the residential area of the city, many houses of different scale, décor and equipment were erected becoming a testimony of their times and the changing tastes of their owners who lived in the eastern part of the Graeco-Roman World. From the local building traditions, through the Alexandrian influences of the Ptolemaic Kingdom to Roman innovations – all those factors were present in Paphian houses reflecting changes in the Cypriot society which took place during the long history of the ancient city. The aim of the presentation will be to show the architecture of the selected Paphian residences, especially the so-called 'Hellenistic' House, and the changes they underwent against a wider background of the houses from the Eastern Mediterranean cities. Were the houses in question typical for those ancient areas? Is it possible to indicate a set of typical features for a Graeco-Roman residence or were there many characteristics that could have been freely combined creating a different effect each time?

#### 5 **THE ROMAN HOUSES AT EPHESOS AND THEIR REPRESENTATIVE SPACES FOR THE LOCAL ÉLITE**

**Abstract author(s):** Barresi, Paolo (Università Kore Enna)

**Abstract format:** Oral

The houses known as "Hanghäuser", or Terrace Houses, are the most famous private buildings in Roman Ephesos, excavated by Austrian archaeologists in the last century: they are placed in two large blocks of the regular city planning, following hill slope. The wall and floor decoration of the house units within, are evident indicator of the wealth of their owners, belonging to local high class, who chose an imposing and central space as place of representation. For these houses, it was chosen a localization at the very centre of the city, near the monument of the mythical founder Androklos: but there, public buildings had grown during Hellenistic and Roman period, and for this cause, the house units have dimensions relatively small, even if their luxury character emerges from the high-level decoration. There are also other examples of large houses, not well published yet, such as the "Bishop Palace" over the odeion: such examples are useful, anyway, to enforce the overview. This paper is particularly aimed at the discussion of floor and wall luxury decoration of Ephesos' houses, in relation to the architecture and the meaning of power spaces managed by local ruling élites.

#### 6 **LIVING AND WORKING IN A SUBURBAN WINERY ALONG THE EAST. COAST OF THE ARGOLIS PENINSULA: THE SUNKEN VILLA OF EPIDAUROS**

**Abstract author(s):** Davide Petriaggi, Barbara (National Superintendency for Underwater Archaeological Heritage, Italy) - Galiatsatou, Panagiota (Ephorate of Underwater Antiquities of the Hellenic Ministry of Culture and Sports) - Medaglia, Salvatore (Department of Cultures, Education and Society, University of Calabria)

**Abstract format:** Oral

The marine transgression, triggered by very complex geo-tectonic and seismic phenomena, has caused the many archaeological remains scattered along the Peloponnesian coast of the Saronic Gulf during the Upper Holocene. Among them, one of the most significant is the so-called 'villa of the dolia', a rural complex on the southern outskirts of Epidaurus dated to the Middle Imperial Age and investigated since 2018 by an Italian-Greek archaeological mission. The submerged architectural remains of the villa are now visible at a depth of about -1.00/-2.00 m and extend over an area of about 1600 square metres. What characterises the rustic villa more than any other element is the presence of a vast wine cellar with several large dolia still in situ. The hypothesis that the productive vocation of the villa rustica was mainly linked to viticulture is strengthened by the discovery of the remains of a lenos and a hypolenion.

The excavation of the latter has yielded a considerable amount of finds related to the last phase of life in the complex, the study of which is providing numerous data for reconstructing certain aspects of the daily life of those who lived and worked in the farm. The investigations currently being carried out are making a contribution to shedding light on an aspect on which the ancient sources converge regarding the landscape of the Epidaurus countryside, which was geared more towards specialised agricultural production. According to Plutarch most of its inhabitants worked in the fields, and it is no coincidence that Stephen Byzantine uses the adjective *λειμηρῆς* to describe the area. But even more significant is the evident connection between the wine vocation of the Epidaurus farm and the

tradition, dating back to Homer and recorded by Strabo, that its territory was more than anything else cultivated with vineyards.

## 7 PERSISTENCE AND CHANGE. TOWARDS A THEORY OF LOCAL DIVERSITY IN VERNACULAR ROMAN ARCHITECTURE

**Abstract author(s):** Kienzle, Peter (LVR-Archaeological Park Xanten)

**Abstract format:** Oral

Traditionally, architectural history focussed on representative public buildings such as temples, palaces and baths, thus, identifying the dominance of a universal Roman architecture all over the Empire. This was linked to army-engineers, who came to all parts of the Roman Empire, bringing with them the actual knowledge of Roman building technology and design. However, this is different in vernacular architecture. These new ideas were brought to an existing building tradition, well suited to climatic conditions, available materials, craftsmanship and economic requirements. As a result, regional and local housing landscapes developed integrating both, local traditions and new ideas.

Building traditions in vernacular architecture may be perceived as "style" in academic research. However, the particular design of a housing landscape is the result of a well-adapted economic responses to an existing environment. The lower Rhine area encompasses the lowland parts of western Germany (North-Rhine-Westphalia) and parts of the Netherlands. In Roman times, this was the Province Germania Inferior. In some areas of the province, a new Roman housing design became dominant while in other areas the traditional design persisted. This was not accidental but followed identifiable reasons.

This paper explores the concept of housing landscapes in general and tries to identify the parameter for regional differences. In a long term, perhaps, a map of regional or local housing landscapes in Roman times can be developed, identifying the local conditions, which cause distinct local house design in the Roman period.

---

## 325 "OPEN SCIENCE" IN ARCHAEOLOGY AND HERITAGE: CHALLENGES AND FUTURE PERSPECTIVES

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Edinborough, Marija (The University of Melbourne) - Palmisano, Alessio (Ludwig-Maximilian University of Munich) - Bonacchi, Chiara (University of Stirling)

**Format:** Regular session

For some time, archaeology and heritage have been experiencing a huge increase in the amount of available "Open Science", in terms of digitized and born-digital data concerning human history and prehistory with all their contemporary legacies. This has been due to a combination of numerous research and cultural resource management initiatives, for example, fieldwork expeditions, grey literature, digitization of museum, archive, and library collections, co-production of data through crowdsourcing, and the creation of open repositories of remote sensed data. Archaeology and heritage are often at odds with well-established practices of data sharing in data-rich disciplines such as astronomy, physics, and medicine for the following reasons: 1) there is a variable level of consensus over use and curation of data and related analytical methods in both archaeology and heritage; 2) it is not clear what the norms and requirements of "ethical open science" are; 3) the communication among different interested parties regarding the requirements and expectations of open data is limited.

To address these issues, our session brings together researchers interested in the practices of ethical open science and data sharing in both archaeology and heritage. The session will explore the different practices used in these fields so far, whilst comparing them to those used in other research areas and disciplines. We hope to foster practical cross-pollination and useful discussion between archaeology and heritage researchers. Our goal is to open a forum that will lead to implementation and standardization of the best open science ethical practices. We aim to bring tangible benefits for all stakeholders in open science data, citizens, communities, individual researchers, and researchers, with special attention paid to the requirements of indigenous stakeholder communities.

We invite papers that present new open science research, and also how this research relates to the notion of ethical open science.

## ABSTRACTS

### 1 XRONOS: CHALLENGES IN BUILDING A GLOBAL OPEN REPOSITORY FOR CHRONOMETRIC DATA

**Abstract author(s):** Roe, Joe - Hinz, Martin (Institute of Archaeological Sciences, University of Bern)

**Abstract format:** Oral

Radiocarbon data has been at the forefront of archaeologists' recent embrace of open data and open science. Comprehensive compilations of radiocarbon dates have become available for many parts of the world in the last

decade and, as natural next step, there are now several initiatives to collate this data globally, including the retrieval tool c14bazAAR (Schmid, Seidensticker, and Hinz 2019), the IntChron exchange format (Bronk Ramsey et al. 2019), and the synthetic database p3kc14 (Bird et al. 2022). Here, building on a complementing these initiatives, we present XRONOS (<https://xronos.ch>): a new web-based platform for chronometric data from archaeological contexts worldwide, combining an open data repository with tools for importing, curating and analysing chronometric information from diverse sources. The development of XRONOS has raised a number of challenges. Conventions for sharing radiocarbon data are relatively well-established, but integrating other classes of chronological information—dendrochronology, typhochronology, Bayesian priors, etc.—demands a more sophisticated technical infrastructure. The scale of the dataset, and our aim of “one date, one record”, also requires new systems for the continuous ingestion, synthesis and curation of data from multiple sources; systems that should be scientifically robust and sustainable in the long term. Finally, beyond the technical, we must acknowledge several ethical and practical limitations on the how ‘open’ archaeological data can be, building tools that respect these limits, but also continue to foster an appreciation of the ethical imperatives for data-sharing within our discipline. In this talk, we present our progress towards meeting this challenges in the development of XRONOS so far, and invite discussion with the community of practitioners who produce, compile, and use chronometric data on the future direction of the project.

## 2 RETHINKING DATA SHARING IN PHYTOLITH RESEARCH: FROM FAIR PHYTOLITHS TO KEY INSIGHTS FOR ARCHAEOLOGY

**Abstract author(s):** Lancelotti, Carla (CaSEs, Universitat Pompeu Fabra Department of Humanities; ICREA) - Karoune, Emma (The Alan Turing Institute) - Ruiz-Pérez, Javier (Texas A&M University) - García-Granero, Juan José (Spanish National Research Council) - Kerfant, Céline (CaSEs, Universitat Pompeu Fabra Department of Humanities) - Madella, Marco (CaSEs, Universitat Pompeu Fabra Department of Humanities; ICREA)

**Abstract format:** Oral

Our project ‘Increasing the FAIRness of phytolith data’, funded by EOSC-Life, is striving to set the basis for implementing the FAIR (Findable, Accessible, Interoperable and Reusable) data principles within the phytolith research community. Phytoliths are micro-botanical remains that are formed within the cells of living plants. They can be used to address archaeological questions concerning anthropogenic plant exploitation and landscape changes.

The phytolith community has been making efforts to standardise data through the development of a common nomenclature and other guidelines. However, the routine adoption of these standards has not been straightforward. Data sharing is minimal and data is often exclusively within paywalled published articles rather than in open repositories.

An assessment of open science practises in phytolith research (Karoune 2020) found that only a small percentage of research provided reusable data. These findings initiated the FAIR Phytoliths project to take the first steps along the FAIRification journey.

The FAIR Phytoliths project has engaged with our community to find shared views on opening up research. We have also conducted an assessment of publications containing primary phytolith data and associated methods to fully investigate the key variables needed to improve data sharing in line with the FAIR principles.

This presentation will share the results of this work and the FAIR guidelines that we have drawn up with community support. We will discuss what this means for future phytolith research and the wider learnings that can be taken from this project for the archaeological community. We hope this work will initiate more sustainable data sharing practices in the future for phytolith research and related disciplines.

## 3 FROM POLICY TO PRACTICE – HOW TO BE FAIR AND OPEN IN HERITAGE

**Abstract author(s):** Larsson, Asa (Swedish National Heritage Board)

**Abstract format:** Oral

While Open Science and FAIR data have become requirements among many funders and policy makers, there is still a huge disconnect between these general goals and the reality of researchers and specialists who receive little in terms of practical instructions or training in data management. This is especially true for the Humanities, whose output does not always match the model used by the Natural Sciences. Heritage studies tend to straddle both these worlds and therefore face additional challenges, combining “hard” technical data with terminologies dependent on cultural, regional, temporal and research contexts.

Heritage researchers and professionals find themselves without clear motivations for sharing data apart from the demands of funders, who rarely if ever give advice beyond general policy documents. Complicating the situation further is the confusing plethora of standards and vocabularies available online, with both overlaps and troublesome gaps. There is need for a systematic and collaborative effort to identify and meet the requirements of cultural heritage research.



I will present results from projects undertaken at the Swedish National Heritage Board to help researchers, archaeologists and heritage specialists identify the tools and practices needed to achieve Open Science. This involves breaking down the FAIR principles into practices for individuals, highlighting the importance of digitalised collection data, and explaining the potentials of linked data, vocabularies and persistent identifiers. It is of vital importance to communicate to researchers and heritage professionals how they can benefit from adopting these practices. However, the rush towards open data and digitalisation of collections can cause unintended harm. We must take responsibility for what is published and set the necessary limitations that are possible with proper implementation of technology.

#### **4 'OPEN' HERITAGE RESEARCH IN BIG DATA ECOLOGIES**

**Abstract author(s): Bonacchi, Chiara (University of Edinburgh)**

**Abstract format: Oral**

This paper discusses 'open' practices and ethical implications of undertaking heritage research in big data ecologies. It draws on the experience gained during two collaborative projects funded by the UK Arts and Humanities Research Council – Ancient Identities in Modern Britain (2016-19) and Deep Cities (2020-22). In both projects, people's interactions with different kinds of heritage as well as the meanings and values assigned to those heritages were studied online and offline using a combination of qualitative and data-intensive methods. Through an examination of these case studies, the presentation will address both the possibilities and the limitations of adopting an open science ethos within heritage research that relies on the collection, analysis and interpretation of web data – and social media data in particular. What kinds of data can and should be shared? How can they be meaningfully reused and by whom? In what situations can the sharing of research workflows and data be harmful and for what constituencies or researchers and citizens?

#### **5 PARTICIPATORY RESEARCH AS MEANINGFUL OPEN SCIENCE: FIRST RESULTS OF THE C-LIMES PROJECT**

**Abstract author(s): Stevens, Saskia - Plets, Gertjan (Utrecht University)**

**Abstract format: Oral**

In archaeology, Open Science is often theorized in relation to open data. This contribution focuses on the application of citizen science and public engagement as two significant cornerstones of open science. Today, citizen science and public engagement are included in many grant applications to "tick the box". As a result, when citizens engage in the production of (open) data, it is mainly the scientific project and discipline at large that benefit from "opening" up the black box of research. To prevent citizen scientists from ending up empty-handed and demotivated, it is important to foster a sustainable relationship that will encourage further involvement, even after the project has ended.

In this paper we present the Constructing the Limes Project; a large interdisciplinary research project investigating the Roman borderscape in The Netherlands, Germany and Belgium. The project is unique in its approach, since more than 20 societal partners have been involved in every step of the research. In this paper, we present the organization and structure of the project and discuss which mechanisms we apply to include societal stakeholders and which challenges we have encountered. Furthermore, we will also present some first outcomes of our citizen science projects.

#### **6 THE LONG AND WINDING TOAD TO 'OPEN SCIENCE' IN ARCHAEOLOGY: DATA DISSEMINATION, REPRODUCIBILITY AND ETHICAL ISSUES**

**Abstract author(s): Palmisano, Alessio (Ludwig-Maximilians-Universität München)**

**Abstract format: Oral**

The recent advancements of digital methods for the acquisition and dissemination of data have resulted in an increasing flood of evidence about the human past. In this context, archaeology, as a discipline relying on empirical methods in data collection and analysis, has to deal with several new challenges. In particular, the common norms of data sharing and reproducibility of research are still nebulous and lack a proper operative protocol widely recognised in the scientific community.

In this paper, I will illustrate the best practices of data sharing, dissemination and reproducibility in archaeology and their benefits for researchers and the public. I will survey a series of approaches and practical examples from different case studies (e.g., fieldwork, desk-based research, synthesis of large datasets) that contribute to fostering transparency and open scholarship. In the end, I will discuss the ethical issues that archaeologists can face when disseminating openly their datasets and the resulting impact on the local communities and the cultural heritage.

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Giroto, Chiara (Ludwig-Maximilians-Universität München) - Price, Henry (Imperial College London)

**Format:** Discussion session

Machine learning in archaeology, especially in combination with social theories offers tremendous potential for the reconstruction of past interaction, social systems, and interaction. However, there is little user experience compared to other scientific techniques and more established statistical methods among archaeologists. The models - often necessarily based on ambiguous or sparse data - generate results which require interpretation. More often these are based on "commonly accepted" social theories, values, and ideals rather than embracing the problems and uncertainties in modelling. In her 2007 article, "Honoring Ambiguity/Problematizing Certitude", Joan Gero argues for archaeological research which acknowledges and values the ambiguities and uncertainties of its data and the importance of "protecting and preserving ambiguities as a valuable rather than a necessarily painful aspect of archaeology" (323).

In the previous years our sessions ("Is ML in archaeology fact or fiction?" (2021) and "Tracing reality in archaeology using machine learning" (2020)) explored the potential, possibilities, ambiguities, and pitfalls of machine learning in social and bioarchaeological contexts. This year we specifically want to address the ambiguity of ML models, problems in their interpretation as well as their potential and danger to create narratives. Since all ML models are only capable of highlighting internal patterns of their respective data universes, they can easily perpetuate ideas of excessive certainty and amplify pre-existing biases of the data. Touching on ethics, representation, and oversimplification this perceived "sureness" has the power to distort the past, either involuntarily or voluntarily as a misuse of archaeology in the present.

We specifically invite contributions addressing ideas on how to retain ambiguity in modelling, spotting unwarranted presuppositions, colouring the conclusions, inclusion of ethics in archaeological machine learning applications, and more generally the dangers and pitfalls of creating narratives in archaeology through ML.

## ABSTRACTS

### 1 CAN WE RELY ON DATA OBTAINED SOLELY THROUGH ML? AN ARCHAEOASTRONOMICAL APPROACH TO THE PREHISTORIC TOMBS OF NORTH-WESTERN ARABIA

**Abstract author(s):** Urrutia-Aparicio, Maitane - Asensio Ramos, Andrés - Westendorp Plaza, Carlos - Belmonte, Juan (Instituto de Astrofísica de Canarias) - González-García, A. César (Instituto de Ciencias del Patrimonio - Incipit - Consejo Superior de Investigaciones Científicas - CSIC)

**Abstract format:** Oral

The pathways in the north-west Arabian regions leading to the oases of Khaybar and Al-Hait are surrounded by a myriad of drystone funerary structures, dating to mid-to-late third millennium BCE. Due to the vast number of them, their individual identification in situ or through transects in high-resolution satellite imagery becomes laborious and time-consuming. Therefore, it constitutes a potential case for applying Machine Learning (ML) techniques which may facilitate and accelerate their detection and, moreover, extract useful information such as the orientation of a comprehensive and large sample, the basic data in archaeoastronomy.

Archaeoastronomical analysis has proven to be a unique tool for the construction of narratives in cultural land- and skylines, mostly reinforced by material evidence. When archaeological prospections are scarce or not accessible, the weight of eventual data, obtained by ML, increases.

So far, the studies carried out in the Khaybar Harrat monuments state that most of these 'pendant' tombs are perpendicular to the pathways, but no systematic analysis on the topic has been performed. The present work attempts to identify the funerary structures and their orientations through ML techniques and afterwards, explore possible patterns perhaps related to local topography or astronomical targets. Preliminary results suggest a predilection for cardinal directions, predominantly close to the East-West line, indicating a preference for the solar range. Besides, orientations towards South-Southeast have been identified to a lesser extent. A putative target for such orientation could be the bright star Canopus, whose long-lasting importance in the Arabian Peninsula is well documented. However, substantial evidence supporting these hypotheses, is indeed lacking.

Consequently, there is a risk of creating certain narratives overestimating the outcomes of ML techniques which must not be ignored. This sort of data should therefore be regarded as valuable information that, nonetheless, ought to be corroborated by archaeological, topographic, and eventually, ethnographic evidence.

## EMPLOYING VISUAL FEATURE ANALYSIS WITH MACHINE LEARNING MODELS FOR THE AUTOMATED CLUSTERING OF SMALLER BUT SIGNIFICANT ARCHAEOLOGICAL ITEMS

**Abstract author(s):** Mircea, Cristina (Department of Molecular Biology and Biotechnology, Faculty of Biology and Geology, Babes-Bolyai University; Molecular Biology Center, Interdisciplinary Research Institute on Bio-Nano-Sciences, Babes,-Bolyai University) - Mircea, Ioan (Department of Computer Science, Faculty of Mathematics and Informatics, Babes-Bolyai University) - Urduzia, Claudia (Brukenthal National Museum) - Pinter, Zeno (Department of History, Heritage and Protestant Theology, Lucian Blaga University of Sibiu; Institute of Social Sciences and Humanities, Romanian Academy) - Kelemen, Beatrice (Department of Molecular Biology and Biotechnology, Faculty of Biology and Geology, Babes-Bolyai University; Molecular Biology Center, Interdisciplinary Research Institute on Bio-Nano-Sciences, Babes,-Bolyai University)

**Abstract format:** Oral

As we are situated at the crossroads of machine learning and modern (bio)archaeological research, we cannot neglect the importance of better harvesting archaeologically relevant information from all the levels of archaeological research: the excavation site, the archaeological laboratory, and the biological laboratory. This information is capital to the development and perfecting of machine learning models catered towards bioarchaeological needs.

The current proposal focuses on the visual features of pottery fragments that usually went neglected in traditional archaeology but are becoming the pivotal weapons towards uncovering the capital questions still unanswered about the past.

The analysis of the pottery bits and parts from the archeological site of Orastie (Hunedoara county, Romania, XVII-XVIII centuries, A.D.) is based on computer vision techniques enriched with machine learning enhancements to detect the contour as accurately as possible and the textural features. The fragments are first clustered based on the joint contour and textural extracted features and then used for optimized semi-automated labeling.

## COULD MACHINE LEARNING SEAL THE DEAL? EXPLORING MULTIPLE AVENUES TO RECOGNISE AND CLASSIFY DESIGNS OF COMMON MITANNI CYLINDER SEALS

**Abstract author(s):** Angourakis, Andreas (Institute for Archaeological Studies, Ruhr University Bochum; McDonald Institute for Archaeological Research, University of Cambridge) - Tsouparopoulou, Christina (McDonald Institute for Archaeological Research, University of Cambridge; Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences)

**Abstract format:** Oral

Machine Learning (ML) has been permeating archaeology progressively, and it has been prolific regarding the automatization of the analysis of recurrent material culture. Cylinder seals are one of the most ubiquitous types of archaeological objects in Southwest Asia throughout the Bronze Age, but are also exceptionally loaded with semantics, as their primary function as an artefact was communication. The pictorial assemblages that populate these objects, being them figurative or abstract, present a challenge to most generic approaches to ML in computer vision, despite the rapid development of the field. Much as any hand drawing, seal engravings are simpler than photographic pictures (as they hold less information), yet their features can be more diverse and conceal subtle patterns that express motifs and styles intrinsically linked to a specific cultural context; all of which must be captured with a relatively limited sample. As archaeologists are mostly users rather than developers of ML models, tackling domain-specific challenges such as these often leads to a tentative exploration of alternatives offered by applications in other fields or datasets. We present a summary of our exploration using our own database of Common Mitanni cylinder seals, which went progressively through three substantially different approaches aimed at measuring similarity/dissimilarity in images: locality sensitive hashing (LSH), pretrained convolutional neural network (CNN) models using the ImageGraph Python library, based on Tensorflow-keras, and training CNN models with SVGs using the deepsvg Python library, based on PyTorch. The journey has brought to light both issues and opportunities, from deepening our understanding of cultural diversity in the period to insights on how to improve the use of archaeological drawings in computer applications. In addition, the experience also yielded important lessons for the use of ML technology in archaeology and, particularly, in the analysis of figurative images in archaeological contexts.

## A. FRAGMENT GENERATION OF IBERIAN POTTERY PROFILES WITH MACHINE LEARNING FOR CERAMIC RECONSTRUCTION

**Abstract author(s):** Fuertes García, José Manuel (Department of Computer Science, University of Jaén; University Research Centre for Iberian Archaeology) - Navarro, Pablo (Instituto Patagónico de Ciencias Sociales y Humanas. Centro Nacional Patagónico; CONICET) - Cintas, Celia (IBM Research Africa) - Lucena López, Manuel José - Segura Sánchez, Rafael (Department of Computer Science, University of Jaén; University Research Centre for Iberian Archaeology) - Delrieux, Claudio (Departamento de Ingeniería Eléctrica y de Computadoras, Universidad Nacional del Sur.) - González-José, Rolando (Instituto Patagónico de Ciencias Sociales y Humanas. Centro Nacional Patagónico; CONICET) - Moreno Padilla, Isabel (University Research Centre for Iberian Archaeology; University of Jaén)

**Abstract format:** Poster

The reassembly of fragmented objects from a collection of hundreds or thousands of randomly mixed fragments is a problem that arises in several applied disciplines, such as archaeology, anthropology, failure analysis, and paleontology. Ceramic potteries are among the most frequently found archaeological artifacts, but complete remains are very scarce. These artifacts are usually short-lived, and thus this helps researchers document variations in style, used materials, and manufacturing techniques. Currently, there is no straightforward way to take advantage of the fragmented data due to the laborious and uncertain nature of the manual restoration process. In this work, we use available digitized profile potteries for training advanced machine learning techniques to enable scholars to recognize and study fragmented pottery. We propose a deep learning approach to generate artificial data departing from a set of known fragments in the model, thus creating new virtual pottery with the same features as the real ones. To do so, we propose a framework based on generative models that reconstruct pottery profiles from rim or base fragments. We have evaluated the performance of the method based on many aspects. Finally, the results obtained suggest that our approach is capable of generating potteries that satisfy the image, pottery morphometric structure and is flexible to work on different ceramic datasets that present a variety of fractured materials.

---

## 327 STONE AGE STRAY FINDS AND HOW TO USE THEM [PAM]

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Bergsvik, Knut Andreas (University of Bergen) - Nilsson, Björn (University of Lund) - Johanson, Kristiina (University of Tartu)

**Format:** Regular session

Stone Age artifacts found by lay people – stray finds – have been important in European archaeology for more than a century. In many areas stray finds are fundamental for landscape studies and macro-scale investigations and they are central cues to locate sites and monuments. Nevertheless, today stray finds are often considered as lesser quality data compared to data generated through professional excavations, mainly because stray finds lack detailed context information. They are also sometimes considered superfluous due to the current volume and spatial extent of archaeology-led surveys. The question we ask here is how stray finds still can play a role in future archaeology. Several avenues are possible, and an obvious one is to draw on the sheer quantity. When systematically classified and georeferenced, stray finds may be excellent for a variety of both synchronic and diachronic “big data” analyses. Second, since they are found and collected by non-archaeologists, they represent a parallel find category, biased not by archaeological science, but by other practices outside of the antiquarian world, and may therefore help locating sites and phenomena (such as placed ritual deposits) that are beyond the capacity and problem orientation of most archaeology-led surveys. Third, they could play a complementing role in public outreach.

For this session we invite papers that work on local studies as well as studies that treat large-scale distribution patterns, and we welcome papers that discuss the relationship between archaeology-led field investigations and investigations of stray finds. Since there are major institutional and legislative differences in cultural heritage management across Europe, there is great variety in how Stone Age stray-finds are collected and stored. Papers that address these differences are welcome, as well as methodological papers that deal with how stray finds are treated, stored, and made accessible for research and public outreach.

## 1 WHAT DO YOU MEAN, THIS IS A STRAY FIND? DISCUSSING SOURCE CRITICISM IN THE LATE PALAEOLITHIC RECORD OF NORTHERN GERMANY

**Abstract author(s):** Grimm, Sonja - Eriksen, Berit (ZBSA - Centre for Baltic and Scandinavian Archaeology; CRC 1266 Scales of transformation) - Weber, Mara-Julia (Archaeological Museum Schloss Gottorf; CRC 1266 Scales of transformation)

**Abstract format:** Oral

The Late Palaeolithic record of northern Germany is often used as reference for other areas. However, when contributing to large-scale projects, colleagues are astonished about the high number of collections and excavations without modern standards. In projects with rigorous protocols many northern German sites are therefore excluded, including some famous sites such as Stellmoor and Meiendorf.

Schleswig-Holstein, the northern most German state, is mostly rural with large areas of pastures, ploughland, moor and marshland. Only a network of people can keep an eye on the archaeological remains in these variable areas. Hence, amateur archaeologists play an important role in identifying new sites, connecting scientists and local population, and in early mentioning of new project plans. Obviously, they are still the first to report interesting finds and sites. Excavated sites with Late Palaeolithic material are rare and many of them have been excavated without modern standards and occasionally also by amateurs. Hence, "stray finds" are still an important source. Yet, what exactly is a stray find? A single find? A surface find? A find identified by an amateur?

What we found relevant is the information connected to a find or assemblage and the analyses that can still be applied to them (e.g. <sup>14</sup>C and stable isotope analyses of osseous artefacts or technological analyses of lithics). With a rigorous source criticism, the quality of the sites, assemblages, and artefacts can be classified. Obviously some high resolution GIS-based research questions cannot be answered with these finds. Technological analyses and mid- to low resolution spatial distributions as well as palaeoenvironmental analyses with osseous artefacts are still possible. In this way, stray finds can still give us new insights into the Late Palaeolithic.

## 2 STRAY FINDS A SLEEPING (ALMOST DEAD) SOURCE OF KNOWLEDGE, LET'S BRING IT TO LIFE

**Abstract author(s):** Måge, Bjørnar (Museum Lolland Falster)

**Abstract format:** Oral

Stray finds are an important source for understanding the Stone Age people's use of the landscape. This is because commonly the archaeological activity in an area is evaluated over the number/density of stray find sites in an area.

In Denmark, the registered stray finds are directly used in risk assessment for encountering archaeological finds in connection with construction work. In Denmark, which is a very agriculture-based country, most stray finds have been found by farmers during field work. However, new cultivation methods and larger machines mean that today's farmers rarely walk on their fields and this source of stray finds is drying up. At the same time, knowledge about the stray finds and their circumstances of discovery is rapidly disappearing as the older farmers who made the finds are dying out. When stray finds just lie in drawers and cupboards out in the various farms and are not registered in a public national database, it is dead knowledge.

Archaeological museums and institutions have a major task in getting stray finds registered while there is time if we are to exploit the full potential of the stray finds. This is of special relevance, as stray finds have a direct influence on where actual archaeological investigations are initiated. To be able to utilize the full potential of them, it is therefore essential that a strictly uniform collection policy is introduced. This helps to evaluate, if the distribution of sites in the landscape reflects the real level of activity in the Stone Age. Otherwise, there is a risk that the distributions only testify to where the most tenacious amateur archaeologists live.

## 3 MUSARK AND GEOGRAPHIC VISUALISATION OF STONE AGE STRAY FINDS

**Abstract author(s):** Matsumoto, Mieko - Uleberg, Espen (Museum of Cultural History, University of Oslo)

**Abstract format:** Oral

This paper presents visualisations and analyses of georeferenced stray finds that are typologically dateable large stone tools. This dataset opens landscapes of sickles, daggers, and axes. Some of these objects are interpreted as symbols of power while others are seen as working tools. These landscapes are not necessarily the same as those described by excavated material and collected small artefacts and knapping debris.

The material is taken from MUSark, the database system for archaeological collections in the Norwegian University Museums. The objects are generally georeferenced, and the metadata includes the coordinate precision levels. The precision level reflects the find circumstances and the information recorded at the acquisition, and this varies greatly over 150 years of museum history. Early acquisitions often have lower precision levels while more recent finds can

have rather precise GPS-coordinates. The total dataset might be treated as archaeological Big Data – in the sense that it can be combined with a variety of datasets in different analyses.

The paper uses geographical Exploratory Data Analysis (EDA) to study the georeferenced artefacts. EDA is looking for patterns and anomalies in datasets, but does not imply a strictly inductive methodology, as some advocates of Big Data theory claim possible. The registered geographical precision levels and dating intervals in MUSark make it possible to include appropriate subsets at different time and space scale levels.

A major challenge is however to find optimal scale levels for each analysis. Certain patterns can be visible at only certain time and space levels, and the objects included in a certain analysis must have metadata values that make the combination meaningful. As an example, an analysis of covariation of artefacts with distance to prehistoric shorelines demands higher coordinate precision of the find and higher measuring precision of the elevation than covariation with large scale landscape types.

#### 4 **STONE AGE STRAY-FINDS IN WESTERN NORWAY: POTENTIAL FOR RESEARCH AND CULTURAL HERITAGE MANAGEMENT**

**Abstract author(s):** Bergsvik, Knut Andreas (University Museum, University of Bergen) - Aksdal, Jostein (Vestland county administration) - Lundström, Victor (University Museum, University of Bergen)

**Abstract format:** Oral

Stone Age stray finds from western Norway have been delivered to the Bergen University Museum since its foundation in 1825. These artifacts are found by non-archaeologists – mainly farmers – and make up more than 4000 entries in the database. Through the years, the finds have been important to local and regional research projects, however, until recently, they have not been subject to uniform classification systems. In a new project, which is a collaboration between the University Museum and Vestland county administration, the entire collection of stray-finds at the museum have been reclassified according to updated terminologies and systems, detailed georeferencing have been performed, and data on deposition is being collected and organized. This paper presents some results of this ongoing work and discusses the research potential of the databases. We argue that quantitative and chronological analyses of stray-finds are important proxies to studies of Stone Age demography, regional differences, and changes in land-use and settlement patterns, particularly when combined with distribution studies of surveyed and excavated archaeological sites. Important is also to relate the distribution of stray finds to digital environmental map databases on themes such as bedrock, soil types, temperature zones, and marine production. The database helps identifying new Stone Age settlements sites as well as locations for placed deposits. They therefore represent a great potential to cultural heritage management, considering that detailed knowledge of chronology and deposition of earlier finds is vital when preparing for archaeological fieldwork in areas planned for development.

#### 5 **UNITED BY CRISIS? A TRANSDISCIPLINARY LOOK AT THE EARLY NEOLITHIC COMMUNITIES IN THE SCHLETZ SETTLEMENT CLUSTER, AUSTRIA**

**Abstract author(s):** Maurer, Jakob (University for Continuing Education Krems, Center for Museum Collections Management) - Längauer, Julia (University of Vienna, Department of Prehistory and Historical Archaeology) - Irrgeher, Johanna (Montanuniversität Leoben) - Puschenreiter, Markus (University of Natural Resources and Life Sciences Vienna) - Novotny, Friederike (Natural History Museum Vienna) - Teschler-Nicola, Maria (Natural History Museum Vienna; University of Vienna, Department of Evolutionary Anthropology) - Pieler, Franz (State Collections of Lower Austria)

**Abstract format:** Oral

Schletz in the Lower Austrian Weinviertel ranges amongst the most prominent Linear Pottery culture sites in Europe, due to evidence suggesting a massive violent attack on the settlement around 5000 BC. However, the long history of the site and the surrounding region preceding this presumably final massacre is largely unknown. In our contribution, we present a summary of what we currently know, and an outlook on a proposed project, due to start in summer 2022, which aims to put the site into a regional context.

In recent years, new research on the site of Schletz delivered quite unexpected results. This includes e.g. first data of a systematic DNA-analysis of the excavated human remains as well as a reassessment of the stratigraphy of the sites fortification ditches. Furthermore, artefact scatters documented during line walking could indicate different functions of the various parts of the earthwork.

Schletz is often addressed as a "central site" and was likely surrounded by a cluster of smaller sites. We assume that knowledge of the surrounding settlements is crucial to better understand local LPC developments that might have led to the violent crisis on the central site. Most information we have on them exist in the form of stray finds (including human bone fragments with traces of perimortal injuries that might indicate that further sites within the settlement agglomeration were affected by violent events as well).

We want to show how we have used this existing "background of stray finds" to define working hypothesis and further project work. The latter includes line walking and finds processing together with Citizen Scientists, to find out more

about the structure and precise dating of the LPC settlements around Schletz, and the creation of a local isoscape map, in order to determine possible areas of origin of the dead of Schletz.

## 6 STRAY FINDS AND RITUAL DEPOSITIONS

**Abstract author(s): Larsson, Lars (Department of Archaeology and Ancient History)**

**Abstract format: Oral**

Deliberate depositions of objects in wetlands are extensive from virtually the entire prehistory of southern Scandinavia. These were probably especially common during Neolithic times

which is evident from the finds in a number of museum collections. Most extensive are the depositions that consist of flint axes. Almost all of these depositions have been found by the public during various works in former wetlands. One may ask whether it is possible to get an idea of how extensive the custom of depositing objects in wetlands really was? To try to get an idea of this, a special study was conducted of a limited area in the southernmost part of Scania, southernmost Sweden. Within the area, there was only one deposition of several flint axes stored in a museum collection. Previous inventories of the area have mainly registered objects from settlements on solid land.

The effort was carried out through inventories, but mainly by visiting the farms in the area, registering the finds that have been recovered, and thereby gaining knowledge about which objects have been found and where they came from. With few exceptions, they had been found in places that during Neolithic times consisted of wetlands. These sites were related to maps from the early 19th century before extensive drainage of wetlands began. This shows that almost all wetlands, even those of very limited extent, contain deposits of Neolithic objects. Not least with regard to exploitation, these results should provide a basis for considering wetlands, even those of limited scope, to a greater extent than previously prevailing.

## 7 FROM CHANCE FINDS IN BOGS TO WETLAND ARCHAEOLOGICAL SITES?

**Abstract author(s): Koivisto, Satu (University of Turku)**

**Abstract format: Oral**

Much of the early wetland archaeological fieldwork in Finland in the 19th and early 20th centuries was basically restricted only to revealing and recovering the sudden stray finds (e.g. wooden skis, paddles, sledge runners, and dugout canoes), which were exposed in wetlands through various land use processes, mainly manual ditching aimed at wetland drainage for agriculture and forestry. When these finds were suddenly recovered, there were no viable methods (apart from excavation) or interest in prospecting the surroundings of the find spots, and the artefacts were typically interpreted as stray finds lost accidentally or deposited intentionally in wet habitats for some ritual or otherwise unknown purposes in the distant past. Hundreds of wooden fish traps have also been revealed in Finnish bogs and shallow waterways through ditching and drainage operations. Recent studies have demonstrated that a fairly large proportion of the stationary wooden fishing structures are actually prehistoric and their find spots and environs are potential for human habitation and resource procurement. Re-evaluation and contextualisation of the fishery data has increased the number of Finnish wetland archaeological sites and furthered their consideration in archaeological research and interpretation. Older data in archives, reports and publications is thus relevant and useful for modern studies concentrating on the detection and evaluation of archaeological sites in wetland environments. Mapping and georeferencing the adequately documented find spots, studying and prospecting the sites, and targeting systematic dating programmes on the preserved organics (still at sites and in museums) would elucidate the contexts, types and dating of certain find categories. Their results would also provide better preconditions for heritage management authorities to evaluate the archaeological potential of certain wetland areas in land-use planning and threat mitigation procedures.

## 8 THE IMPLICATION OF STRAY BONE POINTS STUDIES TO THE FINAL PALAEOLITHIC AND MESOLITHIC RESEARCH IN LITHUANIA

**Abstract author(s): Rimkus, Tomas (Centre for Baltic and Scandinavian Archaeology - ZBSA)**

**Abstract format: Oral**

The 20th century in the territory of Lithuania was a period of a massive draining of wetlands and straightening of the riverbeds. Due to these reasons, many prehistoric bone and antler tools were unearthed that later became a part of private collections or were transferred to museums. Many of such finds ended up in scientific publications where their typology and shape were discussed, however, their chronology was only speculated.

Recent AMS investigations of osseous implements from the eastern Baltic revealed many new Final Palaeolithic and Mesolithic tools. These results enabled to highlight the continuation of Late Pleistocene technologies into the Early Holocene, and take a closer look into human adaptation to new hunting technologies. However, in comparison with other northern European territories, the dating and the significance of such finds in the territory of Lithuania have been poorly emphasized. In 2021 a new post-doc project focusing on the hunter-gatherer's technological development

in the eastern Baltic was launched. One of the main studied objects in this project is the bone points that are considered as the single finds or come from the wetland sites with complex stratigraphy. 16 bone points, that previously have been chronologically considered as the Final Palaeolithic and Mesolithic tools, have been sampled for AMS 14C analysis. The results presented in this paper allows not only to correct the bone points typo-chronological aspect but also consider the changes and adaptations in technologies, as well as shed light on the cultural history in the territory of Lithuania.

## 9 THE DISTRIBUTION OF ESTONIAN LATE NEOLITHIC AND BRONZE AGE STRAY STONE AND BRONZE ARTEFACTS: A QUANTITATIVE APPROACH

**Abstract author(s):** Johanson, Kristiina - Paavel, Kristiina (University of Tartu) - Sikk, Kaarel (University of Luxembourg) - Kriiska, Aivar (University of Tartu)

**Abstract format:** Oral

The distribution of Estonian Late Neolithic and Bronze Age (2800-500 BC) shaft-hole stone axes has been mostly used to describe the impact of early farming on the settlement pattern. However, the landscape context of these stray finds, their relationship to soils and partly contemporary stray bronze objects have not been examined.

We report the characterization of 141 find locations of stone axes and 48 find locations of bronze artefacts, as well as their associations to soils and settlements. The study takes a quantitative approach, by starting from site-specific data collection focused on local topography and hydrology, soils, and local environmental background. We seek to outline general tendencies in the distribution of stray finds on soils and the landscape, to discuss which activities or habitats they indicate, and to evaluate the influence of soils on human activities on the landscape within the broader context of the changing subsistence base.

The results show that the stray finds are not located randomly when it comes to soils. In particular, stone artefacts tend to be more often associated with dry land near rivers and streams, whereas bronzes have a quite clear preference for wet contexts. When compared to the find places of contemporary settlements, it is evident that the stray finds likely indicate various off-site systemic behaviours and the diversification of land use during the period, attested by distinct deposition activities for stone and bronze artefacts.

## 10 MESOLITHIC STRAY FINDS AS POINT OF DEPARTURE FOR A SURVEY ON WATERLOGGED SITES

**Abstract author(s):** Mahlstedt, Svea (Lower Saxony Institute for Historical Coastal Research - NIHK)

**Abstract format:** Oral

In northwestern Germany the Mesolithic is mainly known from stray finds. These include mostly flint but also random finds of organic material, from surface sites as well as rescue excavations, non-archaeological construction work and dredging. The finds are regularly registered in the state heritage database, which gives an overview and brings together information from very different collections.

To gain a better understanding of the regional Mesolithic especially in terms of chronology as well as developments in material culture and landscape use a survey for waterlogged Mesolithic sites was started in 2019, taking selected stray finds as a point of departure. After evaluating the site positions in respect to available landscape data about bogs, fens and transgression areas, some 20 sites seemed suitable for further investigation, such as field walking, coring, geophysical survey and excavations. The presentation shows first results and discusses the value of stray finds as indicator for preserved waterlogged find layers.

## 11 NICE TO HAVE OR NEED TO HAVE? STRAY FINDS, A KEY TO UNDERSTAND THE EARLY NEOLITHIC IN NORTHERN ZEALAND, DENMARK?

**Abstract author(s):** Aarsleff, Esben (Museum Nordsjælland)

**Abstract format:** Oral

Northern Zealand was an Eldorado for the people of the Early Neolithic (3900-3300 BC). The watery landscape with lots of open water and small dry elevations was highly attractive, and we find traces of activity on almost every field, in the shape of stray finds.

Stray finds are undoubtedly important in large scale analysis of different typology and distribution studies, just as they may be significant in identifying human presence in specific landscape setting. But on the small scale the impact of the stray finds is problematic, because what do they represent, when we do not have their exact context?

In the endeavor to comprehend the impact of stray finds, we have combined the mapped stray finds around the Søborg sø (Lake Søborg) with both surveying and excavations. It turned out that the soil contained hundreds of finds, mostly flakes, yet there were no neolithic features in the subsoil. This could of course be due to modern ploughing or erosion. Another explanation could be that some of the activities on the settlements did not leave traces in the subsoil, such as flintknapping for instance. The latter is supported by the fact that most of the excavated settlements in Northern Zealand contain numerous flakes in the cultural layers, but they are always secondarily placed. We have



never found actual knapping sites. Stray finds can, perhaps, indicate such knapping sites, but only if they are all collected with exact GPS coordinates, which is a huge work effort.

The paper will present recent attempts to combine stray finds with archaeological excavations, as well as some insight into the use of the thousands of stray finds that we store in the Museum of Northern Zealand.

## 12 LATE GLACIAL STRAY FINDS FROM THE COLONISATION OF BRITAIN DATABASE (ENGLAND AND WALES) AND HOW TO USE THEM

**Abstract author(s):** Mills, William (University of Oxford)

**Abstract format:** Oral

The Colonisation of Britain database (The Colonisation of Britain Project 2012; wessexarch.co.uk 2015) was developed from the personal archive collated by Roger Jacobi from the 1970's until 2009. It is the most extensive and detailed catalogue of Late Glacial sites in England and Wales. The database contains material from 67 cave sites, 95 open air sites and over 400 stray finds identified as Late Glacial. Whereas the cave and open air sites are relatively well defined, the stray finds are based on what are considered diagnostic characteristics and "type fossils". However the database is not without challenges, and "diagnostic" stray finds may vary considerably in resolution. The potential for these stray finds to provide further information on a landscape scale of Late Glacial occupation and dynamics is considerable. Not only do they fill in the gaps between recognised fully excavated assemblages, but also provide a means to examine multiple themes of landscape use and taphonomy. In some cases they may even lead to the identification of areas with high potential and the discovery of new sites.

## 13 STRAY FINDS AND THE MESOLITHIC OF NORTH-EASTERN ITALY: THE CASE STUDIES OF THE SILE RIVER SPRING AREA AND COMELICO

**Abstract author(s):** Fontana, Federica (Università di Ferrara - Dipartimento di Studi Umanistici - Sezione di Scienze preistoriche e antropologiche) - Visentin, Davide (Institución Milá y Fontanals, IMF-CSIC; Università di Ferrara - Dipartimento di Studi Umanistici - Sezione di Scienze preistoriche e antropologiche) - Bertola, Stefano (Università di Ferrara - Dipartimento di Studi Umanistici - Sezione di Scienze preistoriche e antropologiche)

**Abstract format:** Oral

North-eastern Italy is the best-known region regarding the Mesolithic of the peninsula and one of the richest in Europe both from a qualitative and quantitative viewpoint. Extensive research carried out during over 50 years allowed reconstructing a complex framework that is the result of three self-reinforcing factors: a) the high visibility of the record, especially in some topographic/ecological areas; b) the discovery of most sites by local amateurs; c) the intensive research activity carried out by research institutions.

The Sile River spring area in the Venetian Plain (between the provinces of Treviso and Padova) is the first case study presented. The second one deals with an upland territory known as Comelico (Belluno Alps), located close to the Austrian border. In both areas, stray finds identified by local amateurs represent the primary evidence. In the latest years, we have started profitable collaboration programs in both regions with the local offices of the Italian Ministry of Culture (i.e. Soprintendenze) and local public and private entities (e.g. municipalities, regional parks, private associations) and developed research projects aimed at valorising such evidence both from a scientific and disseminative perspective.

## 14 UNLOCKING THE INVISIBLE POPULATION OF THE LATE MIDDLE NEOLITHIC IN EASTERN DENMARK THROUGH STRAY FINDS. INVESTIGATIONS AROUND ROSKILDE FJORD

**Abstract author(s):** Struve, Emil (Roskilde Museum)

**Abstract format:** Oral

Documenting the Neolithic population on the island of Zealand, Denmark in period B (2800-2450 BC) of the Danish Middle Neolithic has proved difficult due to a lack of known settlements, as well as the continued use of previously constructed passage graves for burials throughout the period as well as the following Late Neolithic and Early Bronze Age periods. The only significant sites demonstrating the structure and organization of the population in the late Middle Neolithic around Roskilde Fjord are large palisaded enclosures built between 2800 and 2500 BC. So how do we get close to the population that constructed the enclosures without clear traces of settlements and graves?

The presentation gives an example of successful cooperation with local flint enthusiasts welcomed at the museum at special events, where stray finds are presented to professional archaeologists, benefitting both parties. The finder gains knowledge of the artefact, while the researchers gain knowledge of sites with scientific potential. In several cases, the events have been successful as a way for the museum to search the network for specific artefacts identified with research potential.

In the case of the missing late Middle Neolithic, the contacts gained by the network of enthusiasts led to a private collection not previously registered by ROMU (Roskilde Museum) or the database of the Danish Heritage Agency.

The collection gathered at the site of Grønshøj Mark displayed significant axe-types with characteristic scorching of fire. The stray finds demonstrate a site dated to the beginning of the sought after period and suggest a context with the potential to bring knowledge of both rituals and social structure of the period. Based on the potential of the stray finds, excavations are now underway at the site, and a shortcut between stray finds and research has been achieved.

## 15 HIDDEN LITHIC TREASURES. MUSEUM COLLECTIONS OF THE NEOLITHIC STONE TOOLS.

**Abstract author(s):** Kufel-Diakowska, Bernadeta - Chłoń, Marcin - Bronowicki, Wojciech (University of Wrocław) - Borowski, Michał (independent researcher)

**Abstract format:** Oral

In this paper we would like to present the result of studies on the collection of stray finds from SW Poland that consists of the macro-lithic tools dating to the Neolithic. The group of objects (more than 350) includes mainly axes, adzes and handstones made from various igneous, sedimentary and metamorphic rocks. Most of them became part of museum collections thanks to donations from the local community and surface prospection conducted by German archaeologist before WWII. Despite the undetermined context of the discovery, we consider them to be valuable source of information on the mobility, contacts and life of the Neolithic societies.

We used a combination of generally available methods in our research. Starting with application of systematic classification of macro-lithic tools, we were able to define cultural connections and chronological frames of the finds. While some of the objects are well recognised in other archaeological contexts in this area, number of specimens are represented only by stray finds. This is true mainly for a large group of the Eneolithic axes. The use of petrographic analysis allowed us to identify the type of raw material, as well as, in some cases, local and distant rock outcrops. Finally, the use of geographic information system (GIS) together with distribution of archaeological sites and settlement traces, gave use opportunity to link particular finds with the recognized episodes of the occupation of the early farming societies in the SW Poland. The studies are complemented by the technological and functional analysis based on microscopic observations in case of well-preserved pieces.

The obtained results confirm our opinion about the necessity to conduct research on collections of stray finds. These data complement the information gathered through excavations of the archaeological sites.

Studies are supported by the National Science Centre (NCN), Poland, decision No: UMO-2020/38/E/HS3/00285.

## 16 STONE BATTLE AND POLISHED AXES IN NW RUSSIA AS STRAY FINDS: POTENTIAL FOR ANALYSIS

**Abstract author(s):** Dolbunova, Ekaterina (-) - Mazurkevich, Andrey (-) - Stolyarova, Tatyana (-) - Kazakov, Eduard (-) - Rineyskaya, Tatyana (-)

**Abstract format:** Oral

Stone axes have been the most common category of Stone Age stray finds over the last 150 years in NW Russia. This has been the most overlooked and unexplored category, as they are often not precisely georeferenced and represent accidental single finds. They are housed in various regional museums and in local schools. Some of them did not survive and description in field diaries and catalogues appears to be the only source of information. As part of a scientific project on the study of the Stone Age in Northwest Russia, the collections of all regional museums in the Pskov and Smolensk Regions were analyzed and attributed, among which more than 400 axes were georeferenced and analyzed. The geographical distribution of axes covers the Upper Volga, Dnieper and Western Dvina rivers. A series of finds can be attributed to the Early Neolithic period (6th millennium BC), and the major part belongs to the Globular Amphora culture and CWC. Regional differences in distribution of different chronological types of axes were traced. Mapping of battle axes has shown that in addition to single finds, there are several concentration areas, most likely burial sites. Comparison with stone axes types found on the settlements in this region allows refining their chronological position and attribution. GIS-analysis of different axes types' distribution and known archaeological settlements allows reconstruction of networks for different Neolithic phases.

## 17 SCULPTED STONE WEAPONS IN NORTHEASTERN EUROPE IN THE 3RD MILLENNIUM BC: STRAY FINDS AS RITUAL DEPOSITS?

**Abstract author(s):** Kashina, Ekaterina (-) - Mantere, Ville (University of Turku) - Zhulnikov, Aleksandr (-)

**Abstract format:** Oral

More than 50 sculpted stone maces and axes have been found as stray finds in Northern Russia, Finland and Sweden during the 19th and early 20th century. They mostly represent heads of different animals, the brown bear (*Ursus arctos*) being the most common. The find contexts of the sculpted stone maces and axes strongly indicate their deliberate abandoning/burying outside settlements. In 1999, archaeologist Aleksandr Zhulnikov managed personally to find a bear-head axe in the vicinity of the excavated settlement Beryozovo in Karelia. This find provides unique modern-day insights on the find circumstances of sculpted stone weapons. Based on their raw materials as well as on their

technological, morphological, and stylistic qualities, the items can be dated to the 3rd millennium BC. The artefacts are closely associated with the cultural influence of Corded Ware/Battle Axe Culture groups, which apparently led to locally distinct changes in earlier hunter-gatherer beliefs. The different states of the sculpted stone weapons (intact, broken, re-made, polished) can give meaningful hints to the objects' life histories. Consequently, the study of the artefacts leads us to wider issues related to the interaction between hunter-gatherers and the first agricultural groups in northeastern Europe during the Late Neolithic/Early Bronze Age transition. It is thought-provoking that even though the widespread stone weapons and their find contexts clearly reflect the Corded Ware influence in the taiga region, there is still an absence of proper Corded Ware materials especially in Northern Russia. The sculpted stone artefacts also raise important questions concerning the new spiritual role of the bear, as bear imagery is almost absent in the hunter-gatherer art of the 4th millennium BC.

---

## 330 SUSTAINABILITY IN ARCHAEOLOGY AND TODAY: AN INTERDISCIPLINARY APPROACH

**Theme: 5. Climate Change and Socioenvironmental Perspectives**

**Organisers: Civilyte, Agne (Lithuanian Institute of History) - Zubrow, Ezra (New York State University of Buffalo)**

**Format: Regular session**

As archaeologists, we are aware that sustainability is not a new issue for human societies. There are many examples of sustainable practices in prehistoric and protohistoric societies, ranging from agricultural methods, organizational forms and economic traditions on the large scale, to specific materials and technological innovations on the small scale. This session first of all examines a range of what archaeologists have learned about how past people created sustainable, long-term solutions to their problems. Then, where they failed. Emphases will be placed on questions such as environmental diversity, social structure, cognition, and the role of clustering in innovations and technology to name a few.

Archaeologists are able to determine which materials were used for production and which for consumption. They consider the role of capital, rent, and labor in forming investment, quality control, and technology. One needs to analyze primary, secondary and tertiary uses as well as recycling to understand the above.

Techniques applied for the physico-chemical, structural and characterization of ancient materials are based on methods used in the Material, Natural, and Engineering Sciences. Consider the use of the Life Cycle of Artefacts where the cycle begins with comparative decision trees, investment of time, labor and capital in the harvesting and extraction of resources, followed by production, marketing, consumption, recycling and ultimately waste. For archaeologists, the Life Cycle can be the bridge between innovation and sustainability and may be analyzed through information flows as well as the application of transdisciplinarity to research. Thus with this session we hope to cooperate with the actors from various fields of material natural and Engineering sciences to resolve problems that could not be solved either by single disciplinary or multidisciplinary research.

### ABSTRACTS

#### 1 AN INTRODUCTION TO AN INTERDISCIPLINARY APPROACH TO SUSTAINABILITY

**Abstract author(s): Goldstein, Lynne (Michigan State University - Retired)**

**Abstract format: Oral**

This presentation serves as an introduction to the session topic. As archaeologists, we can provide many examples of past sustainable practices, and hopefully, point to lessons that are relevant today. Conducting a project in archaeology and sustainability generally requires a long-term commitment because of the complexity of issues and processes, the application of both traditional and new technologies, and place-based approaches to provide the best context. Also critical are true collaborations with a variety of local communities, stakeholders, and scholars, including those in other fields who may collaborate on examining these issues in detail and from other perspectives. Archaeology as a source of historical knowledge has been used to document and understand (1) long-term historical trajectories of human-environmental interactions, (2) responses to natural hazards, (3) legacies of past land-use patterns, (4) modeling or historical analogs of past human-environmental ecosystems, and (5) natural versus anthropogenic agents of change. Long-term, place-based, collaborative, interdisciplinary research and the development of collaborative relationships with local communities and other experts are significant additions to this traditional list.

#### 2 REVERSE ENGINEERING, SUSTAINABILITY AND ARCHAEOLOGY

**Abstract author(s): Zubrow, Ezra (University at Buffalo; University of Cambridge) - Lindström, Torill (University of Bergen)**

**Abstract format: Oral**

Erika Guttman-Bond's 2019 book "Reinventing Sustainability: How Archaeology Can Save the Planet" documents how archaeological discoveries are relevant to modern climate change and sustainability. It focuses on prehistoric

wetland agriculture, deserts, food security, saving the soil, and vernacular architecture. The principles of reverse engineering are pertinent to this task.

Engineering designs, manufactures, assembles, and maintains products and systems. Forward engineering typically moves from abstractions to new physical products. Reverse engineering is the opposite. The design and functioning of a product are recreated using a physical object as the starting point. The physical article contains all known information since all plans and documentation are missing. In many archaeological cases there is only a part of the physical artifact surviving. Reverse engineering begins by examining the object or system with its complicated geometry projecting the entirety and reconstructing it analytically and functionally. Second, one takes the article apart and reassembles it in order to make sure one knows the processes by which the object works. Third is the process of substituting obsolete or inefficient parts with more efficient replacement parts. Fourth, one reintegrates the parts and processes. Fifth is testing the reengineered prototype in its entirety. Finally, one releases the reengineered product.

This paper provides modern and prehistoric examples. If Guttman is right then reverse engineering will be an important innovation process to help develop sustainability as climate change proceeds.

### 3 “DIG DEEP, THINK BIG”: ARCHAEOLOGY AS CLIMATE ACTION

**Abstract author(s):** Riel-Salvatore, Julien - Burke, Ariane (Université de Montréal) - Lyon, Christopher (McGill University)

**Abstract format:** Oral

Archaeology informs us about the resilience of human societies as they faced past climate change. As a discipline, however, it has had a challenging time providing operationalizable strategies for contemporary use. Drawing on two recent multidisciplinary efforts involving archaeologists, we explore how lessons drawn from the archaeological record can be profitably recruited in the ongoing effort to mitigate and adapt to contemporary climate change. First, drawing on a study showing the importance of thinking about and modeling climate change over centuries, as opposed to decades, we argue that an 'archaeological temporality' where the long-term, compound effects of concerted actions take precedence over individual action is necessary if we are to transcend the tyranny of short-term thinking. Then, we show that the archaeological record contains numerous examples of humans coming together to engage in important, large-scale projects (e.g., monumental architecture) that unfolded over several generations, producing lasting cultural signatures. Finally, turning to the archaeology of climate change, we suggest drawing on these insights to propose that humanity must tap into its 'natural reliance' on long-term, multigenerational projects to reframe the scale at which climate action must be enacted and encourage people to recognize that they are participating in a project bigger than themselves, the fruition of which they may not live to see, but which constitutes a lasting heritage for future generations, transcending time and individual lifespans.

### 4 THE ANIMALS OF OLD EUROPE. THE BREAKDOWN OF THE NEOLITHIC MODEL OF SUSTAINABILITY

**Abstract author(s):** Marciniak, Arkadiusz (Adam Mickiewicz University, Poznań)

**Abstract format:** Oral

The profound transformation of constituent elements of the Neolithic mode of existence brought into Europe by farmers migrating from the Near East led to unprecedented growth of communities of Southeastern Europe, the development of genuinely European progenitorial economy, and their long-lasting persistence known as the Old Europe phenomenon. The development of new forms of husbandry practices arguably provided important foundations for the unprecedented growth of these groups and the development of distinct sustainable practices. These involved an effective re-designing of the inherited husbandry tradition of early Neolithic farmers, the development of secondary products mode of exploitation, the adaptation of major Neolithic domesticates to different environmental and ecological zones, and changes in cattle and sheep genomes and morphologies.

However, the persistence of the Old Europe sustainability model was not long-lasting. In subsequent centuries, dysfunctions in their different domains were becoming evident. As animals were clearly important for the development of the Old Europe system, the transformative character of husbandry practices upon its breakdown and ultimate demise must have played an important role in this process. In this paper, I will hypothesize three major effects of transformations in husbandry practices introduced by the local farmers that ultimately significantly contributed to the breakdown of the Old Europe mode of sustainability. These comprise: (a) the newly developed modes of consumption became inefficient and ineffective in a long run, (b) sheep and cattle husbandry practices, along with environmental conditions, affected their genomes and contributed to the decline in livestock productivity towards different animal products, and (c) shortening the distance to animal herds kept at settlements led to the emergence infectious zoonotic diseases and eventual prevalence of various pathogens in both humans and livestock.

## 5 NATURE AND NURTURE: EXPLORING APPROACHES TO LANDSCAPE MANAGEMENT IN THE LATE BRONZE AGE SOUTHEASTERN BALTIC

**Abstract author(s):** Minkevicius, Karolis - Piličiauskienė, Giedrė - Podėnas, Vytenis - Micelicaite, Viktorija - Čivilytė, Agnė (Lithuanian Institute of History)

**Abstract format:** Oral

Effective management of available resources plays a key role in the survival of human populations. This economic aspect is crucial not only for modern, but also for prehistoric populations. The earliest attempts to mitigate the risks posed by the resource scarcity could be traced back to the Neolithic as illustrated by the emergence of subsistence economy. However, this was only the initial step. The necessity to shift towards more sustainable ways of living gradually increased with the demographic growth and the ramping up of agricultural activities.

Agrarian intensification witnessed in northern Europe during the Late Bronze Age presents a case for similar effort. This topic is currently being explored in an ongoing research project "Late Bronze Age (1100–500 BC) economy in the eastern Baltic region: towards a new model", aimed at examining different subsistence strategies and economic adaptations of Bronze Age populations. Our findings are presented in two case studies from Lithuania.

Recent excavations of Mineikiškės and Garniai I enclosed hilltop settlements produced rich archaeobotanical and zooarchaeological collections. Further analysis of these finds provided new insights into the Bronze Age subsistence economy. Our results suggest that certain crops and domestic animal species were especially significant, which could be linked to the surrounding environment. Also, stable  $\delta^{13}C$  and  $\delta^{15}N$  stable isotope analysis of osteological and charred plant remains present information on local conditions and present an opportunity to explore landscape management practices employed by local Bronze Age populations.

## 6 DIET IN BRONZE AGE EUROPE AS REVEALED BY ZONOTIC PARASITES FROM SEDIMENTS AND COPROLITES

**Abstract author(s):** Ledger, Marissa (Faculty of Medicine and Dentistry, University of Alberta; Department of Archaeology, University of Cambridge) - Grimshaw, Elisabeth - Fairey, Madison (Department of Archaeology, University of Cambridge) - Ballantyne, Rachel (McDonald Institute for Archaeological Research, University of Cambridge; School of Archaeology, University of Oxford) - Knight, Mark (Cambridge Archaeological Unit, University of Cambridge) - Mitchell, Piers (Department of Archaeology, University of Cambridge)

**Abstract format:** Oral

Palaeoparasitology, the study of parasites in past populations, affords us the opportunity to not only understand gastrointestinal infections in the past, but also many aspects of diet and thus the sustainability of dietary sources. Due to the unique life cycles and specific intermediate hosts of many parasites, their presence can be used to study sources of nutrition, methods of food preparation, human-animal interactions, and disposal of waste in the past. Here we present the results of the palaeoparasitological analysis of sediments and human coprolites from the Late Bronze Age pile-dwelling settlement of Must Farm, Britain (865–840 cal BC) in conjunction with previous studies undertaken on Bronze Age sites in Europe. We will discuss the value of these parasites for understanding diet in the past.

Coprolites and occupation layer sediments from Must Farm were studied using microscopy and enzyme-linked immunosorbent assay to identify preserved helminth eggs. The samples from Must Farm contained eggs from four zoonotic parasite species including *Capillaria* sp., fish tapeworm (*Dibothriocephalus* sp.), *Echinostoma* sp., and giant kidney worm (*Diocotophyma renale*). Four other Bronze Age sites in Europe, located in Austria, Britain, France, and Czech Republic have been studied for parasites revealing further evidence for fish tapeworm (*Dibothriocephalus* sp.) and one other potential zoonotic parasite of humans, *Dicrocoelium* sp. Three of the identified zoonotic parasites are transmitted via ingestion of raw or undercooked marine organisms. The location of the sites, and proximity to freshwater, are clearly important factors in the acquisition of these zoonotic parasites. Those living at Must Farm appear to have lived a sustainable lifestyle by harvesting a portion of their food from the water around them. Similarly, food preparation methods and waste disposal practices that would have allowed for transmission of these parasites in the communities will be discussed.

## 7 TOWARDS SAFE AND SUSTAINABLE FOOD

**Abstract author(s):** Zabulione, Aelita - Šalaševičienė, Alvija (Kaunas University of Technology) - Alvalade Ximenes, Alexander A. (Columbia University in the City of New York) - Urbonaitė-Ubė, Miglė (Klaipėda university) - Bertasius, Mindaugas (Kaunas university of technology) - Čivilytė, Agnė (Lithuanian institute of history)

**Abstract format:** Oral

Europe's plates today will determine the plight of its people's health tomorrow: the way in which food is farmed, fished, processed, distributed, valued, prepared, consumed and wasted must change to ensure that environmental, social, and economic sustainability as well as food safety become core assets of the EU's food systems. This paper

represents the perspectives of research and innovation as critical tools for the EU in the transformation towards safe and sustainable food systems for people, our planet, and the climate (SSFS).

We are convinced that food is more than just biomass as input for life support, bio-fuel, or bio-based products. Food has relevant historical, social, cultural, geographic, environmental and economic dimensions. Accordingly, we strongly suggest a multi-sector analysis featuring the (bio-based) material, (bio)-energy, technology, health, tourism, and transport sectors. These entities would address co-product valorization, waste and co-products as energy sources and energy input for all steps in the food chain, novel technologies (including ICT), the relationship between food and health, multi-functional agriculture, globalized food chains and local-to-local production concepts respectively. Indeed, these examples may extend to various other sectors as well.

Collaborating with archaeologists is very important because their methodologies—such as ( $\delta^{13}\text{C}$ ), ( $\delta^{15}\text{N}$ ), chromatographic analysis, and others—enable us to reconstruct the food chain, gauge the sustainability of food production, as well as identify health problems caused by poorly prepared or distributed food. In turn, this interdisciplinary approach helps us understand the essential elements of healthy and sustainable food production.

## 8 A LONG VIEW OF THE ENVIRONMENTAL EFFECTS OF COPPER PRODUCTION

**Abstract author(s):** Fregni, Elpidia Giovanna (No affiliation)

**Abstract format:** Oral

This paper explores the environmental impact of early metal industries drawing on samples from archaeological cases and experimental work.

In modern copper mining operations, pollution from extracting and refining sulphide ores contaminates soil and waterways through processes of extraction, leaching, and smelting. This results in long-term environmental impacts that are toxic to nearly every living thing.

In prehistory copper was processed by smelting carbonate and sulphide ores using charcoal in open roasting beds and furnaces, allowing the contaminated slag and waste minerals to remain in the ground. Using examples from known ancient copper processing sites in Europe and Britain, this paper will examine the evidence of long-term contamination in different environments and soil types. This will further be compared to soil samples taken from sites where experiments in copper ore processing and smelting have been conducted that replicated Bronze Age metal technology.

This data in this paper is not only relevant to research in prehistoric metals technology, but it also illustrates the long view of metallurgical industrial waste. By understanding the environmental impact made by Bronze Age metal industries, through both ancient technology and in modern experiments, we will gain a greater understanding of the long-term environmental effects of these activities.

## 9 CHARACTERIZATION OF HEAVY METALS FROM PHOSPHATE ROCKS

**Abstract author(s):** Nzihou, Ange - Lyczko, Nathalie (IMT Mines albi)

**Abstract format:** Oral

Phosphates are among the most used compounds in various sectors of our daily life. This broader utilization is due to its wide range of chemical, physical and thermal properties of the phosphate-based materials that are produced.

The main source of phosphate is the sedimentary rocks mainly composed with apatite (Chlorapatite  $\text{Ca}_5(\text{PO}_4)_3\text{Cl}$  · Fluorapatite  $\text{Ca}_5(\text{PO}_4)_3\text{F}$  · Hydroxyapatite  $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ ). Apatite is also the main constituent of bones and teeth especially. In addition to the apatite, the phosphate rock is composed of a wide range of metal elements which the characterization is important prior processing towards phosphates-based materials.

In this presentation, we will address the characteristics and composition of phosphate rocks with a particular focus on heavy metal elements characterization. A comparison of the relevance of various techniques will be made as for their ability to generate quantitative and qualitative data, and how they could be combined to overcome some issues such as the precision and accuracy.

## 10 INSIGHTS ON TOXIC METALS AND THEIR IMPACT ON THE ENVIRONMENT AND HUMAN HEALTH IN THE BRONZE AGE

**Abstract author(s):** Civilyte, Agne (Lithuanian institute of History)

**Abstract format:** Oral

M. Harper examined the potential exposure of prehistoric Bronze Age workers to toxic metals [1]; however, this topic remains understudied. Metallurgical practices such as bronze soldering, in particular, endangered the wellbeing of the individuals that undertook activities of this nature. Indeed, we need to think about how many harmful substances people have used during the mass bronze production, what kind of vapors or fumes they inhaled and how danger-

ous it was for their health. To be sure, the treatment of metals was not the only hazardous activity. Wood and possibly other kinds of biomass used for huge bonfires and furnaces polluted the environment as well.

Permanent use of bronze artifacts was potentially furthermore problematic. Big metal necklaces and arm-rings may also have had adverse effects on the human body. Traces of such use indicate that bronze was worn every day. The question here becomes, what was the price of wearing bronze?

This paper addresses the above points of inquiry. It also deals with analysis conducted on select bronze artifacts from different periods of the Bronze Age, with the aim of presenting the percentage of metal components in the alloy with a special focus on toxic metals. Moreover, we will try to shed light on theoretical questions about the social positions of metalworkers and those who wore metal jewelry. Last but not least, this paper also aims to propose the collaboration of archaeologists and medical scientists to establish a multi-disciplinary understanding of metal toxicity and its impact on the environment and human health.

[1] M. HARPER. „Possible toxic metal exposure of prehistoric bronze workers,“ *British Journal of Industrial Medicine* 1987;44:652-656

## 11 WASTE OR NO WASTE. THE BENEFITS OF GOOD ORGANIC PRESERVATION IN WELLS

**Abstract author(s):** Staeuble, Harald (Archaeological Heritage Office Saxony)

**Abstract format:** Oral

Archaeological features with good preservation of organic materials, like prehistoric wells, offer exceptional possibilities in understanding more about the use and decay of these prehistoric structures. This applies to many aspects we can analyse, from planning to building and from using until its abandonment by backfilling. Apart from the conventional archaeological reasoning and analysis of the find materials as well as of the sediments within the wells, several results are obtained by non-archaeological methods. These range from the nowadays 'conventional' archaeobotanical, archaeozoological and entomological analyses to geochemical soil and thin section analyses of the sediments. Moreover, the well preserved wooden objects are analysed using dendrology and 3D scans are made to document the toolmarks in detail as well as to reconstruct the construction in a manner which neither builders nor excavators ever saw. Finally we also recovered unconventional ceramic vessels which were coated with bast stripes on tar. The only way to visualize the hidden ceramic surface and recognise the original decoration we use X-Ray micro computed tomography. This helps to understand the different steps of the life cycle of these special ceramics until their deposition in the well.

## 12 RECYCLING OF METAL IN BRONZE AGE. AN OVERVIEW OF SUSTAINABILITY PHENOMENON RELATED TO THE HUMAN BEHAVIOUR

**Abstract author(s):** Delfino, Davide (Geocience Center of University of Coimbra)

**Abstract format:** Oral

The numerous and widespread presence of bronzes hoards, as well as the evidence of bronzists workshops along with Europe, suggest that the phenomenon of bronze recycling was a fairly widespread phenomenon starting from the late Middle Bronze Age, but especially in the Late Bronze Age. A certain postmodernist vision of archaeological data has minimized an obvious human behavior, that is the optimization of resources, to the advantage of an outdated ritualistic vision for many hoards of the Bronze Age often taking into consideration only part of the available data. An overview of some archaeological clusters that include hoards of melters will be presented, also taking into account archaeometallurgical data, to then analyze the phenomenon on a larger scale from a point of view of transregional events and socio-economic scale especially for the Late Bronze Age. The sustainability that can be deduced from the use of recycling of the bronze in a particular phase of the Protohistory, is an indication of the part of human behavior that prefers the optimization of available resources: in the case of bronze metallurgy, among many considerations, there is it is also that of using less wood for the simple melting of the metal alone compared to the double operation of smelting from mineral to metal and subsequent melting.

## 13 HISTORICAL CHARCOAL PRODUCTION: ARCHAEOLOGY, ECOLOGY AND ECONOMY

**Abstract author(s):** Nelle, Oliver (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart)

**Abstract format:** Oral

Historical charcoal production had a crucial role in enabling metallurgical processing and supplying cities with energy. The production of charcoal in kilns was a common practice, with thousands of people working this trade, and with immense consequences for woodlands and landscapes until today. This importance for human civilisation is contrasted by a still to be developed "niche research" on charcoal production up to now. Charcoal kiln sites serve as archives for woodland history on a fine spatial resolution. They are witnesses of on-site woodland activities, as well as provide information on tree species composition since the charred wood originated in far most of cases from the direct vicinity. Such a spatial resolution makes a reconstruction of forest dynamics on a stand level possible. Kiln sites

are an archaeological legacy. Investigating historical charcoal production is a highly interdisciplinary field. Questions of geography and sustainability of charcoal landscapes, ecology of woodlands, economy of wood supply and sociology of the charcoal burners merge and interact. Different sources and archives contribute to an integrated understanding: written documents; archaeological monuments; charcoal as direct left-over of the activities; charcoals in soils and sediments as a fall-out and pollution. It is an ideal subject to bring together researchers and practitioners.

## 331 POSSIBILITIES AND CHALLENGES OF THE ARCHAEOLOGICAL SCIENCE REVOLUTION IN THE CAUCASUS

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Passerini, Annapaola (Cornell University) - Maurer, Gwendoline (University College London) - Batiashvili, Magda (Sapienza University of Rome) - Ismayilova, Narmin (University of Birmingham) - Antonosyan, Maria (Max Planck Institute for the Science of Human History; Institute of Molecular Biology NAS Armenia)

**Format:** Regular session

The advent of the archaeological science revolution has considerably changed archaeological research, but also raised issues regarding the integration of old and new data produced by fundamentally different approaches. This problem is particularly extant in the Caucasus, where the opening toward international collaborations has allowed an infusion of archaeological science applications to answer long-standing archaeological questions regarding the influence or role of the Caucasus in Eurasian prehistory (e.g. animal domestication, demographic changes, chronology). The position of the Caucasus at the bridge between Soviet and post-Soviet approaches often justifies the use of archaeological science as a "solution" to incorrect more "traditional" (often deemed less advanced) approaches. However, this highly undermines the potential of integrating old and new data and the complementarity of "new" and "traditional" approaches to the above-mentioned problems, from the Neolithic to the Middle Ages. This session emerges from reflections brought forward by "The Caucasus Through Time Network" (CTTN), a research network aimed at fostering the development of archaeology in the Caucasus. Inspired by over a year of CTTN interdisciplinary lectures, this session challenges speakers to rethink the dichotomy between the old and the new, and to reflect on how archaeological science can be better integrated with other archaeological traditions in the Caucasus. We welcome case studies that relate to archaeological science techniques (e.g. scientific dating, GIS, quantitative modeling, biomolecular and isotope studies, zooarchaeology and paleobotany) and that reflect on one or more of the following issues: what are the main challenges to include new techniques into field projects in the Caucasus? How reliable are new techniques in answering archaeological questions? And how do the old and new data compare and contrast in different case studies?

### ABSTRACTS

#### 1 COLOUR OF THE PAST. FIRST ARCHAEOMETRIC INVESTIGATIONS OF CAUCASIAN ROCK ART PAINTINGS IN GEORGIA

**Abstract author(s):** Batiashvili, Magda (Science and Technology for the Conservation of Cultural Heritage) - Gallinoro, Marina - Restelli, Francesca (Department of Ancient World Studies) - Medeghini, Laura - Bofficelli, Michela (Department of Earth Sciences, "Sapienza" University)

**Abstract format:** Oral

This research presents the first archaeometric study of the rock art sites of Damirgaya and Trialeti, as well as the Neolithic settlement of Khramis Didi Gora in Georgia's South Caucasus. The goal is to characterize rocks and pigments, assess painting technology, including the potential identification of organic binders and the compatibility of inorganic pigments with locally available minerals.

A first stylistic comparison is hereby provided with adjacent archaeological sites in Armenia, Azerbaijan, and Anatolia, where traces of monochromatic red pigment were found in settlements, barrows, on items such as grinding tools, and primarily on rock art. To determine the mineralogical and chemical composition of the materials (rocks and pigments), several analytical techniques were utilized, including Optical Microscopy (OM), cross and thin sections, X-ray Powder Diffraction (XRPD), and Scanning Electron Microscopy with Energy Dispersive X-ray analysis (SEM-EDX). Moreover, inorganic compounds were also better described in both rock art and grinding tools thanks to the contributions of Fourier-Transform Infrared (FTIR) and Raman Spectroscopy. Organic substances such as binders were not detected. In terms of pigments, hematite was the main coloring agent. For what concerns the rock samples, Trialeti proved to be an igneous basaltic rock - dacite, whilst Damirgaya is a rock primarily containing quartz, but also other minerals such as iron oxides and phyllosilicates.



## 2 A TECHNOLOGICAL ANALYSIS OF THE STONE ARTIFACTS FROM AGHITU-3 CAVE AND ITS IMPLICATION ABOUT UPPER PALEOLITHIC SETTLEMENT IN ARMENIAN HIGHLANDS

**Abstract author(s):** Jabbour, Firas (Eberhard Karls University of Tübingen, Department of Early Prehistory and Quaternary Ecology, University of Tübingen; The Role of Culture in Early Expansions of Humans - ROCEEH, Heidelberg Academy of Sciences and Humanities at the University of Tübingen) - Gasparyan, Boris (Institute of Archaeology and Ethnography, National Academy of Sciences, Yerevan) - Kandel, Andrew (The Role of Culture in Early Expansions of Humans - ROCEEH, Heidelberg Academy of Sciences and Humanities at the University of Tübingen)

**Abstract format:** Oral

This paper presents the results of a study of the Upper Paleolithic stone artifacts from Aghitu-3 Cave, situated in southern Armenia along the Vоротan River. Excavations revealed five archaeological horizons (AHs) that provide evidence of occupation. Notable finds include shell beads, an eyed bone needle, and other bone tools, plus a large assemblage of lithic artifacts. These layers date between 39,000 and 24,000 years ago.

Our previous work provided an overview of the typological nature of the toolkits and their associated cultural attributes. Here, we aim to better understand the lives of those who lived in the cave, the challenges they faced, and how their behavior changed over time. Therefore, we conducted a technological study of each of the cores, tools, and tool fragments. For the cores, we focused on their manufacture, preparation, and reduction. For the tools, we focused on their shape, manufacturing technique, selection, distribution of retouch, and functional details. We also conducted experiments to gain a deeper understanding of some basic patterns and to further examine unique artifacts.

As a result of the technological study, we divided the Upper Paleolithic settlement at Aghitu3 into three main phases. During the early Upper Paleolithic (AHs VII and VI), people relied on large, narrow-faced cores to produce their tools. Based on a smaller number of artifacts, we see diverse types of tools and the variety of activities, and conclude that people used the cave as a temporary camp for stays of shorter duration. During the middle and late Upper Paleolithic (AHs III D-A), people relied on smaller, wide-faced cores. Based on a greater number of artifacts, we observe many types of tools a variety of activities, and conclude that people used the cave as a seasonal camp for stays of longer duration.

## 3 ELEMENTAL COMPOSITION AND LEAD ISOTOPES OF COPPER-BASED ARTIFACTS FROM TEL BET YERAH (KHIRBET EL-KERAK): NEW INSIGHTS ON THE KURA-ARAXES DISPERSION

**Abstract author(s):** Ben-Yosef, Erez - Yagel, Omri (Tel Aviv University) - Harlavan, Yehudit (Geological Survey of Israel) - Shalem, Naama - Paz, Sarit - Greenberg, Raphael (Tel Aviv University)

**Abstract format:** Oral

Tel Bet Yerah (Khirbet el-Kerak) is a large, fortified site on the shore of the Sea of Galilee. During the earlier part of the Early Bronze Age (EB) III (c. 2880–2700 calBC) it attracted the interest of producers/consumers of "Khirbet Kerak ware" (KKW) – a Levantine variant of the Kura-Araxes ceramic tradition that originated in the southern Caucasus and eastern Anatolia. This phenomenon, which is often considered as an indication for the arrival of people from the Caucasus to the southern Levant, has been subjected to various interpretations, especially in regard to the process of migration. Here we aim at shedding new light on this process through the study of the metal artifacts from the site (using methods from the archaeological sciences). The 2003–2019 excavations yielded approximately 30 metal items from the EB III (from both contexts with KKW and without), and the preceding EB II (c. 3100 – 2880 calBC). They include mainly copper-based objects (short rods, pins, wires, and fishing hooks) as well as a gold nail and a gold bead. We analyzed ten of the copper-based artifacts for elemental and lead isotope composition in order to assess their quality and to identify the geological origin of the copper. The results indicate that already during the EB II the copper used in Tel Bet Yerah originated in northern and north-eastern regions (Anatolia and the Caucasus or northern Iran), and that this source remained dominant during the period associated with KKW finds. Only one of the artifacts (from the EB III) originated in the "local" source of the Arava Valley. The early trade with northern metals can be seen as a precursor of the ensuing movement of people, who most probably chose destinations based on existing connections and the world known to them at the time.

## 4 POSSIBILITIES AND CHALLENGES OF USING STABLE ISOTOPE ANALYSIS TO INVESTIGATE KURA-ARAXES 'PASTORAL' ECONOMIES AND MOBILITY PRACTICES IN NACHCIVAN

**Abstract author(s):** Maurer, Gwendoline (UCL - University College London)

**Abstract format:** Oral

Recent years have seen an infusion of the application of isotopic analysis on bio- and zoo-archaeological materials from the Caucasus. Even though isotopic analysis is an immensely powerful tool for exploring major themes in the Archaeology of the Caucasus such as past mobility, past economies, past human-environment interaction, and individual life histories, we should remain conscious of the limitations and caveats of stable isotope analysis as a

stand-alone approach to answer socio-economic questions. Often to enhance interpretations closer integration of isotopic data with more traditional archaeological data as well as inter-disciplinary datasets (geology, environmental sciences, earth sciences) is necessary.

This paper thereby focuses on evaluating the possibilities and challenges of using oxygen ( $\delta^{18}\text{O}$ ), carbon ( $\delta^{13}\text{C}$ ) and strontium ( $^{87}\text{Sr}/^{86}\text{Sr}$ ) isotopic analysis on tooth samples of domestic livestock (sheep and goat) from Maxta I, to answer questions regarding the poorly understood pastoral activities, i.e., degree and extend of mobility, seasonal organisation, and land use strategies of the Kura-Araxes cultural horizon (3500 – 2400 BCE) in Nachcivan. Framing pastoral mobility and economies among the Kura Araxes cultural complex has the potential to address its role in its widely debated spread across the Near East in the 3rd millennium BCE.

## 5 WHAT CAN MOLECULES TELL US? RECONSTRUCTION OF FAUNAL DIVERSITY IN THE LESSER CAUCASUS IN THE PAST 30,000 YEARS

**Abstract author(s):** Antonosyan, Mariya (Department of Archaeology, Max Planck Institute for the Science of Human History; Institute of Molecular Biology, National Academy of Sciences of Armenia) - Davtyan, Armine - Mkrtchyan, Satenik (Institute of Molecular Biology, National Academy of Sciences of Armenia) - Petraglia, Michael - Boivin, Nicole (Department of Archaeology, Max Planck Institute for the Science of Human History) - Yepiskoposyan, Levon (Institute of Molecular Biology, National Academy of Sciences of Armenia) - Amano, Noel (Department of Archaeology, Max Planck Institute for the Science of Human History)

**Abstract format:** Oral

Fossils are excellent sources of information for investigating past biodiversity, palaeoecology, and human activity. However, the accuracy of fossil identifications mainly relies on the easily observable morphological characteristics, making the classification of fragmented or taxonomically-mixed bone records challenging, if not impossible. With the advancement of biomolecular techniques in the past 20 years, novel methods have been developed to back up the identification and analysis of biological markers preserved in fossil bones. This has revolutionized the whole field of archaeological sciences offering excellent potential for extracting a greater array of information from the available data.

A necessary premise for biomolecular research is sufficient preservation. Cave systems represent an ideal environment for such investigations since they often contain relatively complete stratigraphic deposits coupled with stable environmental proxies, as minimal temperature and humidity fluctuations that proved to be favorable for molecular preservation. Karin Tak is one such cave that is characterized by a high rate of ancient biomolecules preservation, which creates wide possibilities for reconstructing ecology from the Pleistocene to our days.

Here we examine biostratigraphic changes in the site by looking at the taxonomic composition of acquired samples using traditional paleontological/zooarchaeological approaches and novel molecular methods of faunal identification including the use of collagen fingerprinting and aDNA metabarcoding.

## 6 DEFINING TECHNOLOGICAL TRADITIONS: MAIKOP AND LEYLATEPE/CHAFF-FACED WARE CASE

**Abstract author(s):** Iserlis, Mark (German Archaeological Institute)

**Abstract format:** Oral

After 124 years of research, the Maikop phenomenon is still a mystery with little understanding of its origin, structure and position. Various theories have been introduced, modified, and applied to archaeological data—the outcome being sometimes more bewildering than enlightening. Pottery, the most frequent, basic and informative component of the material culture, was poorly treated in the field, lab and in publications.

Was Northern Caucasus, located over the Caucasian Range part of the Chaff-Face Ware (CFW) *oikumene*? In what way are Maikop and Leylatepe/CFW pottery assemblages and societies actually related? Why there is almost no evidence for contacts between the Maikop and neighboring Kura-Araxes cultures?

The paper summarizes the results of a technological analysis of assemblages from 11 Maikop and Leylatepe settlements and kurgans, dating to the 4th millennium BCE. The application of a well-established ceramic sampling protocol, material science methods and contexts analysis has allowed the identification of a sequence of specific technological choices made by potters from both Northern and Southern Caucasus. The proposed paper presents these choices, contrasting them with those of the Kura-Araxes potters of the Southern Caucasus, Anatolia and Southern Levant.

## 7 ZOOARCHAEOLOGY AT SHENGAVIT, THE 2009-12 EXCAVATIONS

**Abstract author(s):** Crabtree, Pam (New York University)

**Abstract format:** Oral

Shengavit, located on the outskirts of Yerevan in Armenia, is an important site for the study of the Early Bronze Age Kura-Araxes II culture, dating to the first half of the 3rd millennium BCE. While excavations have been carried out

at Shengavit since the 1930s, much of the original work conducted between the 1930s and the 1950s was poorly documented, and it was impossible to pinpoint the location of the finds, including the faunal remains. More modern excavations began under H. Simonyan in 2000, and he was joined by Professor Mitchell Rothman in 2009. These recent (2009-12) excavations have focused on systematic collections of both artifacts and ecofacts and careful contextual analysis of the finds. This paper will focus on the analysis of the animal bone remains recovered from the 2009-12 excavations. This paper will provide a contextual analysis of the animal bone remains from Shengavit, as well as an overview of animal husbandry patterns, hunting practices and diet based on the well-collected animal bone assemblages that were recovered from the Simonyan-Rothman excavations.

## 8 **REFINING THE TIMING OF PLEISTOCENE HOMININ BEHAVIOURS IN ARMENIA; OPPORTUNITIES, CHALLENGES, AND FUTURE PROSPECTS**

**Abstract author(s):** Sherriff, Jenni (Department of Geography, King's College London) - Adler, Daniel (Department of Anthropology, University of Connecticut) - Arakelyan, Dimitri (Institute of Geological Sciences, National Academy of Sciences of the Republic of Armenia, Yerevan) - Blockley, Simon (Centre for Quaternary Research, Department of Geography, Royal Holloway, University of London) - Gasparyan, Boris (Institute of Archaeology and Ethnography, National Academy of Sciences of the Republic of Armenia, Yerevan) - Mark, Darren (NERC Argon Isotope Facility, Scottish Universities Environmental Research Centre, Glasgow) - Preece, Katie (Department of Geography, Swansea University) - Timms, Rhys (School of Archaeology, Geography and Environmental Science, Whiteknights, University of Reading) - Wilkinson, Keith (Department of Archaeology, Anthropology and Geography, University of Winchester)

**Abstract format:** Oral

Armenia, and the wider Caucasus region, has great potential to offer insights into the timing and nature of hominin dispersals into Eurasia. This is due to its rich Palaeolithic archaeological record and the association of archaeological material with volcanic and sedimentary products that can be dated using a suite of chronological techniques. Indeed, Palaeolithic excavations in Armenia have been ongoing since the 1930s, with many Lower, Middle, and Upper Palaeolithic open-air and cave sites published. Parallel to this research has also been the study of past volcanic activity in Armenia. This has focused largely on understanding the mode and timing of volcanism, with chronologies published since the 1990s based on radiometric dating of volcanic products. However, until recently, there has been limited integration of these chronologies with the archaeological record, despite the occurrence of some of these volcanic products in close association with the Palaeolithic records.

This presentation highlights ongoing interdisciplinary work in Armenia focused on integrating Pleistocene archaeological and volcanic records to further understand the timing and nature of hominin activity in the region. Using examples of the Hrazdan and Debed river basins, we will first review previous (both Soviet and post-Soviet) dating approaches, before discussing the results of recent chronological investigations. Based on these data, we will produce a model for volcanism, landscape change and hominin activity during the Pleistocene. Through this, we will highlight the opportunities, and challenges in integrating data from different research disciplines and paradigms to help understand Pleistocene hominin behaviours in Armenia and the wider Caucasus region.

## 9 **NEW FRONTIERS FOR DIGITAL RESEARCH @ SAMTAVRO CEMETERY, CAUCASIAN IBERIA**

**Abstract author(s):** Michalewicz, Aleks - Fitzgerald, Emily (University of Melbourne) - Birkett-Rees, Jessie (Monash University)

**Abstract format:** Oral

Precisely because we can often draw on well over one hundred years of data, Caucasian archaeology presents great scope for applying and testing digital research techniques. Rather than viewing archaeological data as Soviet ('traditional') and post-Soviet ('new'), we can reframe our perspective by considering how archaeological frontiers can be expanded through new and emerging interdisciplinary analytical methods. By approaching our collective enterprise in this manner, the focus becomes the data itself.

Our paper presents as a case study the Samtavro cemetery in Mtskheta, Georgia, which has been investigated since 1871. We concentrate on excavation results from two expeditions operating between 1976 to 2010: geographic location, human remains, grave goods, tomb architectural and chronological data. In addition, we are working with data generated through spatial mapping, database and visualisation research undertaken by the authors. This approach enables both granular analysis and consideration of the data from different perspectives.

An important component is the aggregation, 'cleaning' and linking of multiple and disparate datasets, which has implications for data governance, stewardship and management. Metadata also has the potential to reveal information about cultural materials and processes as well as earlier excavation methodologies. A further provocation is determining when data might be classified as 'legacy' data. In this way, archaeological methods come to be in stronger dialogue with other domains.

By undertaking complex analytics and mapping research, we can generate new understandings about mortuary rituals and broader cultural practices in Caucasian Iberia from the Roman to Late Antique periods. This is made possi-

ble through experimentation with data science tools and presents to us exciting opportunities on a number of fronts: application of cutting edge digital and analytical methods, cross disciplinary collaboration and – in turn – new kinds of questions about existing data in Caucasian archaeology.

## 10 **OUT OF TIME, OUT OF MIND: RADIOCARBON DATING THE EARLY BRONZE AGE IN THE SOUTH CAUCASUS**

**Abstract author(s):** Passerini, Annapaola (Cornell University)

**Abstract format:** Oral

Radiocarbon dating has radically changed temporal and social perspectives on European prehistory. Soviet archaeology also enthusiastically participated in the first “radiocarbon revolution”, as laboratories flourished across the USSR in the 1950s and 1960s and the new dating method was applied to archaeological contexts across Eurasia. Early applications in the South Caucasus were often part of attempts to systematize prehistory in broad brushstrokes by tracking widespread monumental phenomena, such as that of the kurgans. Though in limited series, these early endeavors produced the first radiocarbon-based chronologies for the Early Bronze Age and inaugurated the first canonical datasets that continue to be referenced in publications even today. However, technical discrepancies between Western and Soviet laboratories, the tendency to date isolated samples and contexts, and the use of different terminologies have distanced the Early Bronze Age of the South Caucasus from its neighbors. While some of these issues directly pertain to the conditions of reliability of radiocarbon, others speak to the deeper intellectual politics of choosing specific narratives to describe the Early Bronze Age.

Active fieldwork and broad-scale collaborations over the last three decades have greatly improved the radiocarbon record of the South Caucasus, both in qualitative and quantitative terms. Despite this, complications remain when attempting a systematic synthesis of the Early Bronze Age based on what is a very stratified radiocarbon record. This paper discusses the possibilities and challenges of radiocarbon dating in the South Caucasus on the background of the history of its application to investigate the Kura-Araxes phenomenon. It will address the complexity of integrating very heterogeneous (old and new) data, the problem of taxonomy for the purpose of Bayesian chronological modeling, and the relationship between radiocarbon and historical nomenclature. It will finally assess the potential of radiocarbon to provide, or not, an unbiased approach to prehistoric chronologies.

## 11 **NEOLITHIC REVOLUTIONARIES: SOVIET STUDIES ON EARLY AGROPASTORAL COMMUNITIES AND THEIR IMPACT ON THE CURRENT ARCHAEOLOGY IN SOUTH CAUCASUS**

**Abstract author(s):** Heit, Ilia (German Archaeological Institute, Eurasia Department)

**Abstract format:** Oral

Early agropastoralism was a topic followed with great interest by Soviet archaeologists. The appearance of the productive economy was considered as the first big leap in a universal historical progress in the Soviet Marxist sense. Accordingly, in many regions within and outside the USSR, the material evidence of early farming societies was the focus of attention and subject of cross-cultural comparisons. Additional input in this debate was provided by the works of V. Gordon Childe on the Neolithic Revolution, which, unlike publications of many other Western archaeologists, appeared in Russian in the Soviet Union and were well received by Soviet authors.

The South Caucasus region became prominent in this topic even before the actual archaeological exploration through the pioneer works on the origin of cultivated plants by agronomist and botanist Nikolai I. Vavilov in the 1920s. The investigations on the Neolithic and Chalcolithic sites carried out in the 1950s–1980s provided rich evidence of early village communities excavated and analyzed by Soviet archaeological methods.

In this talk I will consider the research in South Caucasus during the Soviet period. I will look at the aberrations but also at promising approaches of that period that may have been forgotten and possibilities of their integration into current research on the early agropastoralists in the region. I will also consider anticipated discoveries and narratives on historical development that have left an impact on the contemporary South Caucasian archaeology.

## 12 **DOMESTIC ARCHITECTURE IN THE SHULAVERI-SHOMUTEPE CULTURE IN THE KURA RIVER VALLEY IN SOUTHERN CAUCASUS IN THE 6TH MILLENIUM BC**

**Abstract author(s):** Sobko, Jakub (Adam Mickiewicz University in Poznań)

**Abstract format:** Oral

The purpose of this dissertation is to recognize the character of the Neolithization process in southern Caucasus on the basis of the comparison of Neolithic domestic architecture from the Kura river valley with the respective architecture in North Mesopotamia and Northwest Iran.. The Kura river valley was divided into three areas: a) the upper course of the Kura, b) the middle course of the Kura, and c) the lower course of the Kura. The domestic architecture from the following sites was examined:: Gadachrili Gora, Aruchlo, MenteshTepe, Hacı Elamxanlı Tepe, Göytepe and Kamiltepe. The empirical evidence studied in the dissertation was collected from academic publications pertaining

to the discussed issues. Analysis of each site, except for Kamiltepe, was accompanied by a table with quantitative dimensions of studied architectural structures performed in the QGIS program, based upon the published plans. The following step involved an analysis of domestic architecture from North Mesopotamia and North-West Iran. This made it possible to compare domestic architecture from southern Caucasus with corresponding architecture from these two region and draw some conclusion as regards the spread of Neolithic into southern Caucasus.

### 13 **PRESSING CONCERNS: URARTIAN WINE PRODUCTION EQUIPMENT**

**Abstract author(s):** Newson, Victoria (University of Sheffield)

**Abstract format:** Oral

Armenia has a long and significant history of grape cultivation and wine production, such that 8th century BCE Urartian kings referred to it as "the land of vineyards". Likewise, Assyrian armies marveled at the vast quantities of wine and chose to take wine as tribute rather than precious metals. The most notable 'stains' that grapes and wine made on ancient economies and societies occurred in three distinct periods: 1) the Chalcolithic/Early Bronze Age, specifically at the site of Areni-1; 2) the Iron Age Urartian wine economy and 3) the Medieval Period (Christian wineries). However, the archaeological evidence of wine production from the Urartians period (9th-6th centuries BCE) has mainly been textual (primarily Urartians and Assyrians) and ceramic based (i.e. karases), with minimal evidence of the technology of grape processing and winemaking (i.e. archaeobotanical data in association with specific wine production equipment). To help fill this gap in the archaeological record, the (minimal) chronology of wine production equipment in Armenia will be explored, along with contemporary production equipment from surrounding areas (eastern Mediterranean and the Levant). The ethnography of production equipment will be used as a heuristic tool to explore the possible locations for wine production and what types of production equipment were utilized to create such a significant wine industry during the Urartian Period.

---

### 336 **EXPERIMENTAL APPROACHES TO PALAEOOLITHIC AND MESOLITHIC ARCHAEOLOGY [PAM]**

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Bentsen, Silje (Nordland County Council; School of Geography, Archaeology and Environmental Studies, University of the Witwatersrand) - Milks, Annemieke (University of Reading; University College London)

**Format:** Regular session

Experimental archaeology in its broadest sense is instrumental to our current understanding of technology, structures, and lifeways of hunter-gatherer humans throughout the Pleistocene and Holocene. Stone and organic tool technologies, fire, adhesives, dwelling structures, art, taphonomy, landscape use, abstract thinking and symbolism are but some of the topics that are explored through both scientific experiments and experiential approaches. The benefits of advances in quantitative and highly-controlled experimental research for archaeology are clear. Yet, problems also remain regarding the foundational data upon which we base such controlled experiments. The skills and people behind technologies are often understudied and poorly understood, and the 'realism' behind high levels of control can also be lost. In that sense, both experiential archaeology, and research involving skilled participants, children, and the experience and skills of Indigenous peoples can and should also play an important role.

This session explores experimental approaches to Palaeolithic and Mesolithic Archaeology through historical perspectives of the development of experimental archaeology, theoretical papers on its role in interpreting the past, methodological developments, and case studies of experimental applications. It will include a discussion of the similarities, advantages and challenges with experimental and experiential approaches, and the role of experimental archaeology in science communication and community involvement. We invite papers from a wide range of geographical areas and subjects to showcase the impact that scientifically controlled experiments and experiential perspectives continue to have on our understanding of the Palaeolithic and Mesolithic.

### **ABSTRACTS**

#### 1 **A WHIRLWIND HISTORY OF EXPERIMENTAL APPROACHES TO THE PLEISTOCENE ARCHAEOLOGICAL RECORD**

**Abstract author(s):** Milks, Annemieke (University of Reading, Department of Archaeology)

**Abstract format:** Oral

Experimental archaeology is a key analogical method with which to understand Pleistocene human lifeways. The roots of experimentation and replication as methods to understand the Pleistocene archaeological record are over 150 years old. Swedish zoologist and archaeologist Sven Nilsson, and the British archaeologist John Evans for example, attempted to replicate stone tools during the 19th century. By the 1920's experimentation was expanding to include ever more early technologies: the American doctor and teacher Saxton T. Pope reconstructed and tested components of bows, while British tailor and archaeologist James Reid Moir explored woodworking with stone tools.

Experiments eventually became a cornerstone of archaeological research, particularly when processual approaches to the archaeological record took hold. During the 1970's the increasing use of the term 'experimental archaeology' symbolised a greater overall shift towards scientific methods. Ensuing debates around what did and didn't constitute experimental archaeology created a rift between those who aimed to test hypotheses and control variables (i.e. 'experimental archaeology') and those whose work focused on reconstructing and recreating past technologies and lifeways ('experiential archaeology'). This talk will conclude by exploring where we are today with experimental methods, particularly in regards to contemporary concerns including the effects of replicators' skill sets, and relatedly, the analogical power of experiments aiming to understand technologies that are divorced from social contexts. Working to bridge these 'experiential' and 'experimental' approaches may go some way to redressing such concerns.

## 2 WERE MIDDLE PALAEOOLITHIC SHELL BEADS USED AS ORNAMENTS: AN EXPERIMENTAL ENQUIRY

**Abstract author(s):** Bar-Yosef, Daniella (Tel Aviv University) - Groman-Yaroslavski, Iris (University of Haifa)

**Abstract format:** Oral

Glycymeris shell beads found in Middle Palaeolithic sites are understood to be artifacts collected by modern humans for symbolic use. In Misliya Cave, Israel, dated to 240-160 ka BP, Glycymeris shells were found that were neither perforated nor manipulated. At about 120 ka BP at Qafzeh Cave, Israel, modern humans collected perforated Glycymeris shells for symbolic use. To understand whether the perforations were natural or artificial, and how the shells were used we performed use-wear analyses backed by experiments. Those demonstrated that the Qafzeh shells were naturally perforated, however, they were suspended on string, reinforcing the notion that their collection was intentional. Additional use wear observations enabled the reconstruction of their arrangement. Similar to findings from South Africa and North Africa shells in the Levant, were collected between 160 ka BP and 120 ka BP and during that period there was a shift from collecting complete valves to perforated ones, which reflects both the desire and the technological ability to suspend shell beads on string to be displayed on the human body.

## 3 FROM LAB TO KITCHEN: TEACHING EXPERIMENTAL ARCHAEOLOGY DURING LOCK-DOWN

**Abstract author(s):** Bentsen, Silje (Nordland County; School of Geography, Archaeology and Environmental Studies, University of the Witwatersrand) - Nel, Turid (SFF Centre for Early Sapiens Behaviour, University of Bergen)

**Abstract format:** Oral

The course module «ARK213 Experimental archaeology» aimed to teach basic theoretical and practical skills to undergraduate students at the University of Bergen, Norway. The module of 5 ECTS was first offered in March-May 2021, and was designed to include standard lectures, practical experiments, and lab work for the students. However, the ongoing pandemic and subsequent health regulations prohibited students from meeting in large groups, thus virtual lectures became the standard teaching method. Instead of transforming the module to a theoretical course, the experiments and lab work were redesigned to assignments that the students could complete in their own home. The redesigned practical work involved colouring eggs, making cut marks in bone, and shaping a pot using hobby clay, as well as documenting the processes and the results. Basic materials for the practicals were provided by the university and basic instructions provided in writing as well as in a virtual classroom. The students responded positively to the change and reported that the practicals were interesting and provided insights into practical prehistoric skills as well as experimental research. Although students did not learn to use professional lab equipment, they did explore documentation techniques using cell phones and equipment from their own kitchen. Carefully sourced raw materials or equipment were not required for these practicals, which saved time and resources in preparing the work. Perhaps downscaling is the way forward to more sustainable and inclusive future course module?

## 4 ART EXPERTICESHIP, PERCEPTION AND MOTOR INTEGRATION IN PALAEOOLITHIC ART. AN EXPERIMENTAL ANALYSIS

**Abstract author(s):** Rivero, Olivia - García-Bustos, Miguel - García, Paula (University of Salamanca) - Garate, Diego (University of Cantabria)

**Abstract format:** Oral

The development of artistic abilities in Upper Palaeolithic societies has been analysed in recent years from the perspective of learning and transmission of artistic know-how, from both technical and formal points of view. The analyses, based on the study of the operational chains involved in engraving, have shown different levels of acquisition of technical knowledge among Magdalenian artists in Western Europe.

This study presents the result of an archaeological and psychological experimental program based on the analysis of the motor and cognitive actions performed when executing artistic motifs. For the motor actions, different patterns of movement and orientation have been analysed for a large group of engravers at different levels of technical ability, in order to determine the gestural parameters that characterize the different stages of artistic learning. For the

cognitive action, different psychological test have been developed in the same participants, in order to understand which cognitive abilities are involved in Palaeolithic art making.

The results, which have been processed with statistical analysis tools, make it possible to differentiate with greater precision the different mechanisms required to create palaeolithic art, as well as the different stages of acquisition of technical knowledge linked to the production of artistic motifs by engraving.

## 5 BY THE NUMBERS. COMBINING ATTRIBUTE ANALYSIS AND EXPERIMENTAL ARCHAEOLOGY TO RECONSTRUCT KNAPPING TECHNIQUES

**Abstract author(s):** Posch, Caroline (Naturhistorisches Museum Wien) - Ott, Marlina - Meusburger, Katharina (Pädagogische Hochschule Vorarlberg)

**Abstract format:** Oral

Since the 1970s, attribute analysis has been used as a standard practice to study lithic assemblages, especially regarding Palaeolithic and Mesolithic sites. Although this method is not without criticism, it constitutes a useful means to create a basis for quantitative and metric comparisons of lithic assemblages. However, attribute analysis data is often 'only' generated and presented for its descriptive value. In order to tackle this problem and to harvest the full potential of attribute analysis data, we propose a combination of attribute analysis and with results from archaeological knapping experiments. These experiments – undertaken amongst others by Jacques Pelegrin and Jürgen Weiner – have proven to be powerful tools to understand lithic production techniques and generated catalogues of attributes for specific techniques and tools.

This study aims to combine these catalogues with data from attribute analysis undertaken on two Mesolithic assemblages in Western Austria (Schneiderküren and Egg-Schwarzwasser). It focuses on a conversion of knapping features into multivariate statistical models (e.g. confirmatory factor analysis or cluster analysis). The underlying approach is the following: If we assume that combinations of features observed during knapping experiments on the ventral side and striking platforms represent trend groups that arise when applying a respective technique, similar trend groups should be found on archaeological artefacts. The first results are promising and show interesting possibilities to handle the large dataset of attribute analysis and harvest the full potential of its accumulated data.

## 6 A NEW METHOD FOR BIRCH TAR MAKING USING MATERIALS AVAILABLE IN THE STONE AGE

**Abstract author(s):** Koch, Tabea (Université Côte d'Azur, CNRS, CEPAM; University of York, Department of Archaeology; Eberhard Karls Universität Tübingen, Department of Early Prehistory and Quaternary Ecology)

**Abstract format:** Oral

Birch tar is the oldest known adhesive as it can be traced back to the European Middle Palaeolithic. However, it remains unclear what techniques were used during the Palaeolithic and Mesolithic to make birch tar. Most of the potential techniques that had been proposed based on experimental programmes rely on more or less complex underground structures. Such underground techniques require large investment in time and resources and imply that some of the processes cannot be observed or controlled. Here, we present a new way of making birch tar using a cobble-paved groove filled with strips of birch bark, the "cobble-groove". The technique is conducted aboveground and is relatively time- and resource-efficient. In the past, many studies have evaluated the likelihood that birch tar making methods were actually used based on proxies such as efficiency and complexity of the production process. In this paper, we investigate the performance of tar to understand whether this new technique might have been used. For this, we compare the quality of our tar with that of three other tar making techniques using lap-shear tests. We found that cobble-groove tar is usable, and that the technique may have been used by European hunter-gatherers. Our experimental study also documents the potential material leftovers of cobble-groove birch tar making, allowing to propose hypotheses that are testable through archaeological data.

## 7 FOUR DIFFERENT EXPERIMENTAL METHODS OF PRODUCING WOOD TAR IN THE MIDDLE PALEOLITHIC - IN SEARCH OF THE EASIEST WAY

**Abstract author(s):** Piotrowska, Beata (Adam Mickiewicz University Poznań)

**Abstract format:** Oral

The oldest evidence of birch bark tar production comes from the Middle Palaeolithic (> 191 kya) from the archaeological site of Campitello Quarry in Italy. It is well-known that the first binder producers were the Neanderthals. They did not use any ceramics containers. Some say that the ability to produce tar with aceramic methods does not prove the technological advancement and broad cognitive abilities of Homo sapiens neanderthalensis. The work describes four different experiments related to the extraction of tar from birch bark using aceramic methods: condensation, pit-roll, ash mound and raised structure, generally described in the literature on the subject, starting from the least complex construction method that condensation is, and ending with the most extensive structure, in the form of rised-structure. Chemical composition studies of known Middle Paleolithic tar samples confirm the use of various production methods. The experiment aims to establish the effectiveness of the above procedures, carried

out by the inexperienced tar production person, and to trace the learning process. For each aceramic method, there were three samples of the bark of the papillary birch (*Betula pendula*), weighing 100 g. With the acquisition of experience, the level of intuitivity is growing during each experimental attempt, which, as it turns out, does not remain irrelevant to the results of the entire experiment. Experience is key to the fact that the method itself becomes only a means to achieve the assumed goal. In this case, the less complicated method, the higher the likelihood of a successful experiment.

## 8 STUDY OF THE DISTRIBUTION OF PINUS REMAINS IN THE IBERIAN PENINSULA BY EXPERIMENTAL CHARRING

**Abstract author(s):** Garay Palacios, Blanca (Universitat Autònoma de Barcelona) - Berihuete Azorín, Marian (IPHES) - Piqué Huerta, Raquel (Universitat Autònoma de Barcelona)

**Abstract format:** Oral

The aim of this research is to shed light on the forms of use and management of plant resources during the Paleolithic, Mesolithic, and Neolithic occupations in the Iberian Peninsula. Specifically, this work approaches to the consumption of pine nuts in prehistoric sites. The archaeological visibility of these resources is related to the practices associated to their consumption, processing, and disposal. As wild resources are often consumed raw, they do not require processing, and this renders their archaeological recovery difficult. Moreover, pine nuts contain a large amount of oil that makes their preservation by carbonization quite complicated, so this species would probably be underrepresented in archaeological sites. The basis of this study has been the carpological analysis of the remains and experimentation. The charring process of pinecones and seeds has been replicated experimentally and analyzed using a biometric approach. The seeds were measured before and after carbonization to draw a comparative index of differences and detect any morphological changes. Through this study, we have been able to analyze in depth the distribution of *Pinus* plant remains to determine in which areas and periods they appear with higher intensity. Besides, thanks to the experimental carbonization, we have obtained a wide reference collection that will also be useful for future research.

## 9 THE VALUE OF INDUCTIVE REASONING IN EXPERIMENTAL ARCHAEOLOGY

**Abstract author(s):** Schenck, Tine - Groom, Peter (Mesolithic Resource Group)

**Abstract format:** Oral

For years, academic experimental archaeology has had a strong affiliation with natural science ideals, such as the hypothetico-deductive method (HDM), control, and variable isolation. Experimental archaeologists often talk about deduction, with Peter Reynolds a notably strong proponent of applying the HDM on archaeological data via an experimental test. This test, "in the form of a physical experiment which by definition requires replication," (Reynolds 1998:4 "A Unique Research and Educational Establishment") is hailed as the ultimate format of an archaeological experiment. But rarely discussed is what such a test means in practice. In particular, the following aspects are hardly touched upon:

- Is test replication actually feasible and ever satisfactorily performed?
- Does test replication solidify knowledge about actual past behaviours and activities of humans?
- Is a true HDM even possible in experimental archaeology?

The HDM is a self-contained logic relying on necessary inference. If the premises are true, then the conclusion cannot be false. The deduction itself lies in a test that provides one of the premises. But does one ever reach a conclusion that cannot be false in experimental archaeology? Since archaeology is in fact not a hard science, we maintain that the actual methodology of experimental archaeology follows the inductive mode of reasoning. Inductive reasoning is a non-necessary statistical prediction based on observations that results in a probable conclusion. In this talk, we want to explore the value of the inductive mode of reasoning in experimental archaeology, and the benefits of accepting induction as a more attainable format of an archaeological experiment. As an example, we will be showing how we structured and executed a series of experiments with Palaeolithic Birch bark tar production, and how the conclusion can be seen as a valuable addition to this discourse, although it has not been reached through HDM.

## 10 STICKS AND STONES CANNOT ONLY BREAK BONES. USING DIGGING STICKS FOR UNDERGROUNDS STORAGE ORGANS FORAGING

**Abstract author(s):** Lopez-Bulto, Oriol (Department of Prehistory, Universitat Autònoma de Barcelona) - Berihuete-Azorín, Marian (Institut Català de Paleoeologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Àrea de Prehistòria)

**Abstract format:** Oral

Wooden digging sticks have ethnographically and archaeologically been identified as a common tool between hunter-gatherer societies, used for a wide variety of purposes, among them digging Underground Storage Organs (USOs). USOs are a very valuable food resource, predictable and reliable because of their seasonality, as well as



relatively easy to gather and process. Data suggest that they were widely consumed by hunter-gatherer groups but to date, they have been undervalued for multiple reasons such as recovery issues, identification difficulties, and due to the difficulty to identify tools involved in their exploitation, i.e. digging sticks.

This work presents the results of an experimental program designed to assess the efficiency of this type of tool in USOs gathering with experimental wooden digging sticks. The experimental process allowed the characterization of use-wear traits in digging sticks after being used in different sorts of soils, namely marshy, sandy and rocky. Ultimately, the experimentation will allow the complement of a reference collection of use-wear to be used for archaeological identifications, with the potentiality of offering new evidence to identify the use of root foods in Prehistory.

## 11 **LOOKING FOR WORKSHOP AREAS AT THE GRAVETTIAN PALIMPSEST SITE? AN EXPERIMENTAL APPROACH**

**Abstract author(s):** Novák, Martin (Institute of Archaeology of the CAS, Brno) - Ourodová, Anna-Marie (University of Hradec Králové, Faculty of Arts, Department of Archaeology) - Chlachula, Dominik (Institute of Archaeology of the CAS, Brno)

**Abstract format:** Oral

Generally, the archaeological objects create spatial patterns and structures, which are understood and interpreted as an expression of human behaviour and adaptation to the natural and socio-economic environments. An experimental flint knapping was performed in autumn 2021 in order to (a) simulate archaeological situations; and (b) to create the analytical analogy of latent distribution patterns of lithic reduction. Our study correlates the spatial distribution patterns of experimentally knapped flint assemblages with respect to various levels of the knappers' experiences, from the beginner to the advanced. The experimental design and protocol focus on (a) obtaining blanks from an unprepared core, executed by three male right-handed knappers; (b) documentation of the scattered patterns of lithics; and (c) recording an amount of waste created during the different sequences in lithic reduction – especially in between the phase of core preparation and the phase of blank production. The knappers' raw material exploitation efficiency was counted by the number of blades produced from cores with a similar or close in size and weight. Our preliminary results confirm, for example, direct correlation in between knappers' experiences and (a) spatial distribution of knapping waste around them, and (b) his efficiency in flint core exploitation (causing a narrower and smaller scatter pattern with a higher density, followed by more efficient core exploitation in favour of the knapper with a higher level of experiences). Finally, we built an important and comparative framework necessary for the study of lithic spatial distribution on the Gravettian sites from the Dolní Věstonice-Pavlov-Milovice settlement area.

Acknowledgements: This contribution results from the research funded by the Czech Science Foundation as project no. 20-26094S "Hunters at a camp: Reconstruction of spatial behaviour at Moravian Gravettian sites".

## 12 **HUNTING STRATEGY AND PROJECTILE TECHNOLOGY DURING THE DISPERSALS OF MODERN HUMANS INTO ASIA: AN EXPERIMENTAL APPROACH**

**Abstract author(s):** Takakura, Jun (Archaeological Research Center, Hokkaido University) - Yamaoka, Takuya (Faculty of Humanities and Social Sciences, Shizuoka University)

**Abstract format:** Oral

Early projectile technology of hominins during the Middle and Late Pleistocene has attracted attention to many researchers over the last few decades. This issue has also been regarded as a phenomenon deeply related to the rapid spread of modern humans to Asia. In this paper, we would like to explore projectile technology during the Early Upper Palaeolithic in the Japanese islands by analyzing edge damage and use-related fracture velocity on trapezoids. Trapezoids are a major formal flaked tool in the Early Upper Palaeolithic and are thought to be used by the first modern human groups that migrated into the Japanese islands. A series of experiments using replicated trapezoids were conducted to investigate the relationship between the velocity of impact fracture and the projectile delivery modes (arrows, spearthrower darts, javelins, and spears). To measure use-related fracture velocity, this paper focuses on the fracture wings which are microscopic markings found on the fracture surfaces. We present the results of analyses of fracture wings observed on trapezoids from the several Early Upper Palaeolithic sites, such as Doteue, Kojou, Hinatabayashi-B in central Japan. The results of analyses demonstrate that the Early Upper Palaeolithic trapezoids were delivered mechanically. This may provide us with an important insight into the behavioral strategy and technology of the first modern human groups that migrated into the Japanese islands.

## A. **PALAEOLITHIC BIRCH BARK TAR PRODUCTION IN MOUND STRUCTURES**

**Abstract author(s):** Schenck, Tine - Groom, Peter (Mesolithic Resource Group)

**Abstract format:** Poster

Following on from previous research into the prehistoric aceramic distillation and production of birch bark tar, this series of exploratory experiments investigated the use of raised structures within a fire. These field-based experiments were conducted using sand, gravel, wood fuel, and bark from *Betula pubescens* (downy birch). The structures that

were created were simple raised sand mounds, which reflected known Neanderthal combustion surfaces from the Middle Palaeolithic. The bulk of the experiments were recorded throughout using a thermocouple to provide temperature readings from the base of the bark pyrolysis chamber. The experiments proved successful at producing birch bark tar and several containers were used to catch the tar for later analysis. Based on the results, the authors contend that not only could Neanderthals control fire but that regular birch bark tar production by Neanderthals was most likely a result of specific chaînes opératoires in order to provide the necessary control and outcomes.

---

### 337 **ARCHAEOLOGY MATTERS. THE NEED TO RE-DEFINE THE RELEVANCE OF ARCHAEOLOGY [EAA EXB]**

**Theme: 1. Archaeologists and Archaeology Here and Now**

**Organisers: Banffy, Eszter (German Archaeological Institute) - Carver, Martin (University of York) - von Rummel, Philipp (German Archaeological Institute)**

**Format: Round table**

At EAA 2021 a round table was held on the future of archaeological research in the light of ERC's Horizon Europe. A proposal to align with the UN SDGs was sympathetically discussed but without defining a clear way forward. Now we propose to discuss three more particular objectives: how can archaeology bridge STEM and SHAPE disciplines; how can archaeology best address the current climate change crisis – and how can archaeology gain more visibility and a more opinion-forming role in society?

As an area of research that deploys both STEM and SHAPE disciplines we are well placed to advance a broad agenda that can embrace many new projects suitable for funding by Horizon Europe and elsewhere.

The Round Table plans to address these questions (among others):

1. How can EAA help promote the social, political and environmental value of archaeology?
2. How can we enhance cooperation between archaeologists, scientists and heritage managers to ensure that our joint research results in beneficial social and environmental action?
3. How can we better inform and include the general public about archaeology's current contribution to the past history of the world, and how it can serve its future?
4. How can we restructure archaeology to serve these goals more clearly? The young are already sensitive to the needs of the planet. Can archaeology degree courses offer a more certain feeling of engagement in its future? Can grant giving bodies, including ERC, reflect the global needs of research in their panels, rather than representing existing single disciplines?
5. How should we promote a bold new effective and collegiate attitude to STEM/SHAPE combinations in research and teaching?

---

### 338 **POTTERY FROM POST-MEDIEVAL PERIOD IN CARPATHIAN BASIN. EVOLUTION OR REVOLUTION?**

**Theme: 3. The Carpathian Basin: Integration, Mobility and Diversity**

**Organisers: Španihel, Samuel (Museum of the Moravian Wallachia region Vsetín) - Bielich, Mário (Institute of Archaeology of the Slovak Academy of Sciences Nitra)**

**Format: Discussion session**

This session seeks to explore the changes in the ceramic production between the 16th and 19th century in Carpathian Basin and neighbouring regions. The 16th century is an era of great cultural, social and economic changes within this area. The Central Europe was impacted by new ideas originated from Western Europe influenced by expanding Reformation, Renaissance and European overseas discoveries altogether with the rise of Habsburg dynasty and 150 yearlong Ottoman Empire expansion. This unique blend of historical events transformed the whole society of the Central Europe, and also naturally changed its material culture.

Therefore, the main theme of this session is: Are the changes in ceramic production (vessels, stove tiles, smoke pipes, and building ceramics) of post-medieval period in Carpathian Basin based on local medieval ceramic traditions, or are they results of foreign influences? Or in case of mutual impact of those ideas, which was the one that became dominant or even prevailed?

**1 POTTERY OF THE 16TH AND 17TH CENTURY IN NORTHERN HUNGARY BASED ON THE EXAMPLE OF RESEARCH OF HRUŠOV CASTLE (SLOVAKIA)**

**Abstract author(s):** Bielich, Mario (Archeologický ústav SAV Slovensko)

**Abstract format:** Oral

The aim of the presentation is to present the most interesting findings from the 5 year research of Hrušov Castle. In the 16th-17th century Hrušov Castle was in the possession of the Topolčiansky and Rákoczy families. At their personal court we could see the most luxurious goods (ceramics), which appeared during this period in Hungary. Unfortunately, the castle was gradually abandoned, so the finds are mostly in a considerably fragmentary state. We will try to recreate from these fragments a mosaic of life on the castle at the turn of the 16th-17th centuries and we will focus mainly on ceramics, pipes and other small items. There are several thousand fragments of ceramics coming from our research. We divide ceramics into the ceramics of domestic production and imports. We will present the basic types that appeared in this period on the territory of northern Hungary. Among the imports, ceramics from the West. Southern imports come from the area controlled by the Ottoman Empire.

**2 SLIPWARE PRODUCTION IN POST-MEDIEVAL POLAND AS A REFLECTION OF TRANSFER OF TECHNOLOGY AND STYLISTIC TRENDS IN EUROPEAN POTTERY-MAKING**

**Abstract author(s):** Bis, Magdalena (Institute of Archaeology and Ethnology Polish Academy of Sciences, Warsaw)

**Abstract format:** Oral

My paper aims to provide an overview of archaeological finds from the sites located in today's Poland where slipware was produced between the 16th and 18th centuries. It gathers data on workshops discovered during archaeological excavations as well as on regions where this kind of pottery was potentially manufactured. The assortment of archaeological vessels and their formal and stylistic characteristics are discussed. Primarily, the main focus is put on ornamentation of the said pottery – the decorative techniques and motives being one of the main distinguishing features of this group of artefacts. Such approach enables identifying elements specific for the post-medieval slipware manufactured in the lands of present-day's Poland. This leads to evaluation of the levels of diversification and development of this branch of craftsmanship in different regions of Poland. The aforementioned data offers a solid base for considerations regarding transfer of technology in European pottery-making and tracing its geographical aspects, as well as the extent to which the local workshops were influenced by external cultural processes.

**3 ON THE BORDER OF THE OCCIDENT: STOVE TILES FROM THE NORTH-WESTERN PART OF THE HUNGARIAN KINGDOM IN THE 16-17TH CENTURY**

**Abstract author(s):** Rakonczay, Rita (Eötvös Loránd University)

**Abstract format:** Oral

The stoves of the German-speaking regions have always had a great influence on the art of stoves in the Hungarian Kingdom. The relationship between the two regions has been studied by countless researchers since the 20th century, focusing mainly on the Middle Ages. Although the influence of Western Europe in later eras, such as the 16-17th century, is also an issue that always arises, the system of the relations of these areas have been examined in far fewer cases. Compared to the 15th century, when similar motifs appeared on stoves in a particularly large area and roughly at the same time, the 16th-century stove art shows a much more colourful picture. In these cases, local influences and the impact of regional art can both be observed. In addition to local motifs, representations of the German themes appear as well. But what could be the mediums of these parallels? Engravings, books or perhaps the potters themselves?

Examining the north-western parts of the Hungarian Kingdom can help answer these questions. The stove tile research in Hungary has paid much less attention to this region, although a very special mixture of stove art can be observed here. Some local and cross-regional motifs appear in this part, as well as figural representations typical primarily for the German-speaking areas. However, the proportion of the German motifs is much higher in this region than in other areas of the Carpathian Basin. This can be partly explained by the geographical location, but is it questionable whether these stoves were the products of masters called from Germany or merely adopted the fashion of the surrounding art? Can we talk about direct effects, or were Western themes reinterpreted by potters with regional experience? Stove tiles from this region can help mapping out this complex network of connections.

## 4 LATE MEDIEVAL AND POST-MEDIEVAL PERIOD CERAMIC SET FROM ŠINTAVA

**Abstract author(s):** Nezvalová, Lucia - Vangľová, Terézia (Archaeological Institute of Slovak Academy of Sciences)

**Abstract format:** Oral

Incidental archaeological finding was discovered at the plot of land no. 395/4 in the cadastre of town Šintava (district Galanta). Numerous fragments of ceramics and tiles were found during digging of the cellar. Three features were discovered in the profiles of cellar. Animal bones and iron fragments were found too. The owner of parcel handed over to archaeologists also finds from neighbouring parcels (395/2, 5).

Ceramic set is represented by 520 vessel fragments made of 594 shards (fragmentation of set is 87.54%). 213 fragments of vessels (310 shards) are from previous dugouts. It was possible to assign on 10 of fragments found during digging of cellar to certain features from cellar profile (two fragments were from feature 1, 8 fragments were from feature 2). The weight of whole set was 18413 g. Only 22.88% were decorated.

Three fragments of lids, 21 fragments of pans, 149 rims, 51 necks, 116 bellies, 40 bottoms, 99 bases and 32 fragments of handles were found. 9 whole or almost whole vessels were found - three deep bowls, one dish, two pots, two jars and pan. One fragment of body is from storage vessel. One base with the diameter of 6 cm is probably from cup. Some shards can be identified as fragments of plates. 62 fragments were glazed mainly by brown or green-brown glaze, orange and green glaze also occurs. 19 fragments were painted. Most of the ceramic finds were dated to 16th - 17th century, some of them can be dated to 13th - 14th century.

## A. SKALKA NEAR TRENČÍN - CONTRIBUTION TO POSTMEDIAEVAL MATERIAL CULTURE FROM THE AREA OF MONASTERY

**Abstract author(s):** Jakubcinová, Miriam (Archaeological Institute of Slovak Academy of Sciences) - Čurný, Marián (-)

**Abstract format:** Poster

Skalka near Trenčín is the oldest pilgrim place in the Slovakia. It is connected with the tradition of Benedict, the pupil of saint Svorad. The monastery is in ruins currently and it is placed on the cliff in the massive of Biele Karpaty at the right bank of river Váh, in the Cadastre Opatová nad Váhom, district Trenčín. The monastery Skalka is bound to two orders, Benedictines (1224-1528) and Jesuits (1644-1773). During their presence several building phases were realized at the monastery. Last great modification of the area was done at the beginning of 18th century, when the monastery was heavily damaged by kuruc army. Monastery was under administration of royal public treasury after cancelling of Society of Jesus in Hungary and, except for smaller building modifications, gradually declined from the 19th century.

Renovation of some of the objects with the purpose of stabilizing area began after 1990. Several archaeological and architectural-historical researches were connected with it. The excavation in 2018 done by Archaeological Institute of Slovak Academy of Sciences in the room 104 (cellar) was continuation of them. Its aim was to find stratigraphically youngest levels of terrain for the needs of evaluation of architectonic and historical research. The stall under partly preserved vault in the north-western corner, which is interpreted by M. Haviarová as the middle crosspiece, was removed in connection with rebuilding of monastery in 1667-1669. Debris layers which were found contained material from 17th to 20th century. The most numerous were fragments of tiles with the fragmentally identifiable stylised floral decoration from 17th to 18th century. Shards from ceramic vessels are indistinctive and not numerous. Glass fragments suggest several vessels with angular and cylindrical body from transparent and yellowish potassium glass. Fragments of roof tiles covered with transparent dark brown glaze formed as mouldings are interesting.

---

## 339 "MORE THAN JUST BONES" - UNDERSTANDING PAST HUMAN ADAPTION AND BEHAVIOUR THROUGH THE STUDY OF HUMAN REMAINS

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** László-Mateovics, Orsolya (Hungarian National Museum) - Hajdu, Tamás (Department of Anthropology, Eötvös Loránd University) - Novak, Mario - Janković, Ivor (Centre for Applied Bioanthropology, Institute for Anthropological Research)

**Format:** Regular session

The human lifespan is fraught with environmental, physical, and psychosocial challenges that create a dynamic interaction between us and the highly variable ecologies, socioeconomic and political surroundings. Though all human beings share a genetic makeup, the different environmental cues produce a range of variations in their reaction. The response can be encoded genetically, but cultural systems can also influence the adaptation to new life strategies or the changing environment and can lead to new habits to overcome different health challenges. Consequently, we need a biocultural approach to understand that stress can initiate a series of behavioral and cultural countering responses. In this regard, ancient human remains serve as an important complement to paleoclimate, historical, and archaeological approaches understanding environmental changes which we may expect also as modern humans. This session intends to explore how socio-environmental changes manifest and shaped past health and behaviour.

The contributors intend to examine how certain bioarchaeological data (mortality, pathological traits, funerary customs) can indicate certain changes in life quality or behavioural transformations like interpersonal relations, resource use or child-rearing.

How can different scientific fields contribute to the exploration of these questions from the recovery of bones in the field to the evaluation of data produced by analytical laboratory methods?

We would welcome case studies or comparative interdisciplinary research which focus on the dead to provide insights into a past society or a historical era.

## ABSTRACTS

### 1 LATE AVAR PERIOD BURIAL GROUND OF ŠARENGRAD - KLOPARE: (BIO)ARCHAEOLOGICAL AND ISOTOPIC STUDY

**Abstract author(s):** Novak, Mario (Centre for Applied Bioanthropology, Institute for Anthropological Research, Zagreb) - Rimpf, Andrea (Ilok Town Museum) - Rapan-Papeša, Anita (Vinkovci Municipal Museum) - Dizdar, Marko (Institute of Archaeology, Zagreb) - Toyne, J. Marla (Department of Anthropology, University of Central Florida)

**Abstract format:** Oral

This paper presents the results of the rescue archaeological investigation of the Šarengrad - Klopare site in eastern Croatia. The elevated position of the site overlooking the Danube River indicates it served as a military outpost on the southern borders of the khaganate during the Late Avar Period. Recent excavations revealed the presence of 84 graves dated between the 7th and the 9th century CE. Most of the burials are typical Late Avar Period inhumations. However, in 2019, cremation burials associated with a Slavic population were also registered. As such, Šarengrad - Klopare is the first recorded early medieval cemetery with bi-ritual burial practices on the territory of continental Croatia. The archaeological context and radiocarbon dates strongly suggest that these two populations (the Avars and the Slavs) used this location as a burial ground simultaneously. The paper provides the information on demography, health, diet and mobility of the Avar population inhabiting Šarengrad through a comprehensive bioarchaeological and isotopic analysis of human skeletal remains. Results indicate that the studied population was characterized by relatively high subadult mortality, while a complete absence of perimortem injuries points to a low level of intentional violence with injuries primarily occurring as a result of accidents. Additionally, carbon and nitrogen isotopic data suggest a community level consistency in access to food resources. The isotopic compositions include a larger proportion of C3 and only limited C4 plant resources (<30%), including a fair amount of terrestrial animal protein. Isotopic indicators of mobility (oxygen) also demonstrate very little variation across the samples, defining a local population. The presented isotopic data suggest that the Avar community from Šarengrad was an isolated, locally based, group with limited contact or mixing with other groups.

### 2 BURY ME WHERE MY ARROW FALLS. NEW CONSIDERATIONS ON EARLY MEDIEVAL BURIALS WITH COMPOSITE BOWS EXCAVATED IN MODERN-DAY VIENNA, AUSTRIA

**Abstract author(s):** Tobias, Bendeguz (Österreichische Akademie der Wissenschaften - Institut für Mittelalterforschung) - Pany-Kucera, Doris (Naturhistorisches Museum Wien - Anthropologische Abteilung) - Klostermann, Paul (Österreichische Akademie der Wissenschaften - Institut für Mittelalterforschung; Naturhistorisches Museum Wien - Anthropologische Abteilung) - Özyurt, Jasmin (Österreichische Akademie der Wissenschaften - Institut für Mittelalterforschung) - Berner, Margit (Naturhistorisches Museum Wien - Anthropologische Abteilung)

**Abstract format:** Oral

Interpretations of the past are biased by traditional narratives. This is certainly true for the perception of armament in the early Medieval ages. Individuals buried with weapons, such as a bow and arrow, are characteristically identified as warriors. However, the presence of these objects in the funerary context could carry other or additional meanings not limited to a warrior identity. In order to explore the meaning of these grave goods we employed multiple routes of investigation on early medieval graves containing archery related objects excavated in modern day Vienna, Austria. Mortuary practices were investigated, where and how the bows were deposited in the graves. Detailed documentations of the bow parts and micro-CT examinations help to better understand the construction and material composition of the bows. Additionally, the human remains in these graves were analysed and compared to a group of individuals whose graves were devoid of archery-related object. The anthropological research explores the different expressions of enthesal change, joint disease, robusticity as well as palaeopathology and trauma between the groups. All these different results contribute to answer questions regarding the construction of composite bows, if these weapons were used, who used them and how to interpret these graves.

This study contributes to the early medieval studies in Central Europe and the study of occupation in the past through archaeological and bioarchaeological methods.

This project has received funding from the City of Vienna (MA7) and the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement n° 856453 ERC-2019-SyG).

### 3 HORSE-RIDING AND BONES - BIOARCHAEOLOGICAL ANALYSIS OF BURIALS FROM AVAR PERIOD AND HUNGARIAN CONQUEST PERIOD IN BODAJK (HUNGARY)

**Abstract author(s):** Líbor, Csilla (Szent István Király Museum) - Kiss, Krisztián (Department of Biological Anthropology, Eötvös Loránd University; Department of Anthropology, Hungarian Natural History Museum) - Szeniczey, Tamás (Department of Biological Anthropology, Eötvös Loránd University) - Szűcsi, Frigyes (Szent István Király Museum)

**Abstract format:** Oral

In 2016, two cemeteries were excavated near Bodajk in Hungary. From the Avar Period (6-9th c. AD) site of Bodajk – Homoki-dűlő, the skeletal remains of 40 individuals have been examined, and 14 individuals were found on the site Bodajk – Proletárföldek, from the Hungarian Conquest Period, 10th c. AD. Since only a part of the cemetery has been excavated, it was not possible to evaluate the population in sense of paleodemography, but certain trends were outlined. Pathological conditions with direct observation were identified in almost all the individuals of Proletárföldek. The majority of the observed disorders were joint alterations of the limbs and the spine which can be related to age and lifestyle and can be considered as typical alterations in these periods in the Carpathian Basin. Traumatic lesions were presented in 6 of the 14 cases (42,9%). A different ratio can be seen at the Avar Period cemetery since only 5 of the 40 (12,5%) individuals show traumatic injuries, and the occurrence of other pathological alterations was also lower.

Some human habitual activity for example horse riding can change the physical morphological characteristics of certain skeletal elements of the horse riders especially if the habitual riding started in very early years when the skeletal system is still developing thus can change morphologically. „Riding Syndrome” commonly refers to a combination of these skeletal changes.

Besides the increased number of traumatic lesions, the individuals of the 10th-century cemetery show a higher percentage of pathological changes presumably related to horse riding. This can be explained by the possibility that the newly arrived Hungarians of the 10th century were still mainly engaged in equestrian nomadic lifestyles. While the Avar age population of Bodajk may have lived a more settled way of life, especially in the Middle and Late Avar Period.

### 4 WEAVING THROUGH MEDIEVAL YPRES: DENTAL MARKERS OF ACTIVITY IN A HIGH MEDIEVAL URBAN POPULATION

**Abstract author(s):** Jackson, Veronica (Historical Research Into Urban Transformation Processes Research Unit, Vrije Universiteit Brussel; Anatomical Research and Clinical Studies, Vrije Universiteit Brussel; Maritime Cultures Research Institute, Dept. of Art Sciences & Archaeology, Vrije Universiteit Brussel) - Spros, Rachèl (Analytical, Environmental & Geo-Chemistry, Dept. of Chemistry, Vrije Universiteit Brussel; Maritime Cultures Research Institute, Dept. of Art Sciences & Archaeology, Vrije Universiteit Brussel) - Veselka, Barbara (Analytical, Environmental & Geo-Chemistry, Dept. of Chemistry, Vrije Universiteit Brussel) - Provyn, Steven - Snoeck, Thyl (Anatomical Research and Clinical Studies, Vrije Universiteit Brussel) - Claeys, Philippe (Analytical, Environmental & Geo-Chemistry, Dept. of Chemistry, Vrije Universiteit Brussel) - Snoeck, Christophe (Analytical, Environmental & Geo-Chemistry, Dept. of Chemistry, Vrije Universiteit Brussel; Maritime Cultures Research Institute, Dept. of Art Sciences & Archaeology, Vrije Universiteit Brussel) - Lambert, Bart (Historical Research Into Urban Transformation Processes Research Unit, Vrije Universiteit Brussel)

**Abstract format:** Oral

The southern Low Countries were one of the earliest and most densely urbanised regions of medieval Europe. In the high Middle Ages, three Flemish cities were renowned as major cloth production centres across the European market: Ypres, Bruges, and Ghent. In the 13th century, the city of Ypres built the largest commercial building in Europe at the time, the Cloth Hall, in order to store, display, and trade Ypres cloth—a testament to the city's great economic success. Despite medieval Ypres' reputation, not much is known about the actual composition of the workforce or the division of labour within the city. Many assumptions about this workforce have been made based on extrapolations from very fragmentarily preserved and problematic historical sources. In the physical remains of the people of Ypres themselves, evidence of their labour within the cloth industry may be found in their teeth. In several stages of cloth production, teeth are habitually used as tools and repeatedly come into contact with materials such as wool and thread. This motion etches a notch or groove into the tooth surface, thus creating an identifiable characteristic. This presentation delves into the structure of the workforce of this industrial boomtown by examining these markings and the people who bore them, reporting distribution as well as correlations with certain pathological changes such as lordosis and spondylolysis.

## TOOLS AND HABITS - STUDY OF SKELETAL EVIDENCE FOR SPECIAL ACTIVITIES IN PAST POPULATIONS FROM HUNGARY

**Abstract author(s):** László-Mateovics, Orsolya (Hungarian National Museum) - Látos, Katalin (National Archaeological Institute, Hungarian National Museum) - Libor, Csilla (Szent István Király Museum) - Schilling, László (National Archaeological Institute, Hungarian National Museum)

**Abstract format:** Oral

The lifestyle and habits can bear important information about everyday life, the surrounding environment, and the potential use of its resources in the past. It is the main issue of socio-archaeological studies how certain activities, occupations appear and develop, how these can remain through generations or disappear from the cultural history of past societies. Altered environmental conditions, the exploration of new natural resources can lead to the development of new techniques and activities just as the inflow of new ethnicities, cultural customs in a certain area, just as the change of residence of a population. We can find evidence for specific activities or crafts primarily through specific objects and finds and it is also not general that we can associate these with individuals. Skeletal remains also have a limited value in this regard since different physical activities leave similar degenerative lesions on the bones, therefore specific activities cannot be determined. For this reason, we have very scarce data of the following: How many members of society did have the skills of certain crafts? Was it related to a certain segment of the society (sex, age differences)? Were these techniques and occupations attained from other cultures or it was developed within the society? Craftsmen were local or wandering? What were the long-term consequences of special activities on the skeletal system and health? How do these occupations affect funeral rites and customs in a society? To some extent, in this presentation, we intend to assume pieces of information delivered by case studies from the Neolithic, Migration, and Early Medieval periods from Hungary. The osteobiography of these individuals will provide examples for how to find more specific answers to these theoretical questions through the analyses and bioarchaeological interpretation of degenerative joint alterations to dental lesions.

## THE PATTERNS AND ETIOLOGY OF SKELETAL TRAUMA IN AVAR PERIOD COMMUNITIES

**Abstract author(s):** Djukic, Ksenija - Milovanovic, Petar - Mikasinovic, Veda - Pavlovic, Tamara - Djuric, Marija (Laboratory of Bone Biology and Bioanthropology, Faculty of Medicine, Belgrade)

**Abstract format:** Oral

Insights into etiology and patterns of skeletal trauma in archaeological assemblages give us a key source of evidence in shaping our perception of human behaviour, everyday activities and dynamics of violence. A lege artis diagnosis and comprehensive analyses of skeletal trauma yields data on injury frequencies within a population, and their pattern and distribution, and can potentially provide insights into the circumstances of death. Moreover, all this knowledge can point us to some social models and rules within the community that we might not otherwise be able to see.

In this study we will analyse patterns and etiology of skeletal trauma in two Avar period necropolises from the territory of modern-day Serbia. Both necropolises (Čik and Pionirska Ulica) are located in northern Serbia and are attributed to the Avar period. The skeletal remains of a total of 133 individuals were analysed for signs of trauma, using macroscopic examination and plain radiography. Our results suggest an extremely low incidence of skeletal trauma among the investigated communities; less than 10 per cent of skeletons showed signs of trauma, with a significant predominance of injuries of upper limbs. Additionally, there was also a significant predominance of injuries to male individuals. Skeletal traumas on juvenile skeletal remains did not noticed. The main goal of this study is the reconstruction of the biological and community aspects of the patterns and etiology of skeletal trauma in Avar period communities.

## LIFE AT THE BORDER OF VENETIAN REPUBLIC AND OTTOMAN EMPIRE - BIOARCHAEOLOGICAL ASPECTS

**Abstract author(s):** Bedic, Željka (Croatian Academy of Sciences and Arts) - Šučur, Jure (University of Zadar)

**Abstract format:** Oral

Two graveyards on the shores of Vrana Lake in Northern Dalmatia have been archaeologically investigated. Crkvina and Maksanova gomila lie in close proximity, less than 20 m away, but they are separated by the wall. Some grave characteristics show similarities, but there are also differences. On Crkvina there is a church, while on Maksanova gomila there are no buildings at all, and the tombstones are different. Crkvina also shows a longer period of use as a graveyard, at least since Early Middle Ages, while graves at Maksanova gomila are dated to the second half of 15th and the 16th century and are attributed to Vlach population.

Until current excavations on Maksanova gomila only two graves were excavated yielding together 22 skeletons.

In season 2021/2022 archaeological research was carried on, so far giving 14 new graves. Two graves contained only one skeleton – in both cases a subadult. All the other graves generally consist of one skeleton in situ – subadult or adult, and one or more skeletons buried as secondary depositions or reburials.

Previous anthropological analysis carried on skeletal remains from two graves showed high levels of interpersonal violence, evidence of heavy physical labour, and high frequency of indicators of subadult stress suggesting these individuals were probably living in poor conditions and consumed low-quality food.

Ongoing anthropological analysis on new excavated human skeletal remains will focus on demography and pathological conditions in order to complement archaeological research and historical sources to better understand the migration movements in the area of northern Dalmatia in the Late Middle Ages and Early Modern Period.

## 8 CONTINUITY AND/OR IMMIGRATION? – BIOLOGICAL CONNECTIONS OF EARLY AND MIDDLE BRONZE POPULATIONS IN THE NORTHWESTERN PART OF THE CARPATHIAN BASIN

**Abstract author(s):** Szeniczey, Tamás (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest) - Melis, Eszter - Köhler, Kitti - Kiss, Viktória (Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Research Network, Budapest) - Major, István - Horváth, Anikó (Isotope Climatology and Environmental Research Centre, Institute for Nuclear Research, Eötvös Loránd Research Network, Debrecen) - Kiss, Krisztián (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest; Department of Anthropology, Hungarian Natural History Museum, Budapest) - Gémes, Anett (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest) - Jakab, Július (Institute of Archaeology, Slovak Academy of Sciences, Nitra) - Hajdu, Tamás (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest)

**Abstract format:** Oral

The Bronze Age in the Carpathian Basin is characterized by dynamic changes in archaeological cultures. The archaeological interpretation concerning the relationship and (dis)continuity between these cultures, is based almost exclusively on the material culture. However, material culture or identity does not reflect necessarily biological relatedness. The biodistance analysis and statistical modelling could provide a cost-efficient method to estimate the patterns of genetic affinity between different populations, applying phenotypic traits as a proxy.

Linear measurements of quantitative cranial features were selected as most of the anthropological publications are including craniometrics. Accompanied the literature data with our results, the database consists of 560 (284 males, 276 females) well-preserved skulls from 118 Early and Middle Bronze Age (EBA and MBA in terms of Hungarian chronology) archaeological sites in Central Europe (Austria, Czech Republic, Germany, Hungary, Poland, Serbia and Slovakia).

In the present study, we focused on the population history in the Northwestern part of the Carpathian Basin (Austria, Hungary, Slovakia) during the EBA and MBA. The statistical comparison revealed a strong signal for the biological continuity of the EBA population in the MBA. Moreover, ancestry may have played a significant role in shaping the MBA population structure.

This paper was supported by the Hungarian Scientific Research Fund (OTKA FK 128013) and the Momentum Mobility research project (Institute of Archaeology, Research Centre for the Humanities) granted by the Hungarian Academy of Sciences (Project Nr. LP 2015-3).

## 9 CRANIOMETRIC ANALYSIS OF THE 9-13TH CENTURY - POPULATION HISTORY OF THE DANUBE-TISZA INTERFLUVE

**Abstract author(s):** Kiss, Krisztián (Department of Biological Anthropology, Eötvös Loránd University; Department of Anthropology, Hungarian Natural History Museum) - Mészáros, Boglárka (Department of Prehistory and the Migration Period, Aquincum Museum and Archaeological Park) - Gyenesei, Katalin - Gémes, Anett (Department of Biological Anthropology, Eötvös Loránd University) - Rácz, Zsófia (Institute of Archaeological Sciences, Eötvös Loránd University) - Rácz, Tibor (Archaeological Collection, Ferenczy Museum Center) - Tóth, Zoltán (Department of Archaeology, István Dobó Castle Museum) - Révész, László (Department of Archaeology, University of Szeged; Department of Archaeology, Hungarian National Museum) - Hajdu, Tamás - Szeniczey, Tamás (Department of Biological Anthropology, Eötvös Loránd University)

**Abstract format:** Oral

The biological reconstruction of historical populations is one of the main goal for bioarchaeology. Craniometric examination is also part of this process in order to reveal biological relations between different populations. The theoretical background of this methodology says the more similar is the cranial shape of populations, the greater is the degree of genetic affinity between them. If successive communities can be seen with similar morphology then biological continuity can be assumed. We present our results of a craniometric examination involving populations from Late Avar Period (8-9th century), Hungarian Conquest Period (10th century) and Árpadian Age (11-13th century). Adult males and females were involved in our study after biological age estimation and morphological sex determination were performed according to standard methodologies. In order to characterize the cranial shape we took linear cranial measurements based on Martin and Saller (1957). Synchronic and diachronic comparisons of the communities from different temporal and spatial groups were performed in order to explore the population history, and to shed light on



the changes of population structure between the 9th and 13th centuries. This research was supported by the House of Árpád Programme (2018–2023) Scientific Subproject: V.1. Anthropological-Genetic portrayal of Hungarians in the Arpadian Age to TT and Foundation for Bolyai College.

## 10 DENTAL WEAR CHANGES IN THE PAST ~8000 YEARS

**Abstract author(s):** Godinho, Ricardo Miguel (ICArEHB, University of Algarve) - Umbelino, Cláudia (CIAS, University of Coimbra; ICArEHB, University of Algarve) - Relvado, Cláudia (ICArEHB, University of Algarve) - Garcia, Susana (ISCSP, University of Lisbon; Museum of Natural History and Science) - Gonçalves, Célia (ICArEHB, University of Algarve)

**Abstract format:** Oral

Holocene modern humans underwent two major events with profound dietary implications, the (i) transition from hunting-gathering to agro-pastoralism and (ii) industrialization of food production and pre-processing. Such transitions have been associated to increasingly softer diets and so to decreased masticatory system demands that lead to gracilization of the masticatory apparatus. Consistently, previous studies report decreased dental wear magnitudes because foodstuffs become less abrasive. Yet, to the best of our knowledge, previous dental wear studies focus on specific chronologies and/or transitions, and do not encompass such a wide diachronic span, ranging from the Mesolithic to the Late Modern Age. This limitation precludes an integrated understanding of the impact of these major transitions on dental wear. In this study, we use the ordinal scale of Smith (1984) to score the dental wear magnitude of 150 individuals of populations spanning from the Mesolithic to the Late Modern Age from present Portugal. Moreover, we also compare rates of wear across these populations by regressing wear magnitude of the first molar against wear magnitude of the second molar to provide age independent assessment of dental wear. In summary, our preliminary results show that dental wear decreases from the Mesolithic onwards, but statistically significant changes are only found between prehistoric chronologies and Modern and Late Modern populations. Rates of dental wear differ slightly between some populations, but statistically significant differences are only found between the Late Modern Age and almost all other populations (except from the Neolithic). Hence, our results suggest generally progressive and cumulative changes in dental wear that are only significant when comparing Mesolithic populations with Modern and Late Modern populations, and that the rate of dental wear is only statistically meaningfully different in the Late Modern Age (in which the speed of wear is lower).

## 11 DIETARY INFERENCES THROUGH DENTAL TOPOGRAPHY IN PREHISTORIC AND HISTORIC POPULATIONS FROM THE SOUTHEAST OF THE IBERIAN PENINSULA

**Abstract author(s):** Moya Soriano, Ester (Institute for Research in Archaeology and Historical Heritage - INAPH, University of Alicante) - Romero, Alejandro (Institute for Research in Archaeology and Historical Heritage - INAPH, University of Alicante; Department of Biotechnology, University of Alicante) - García Afénzar, Gabriel (Institute for Research in Archaeology and Historical Heritage - INAPH, University of Alicante)

**Abstract format:** Oral

Tooth wear is an age-dependent process largely determined by dietary abrasiveness. Overall, mechanical food properties differently impact on occlusal morphology as the enamel wear. Previous studies conducted on prehistoric hunter-gatherer dentitions found flat crown patterns compared to highly angled occlusal wear planes characteristic of agriculturalists. However, comparatively little is known about specific dental shape changes with wear among prehistoric and historic human groups according to documented differences in dietary regimes and modes of food preparation techniques. Using geographic information systems (GIS), here we investigate the relationship between molar topography and wear in well-dated and contextualized individuals of Bronze Age (Cabezo Redondo; between 1830 and 1450 cal. BC; n=31) and Late Roman (Tossal de les Basses; 6th–7th century CE; n=28) populations from the province of Alicante (southeast of the Iberian Peninsula). High-resolution polyurethane replicas were produced from polyvinyl siloxane-based molds of well-preserved first permanent mandibular molars (M1s) with different wear stages from juvenile and adult skeletally individuals. Meshes were generated using a structured light 3D scanner and digital elevation models (DEMs) processed to collect the steepness (slope) and height (relief) of occlusal molar surfaces using ArcGIS® and QGIS®. Analyses of covariance revealed significant between-population differences in occlusal slope and relief with wearing. The molars of Bronze Age individuals are characterized by significant reduction in cusp slopes and heights than those of Romans showing steeper slopes and relatively taller crowned teeth as wear accrues, probably associated with a substantial reduction in food toughness. Our findings denote that diet-related masticatory biomechanics largely impact on the dynamics of tooth-shape changes with wear and provide new insights about dental functional aspects among ancient populations.

## AGING CHANGES IN MAXILLARY BODY HEIGHT IN A MEDIEVAL POPULATION FROM CENTRAL EUROPE

**Abstract author(s):** Walczak, Anna - Krenz-Niedbala, Marta - Łukasik, Sylwia (Adam Mickiewicz University in Poznań, Faculty of Biology, Institute of Human Biology and Evolution)

**Abstract format:** Oral

The facial skeleton creates a support for soft tissues, and together they undergo the process of aging. The bones are subject to resorption, although the loss of tissue is differentiated, and specific to the particular elements. Maxilla is the bone most susceptible to this process.

This research was aimed at the analysis of metric characteristics of the maxillary body in the medieval sample from Cedynia, Poland. Based on historical and archaeological data, it was assumed that the biomechanical forces used during mastication were greater in the Middle Ages than in the modern times, which led to increased response of the bone tissue. Thus, it was expected to find a lower reduction of the maxillary height in increasing age categories in the medieval sample than in modern populations.

3D scans of the facial skeleton have been obtained for 140 individuals, divided into young, middle and old adults, in order to take measurements of the maxillary body height in the middle line (ML), at first premolar (FP) and first molar (FM), using Geomagic Studio 12. The metric data were statistically analyzed and compared with modern, published data. The measurements decreased with increasing age categories. The differences between young and middle age groups were 0.45 mm for ML, and in the right maxilla 1.66 mm (FP), and 0.55 mm (FM). In the left maxilla they were 1.16 mm and 0.45 mm, respectively. The differences between middle age and old age groups were 0.55 mm (ML); for the right maxilla 0.22 mm (FP), and 2.9 mm (FM), while for the left maxilla 0.21 mm (FP), and 2.66 mm (FM). The results of the study confirmed the hypothesis of the reduction in maxillary body height with age, and the lower decrease in this dimension in the Middle Ages, as compared to the modern populations.

## INSIGHT INTO SOCIAL DIFFERENTIATION OF THE BELL BEAKERS: AN EXAMPLE ON BIOARCHAEOLOGICAL DATA FROM POPŮVKY CEMETERY (CZECH REPUBLIC)

**Abstract author(s):** Tvrđý, Zdenek (Anthropos Institute, Moravian Museum, Brno) - Čerevková, Alžběta (Institute of Archaeology, Moravian Museum, Brno) - Drtikolová Kaupová, Sylva (Department of Anthropology, National Museum in Prague) - Jarošová, Ivana (Freelancer in anthropology)

**Abstract format:** Oral

The recently excavated cemetery from Popůvky (Moravia; Czech Republic) provided one of the largest collections of human skeletal remains (n=75) dated to Bell Beaker period (2500-2200 BC) in our region. Despite the not very good preservation of the skeletons, we were able to obtain valuable bioarchaeological data. The aim of this study is to assess lifeways of the individuals based on the anthropological, paleopathological and dietary analysis and connect them with funerary practices in the cemetery.

Basic demographic and metric data, along with evaluation of health condition and stress markers, provide the biological background of the population. Assessment of living conditions is complemented by dietary habits reconstruction based on the stable isotope analysis (carbon and nitrogen) of bone collagen accompanied by buccal dental microwear data. Bioarchaeological data were put it in context with grave goods at the individual level, so we could get insight into social differentiation in the Late Neolithic.

## THE SEX-SPECIFIC VARIATIONS IN THE HEALTH STATUS OF THE POPULATION FROM A SMALL LATE ROMAN ISLAND BURIAL SITE IN CROATIA

**Abstract author(s):** Zagorc, Brina (Department of Evolutionary Anthropology, University of Vienna; Human Evolution and Archaeological Sciences - HEAS, University of Vienna) - Carić, Mario - Novak, Mario (Centre for Applied Bioanthropology, Institute for Anthropological Research, Zagreb) - Visković, Eduard (Kantharos d.o.o., Hvar) - Reich, David (Department of Human Evolutionary Biology, Harvard University; Howard Hughes Medical Institute, Harvard Medical School; Broad Institute of Harvard and MIT) - Pinhasi, Ron (Department of Evolutionary Anthropology, University of Vienna; Human Evolution and Archaeological Sciences - HEAS, University of Vienna)

**Abstract format:** Oral

The studies of subadults and their role in the past societies have been an object of interest among bioarchaeologists for decades. However, there are no published studies that would include sex-specific health variations, due to the inaccuracy of the osteological methods for sexing subadult remains. Accurate molecular sexing methods (>99.9% accuracy) can be applied to paleogenomic data as well as the detection of first, second, and third-degree of kinship, and the analysis of ancestry. By observing the latter along with sex-specific variations in the health status of the studied individuals (including subadults and adults), we can address questions about the intra-cemetery social dynamics, more specifically about upbringing, familial relationships, and preferential sex-related treatment during their life course.

This paper presents the results of ancient DNA and bioarchaeological skeletal analyses of individuals from a small burial site dated to the 4th-5th centuries CE on the Croatian Dalmatian Island of Hvar (Hvar – garden of the Radošević palace). It includes separate graves and a small tomb where several individuals, both adult and subadult, were buried together. The focus is placed on comparisons between the occurrence of physiological stress indicators and other paleopathological indicators of poor health in relation to the biological sex of the studied individuals, along with their kinship and ancestry data. These analyses enable us to better understand the nature of this burial site, sex-specific health patterns, and the social connection between them. Moreover, the role of subadults and their context within the buried population gives us a better insight into the quality of their life.

## 15 **SURVIVAL OF THE WEAKEST. A CASE OF DISABILITY IN THE LATE ROMAN CITY OF IBIDA (SLAVA RUSĂ, ROMANIA)**

**Abstract author(s): Soficaru, Andrei - Crețu, Ciprian (Institute of Anthropology, Romanian Academy)**

**Abstract format: Oral**

The skeleton (noted M 78) was discovered in 2004 in the cemetery of the ancient city of Ibida (Tulcea County) from eastern Romania. The individual was found in articulated supine position in a simple pit oriented WSW-ENE. The radiocarbon data indicate AD 321±58 and the anthropological analysis established that the remains belong to a 26 to 35.2 years old male.

The skeleton displayed unusual pathological modifications: no teeth are present on the maxillary bones, cranial sutures are closed, the 7th, 8th, and 8th thoracic vertebrae are fused, both glenoid cavities of the scapulae are deformed and show advanced degenerative changes, the humeri show bilateral shortening of the diaphyses with varus angulation and flattened and enlarged humeral heads, the left acetabular fossa is much bigger than the right one displaying enlargement of the joint and porosity, the left femoral head is very deformed with a "mushroom" shape, the right femur shows a myositis ossificans and osteochondritis dissecans, both tibiae are normal in size and proportions but the left one is longer and thinner than the right one which is shorter and thicker. This kind of transformations indicate a genetic disorder. Other pathologies include osteoarthritis of the joints, hyperostosis porotica, caries, abscesses, and some ribs with fractures.

All these conditions indicate a person with a strong impairment: he limped, he could not rise the arms above the head, he was hunchbacked. Such person could not fit to the standards of a military and masculine society as that of the Late Roman Empire. While exercising restricted agency, he was highly probable excluded from many activities performed by the local community and his identity was shaped by other people.

## 16 **THE EFFECTS OF SOCIAL INEQUALITY IN THE ZAPOTEC CHILDREN FROM MONTE ALBÁN DURING THE CLASSIC PERIOD (200-700 AD)**

**Abstract author(s): Camacho, Miriam (Physical Anthropology)**

**Abstract format: Oral**

Social inequality varies according to the type of government, in state societies such as Monte Albán, social inequality is institutionalized, the integration of classes is established on a complex and stable social system, internally differentiated and divided into social strata or classes. These classes are identified through qualitative and quantitative differences in prestige assets, residence location and size, health conditions, and funeral treatment. The most accessible way to study social classes is through the domestic unit, which reflects the social, economic and political situation of the group that inhabits it (González 2011; Winter 1974). For this reason, it is proposed to analyse the skeletal remains of children under 12 years of age (period that includes Mesoamerican childhood) buried in domestic units of Monte Albán during the Classic period (200-700 AD), through funerary customs and indicators of health like: enamel hypoplasia, periosteal reactions, cribra orbitalia and porotic hyperostosis. The explanatory framework is based mainly on the biocultural approach, which provides the necessary tools to understand the human being not only as a biological being but also as a social being that interacts with culture throughout his life (Kelso 1978; Stinson et al. 2012). The results indicate that the children buried outside the domestic unit presented more serious infectious diseases compared to children buried in tombs or inside the domestic unit. However, nutritional deficiencies such as scurvy and anaemia were found in most children regardless of their burial site. This demonstrates an unequal distribution of food in the Zapotec families regardless of their social status. Therefore, the children were vulnerable to the living conditions of the city of Monte Albán, such as the high population density, lack of hygiene and proliferation of infectious diseases caused by these first two.

- 17 SOCIAL IDENTITY OF LATE MESOLITHIC CHILDREN FROM YUZHNIY OLENIY OSTROV IN LIGHT OF NEW ANTHROPOLOGICAL APPROACHES**
- Abstract author(s):** Batanina, Olga (University of Helsinki) - Stewart, Nicolas (University of Brighton) - Murphy, Eileen (Queen's University Belfast) - Zubova, Alisa (-) - Moiseyev, Vyacheslav (-) - Mannermaa, Kristiina (University of Helsinki)
- Abstract format:** Oral
- This paper introduces new data concerning sex estimations of non-adult individuals originating from the Yuzhniy Oleniy Ostrov (Lake Onega, Russia, 6000-6200 cal BC) cemetery and places them in their broader archaeological context. The cemetery is considered to be the largest Mesolithic burial ground in North-East Europe and contains 177 burials. It includes human remains of both sexes and various age groups. While the majority of the graves are those of adults, some 13% have been identified as those of children. The life histories of the adults have been well studied but those of children have been investigated to a lesser extent. One of the reasons for this situation is the challenge of estimating the sex of immature skeletons. Peptide analysis of dental enamel has been demonstrated to be a reliable method for determining the sex of non-adult individuals and this approach was applied to children from Yuzhniy Oleniy Ostrov (n=15). In this paper we present the results of the peptide analysis and investigate the distribution of sex, age, grave goods and body positions of the children buried at Yuzhniy Oleniy Ostrov in order to understand their social identities.
- 18 SUBADULT HEALTH AND DISEASES IN THE MEDIEVAL AND EARLY MODERN PERIOD POPULATION FROM GORA, CROATIA**
- Abstract author(s):** Kokotovic, Tea (The Institute of Archaeology in Zagreb) - Bedić, Željka (Anthropological Centre, Croatian Academy of Sciences and Arts) - Sirovica, Filomena (Archaeological Museum in Zagreb) - Belaj, Juraj (The Institute of Archaeology in Zagreb)
- Abstract format:** Oral
- The Gothic Church of the Assumption of the Blessed Virgin Mary is situated in Gora (Banovina, Croatia), a well-known medieval site occupied by military orders (Knights Templars and Hospitallers). The church itself bears its beginnings sometimes earlier, in the Romanesque period, and the site was used for burials from the beginning of the 11th century, throughout the late medieval and early modern period, up to the end of the 18th century. Rescue archaeological excavations conducted from 2008 to 2011 uncovered 424 burials in the church itself and along the outer perimeter of the church walls. As about 40% of the total osteological sample consists of subadult individuals, the focus of the research is the analysis of the physiological health of the medieval and early modern period subadult population buried at this site. The mortality rates and the health status are explored through different age groups, the latter using standard subadult stress markers such as nonspecific periostitis, cribra orbitalia and linear enamel hypoplasia in permanent dentition. The specificity of the subadult sample from Gora is a high number of metabolic diseases. About 10% of the sample shows signs of vitamin C deficiency (scurvy) and about 5 % of the sample shows signs of vitamin D deficiency (rickets). Because of their well-known aetiology and characteristic markings on the dry bone, these metabolic diseases are ideal for gaining a deeper insight into the researched population's health and survival rates.
- 19 A BIOARCHAEOLOGICAL STUDY OF HOW CREMATION WAS PRACTICED ACROSS MULTIPLE CENTURIES AT A BRONZE AGE CEMETERY**
- Abstract author(s):** Ullinger, Jaime (Quinnipiac University) - Paja, László (University of Szeged) - Williamson, Kylie (University of Florida) - Danella, Erika (University of Michigan) - Cruz, Heleinna (Quinnipiac University) - Ramireddy, Pranavi (California University of Science and Medicine) - Duffy, Paul (University of Kiel) - Gibling, Julia (Quinnipiac University) - Parditka, Györgyi (University of Michigan)
- Abstract format:** Oral
- Cremations are a common mortuary practice in prehistoric Europe. However, the burned, fragmentary, and commingled nature of the skeletal elements have often precluded large-scale bioarchaeological analysis of cremation cemeteries, which inhibits our ability to understand if mortuary practices associated with cremation were conserved or changed during transitional time periods. In this paper, we present the analysis of cremated bone from a large cemetery located in the Lower Körös Basin in Eastern Hungary: Békés 103. Radiocarbon dates indicate that the cemetery was used for several hundred years, with the most active phase between 1600 and 1280 calBC, after most tells in the region had been abandoned.
- To systematically study the burials, we first microexcavated cremated bone from funerary urns in layers, under controlled laboratory conditions. We then examined all diagnostic elements, all elements over 5mm, and a 20% sample of anything smaller than 5mm to assess bone color, bone fracture patterns, and the ratio of cranial/post-cranial elements by layers. Finally, the combined weight and volume of all of the collected bone from each burial was measured and determinations of age-at-death and sex were made when diagnostic elements were recoverable. Our final data set allowed for us to look at several stages of the cremation mortuary ritual: from conditions of how the body

was burned to how much of the body was placed in the urn and whether that placement was done in a particular pattern. In this paper we explore our dataset with a particular focus on how cremation was practiced over multiple centuries at the Békés 103 cemetery. We address what practices stayed the same, what changed, and whether these patterns correlate with regional changes in the Lower Körös Basin from the Middle to Late Bronze Age.

## 20 REVISITING THE “NORTHERN IBERIANS” RITUAL PRACTICES FROM NON-INCINERATED HUMAN REMAINS IN THE NE OF THE IBERIAN PENINSULA (4TH-1ST CENTURY BC)

**Abstract author(s):** Petit-Castellví, Alba - Subirà, Maria Eulàlia (Unitat d'Antropologia Biològica, Departament de Biologia Animal, de Biologia Vegetal i d'Ecologia, Facultat de Biociències, Universitat Autònoma de Barcelona, Bellaterra, Cerdanyola del Vallés) - Agustí, Bibiana (INSITU S.C.P. Centelles, Barcelona)

**Abstract format:** Oral

The normative funeral ritual of the Iberian tribes was based on the cremation of corpses in a general way, although we know that half the population did not have access to it. Since the last century, human remains have been found isolated and not cremated in contexts other than necropolises. The most extraordinary finds are the nailed skulls that were exposed in the walls of the sites of Ullastret and Puig Castellar and Ullastret, which the classical written sources describe as trophies recovered in battles and representative of the defeated enemies.

These specific findings, with repeated patterns, have attracted the attention of researchers, although they have been little studied. Here we present a research based on an osteoarchaeological review that informs nine individuals for the first time, contributing to enlarging the northern Iberian's human remains pool.

The archaeological analysis of these shows that most of the isolated human remains from habitat contexts correspond to partial skeletal remains and show no signs of violence. Two of the skulls in this study, the female from Can Miralles-Can Modolell and the male from Turó de la Rovira, have bruises and perimortem cuts.

The existence of male, female and juvenile severed heads in both urban and productive contexts encourages us to think beyond the “warrior figure” attribution in the trophy heads phenomenon. We propose that trophy heads were also collected from raids. Moreover, since the ritual of exhibiting human remains was used by the elite as proof of their power, it was probably used as a way of coercing exterior enemies as well as local citizens. Finally, those remains with no signs of violence could be considered as burials for the lower classes who were deprived of an incineration ritual.

## 21 BIOARCHEOLOGICAL EVIDENCE OF THE STEPPE NOMAD'S PRESENCE IN BRONZE AGE MONTEORU CULTURE CEMETERIES

**Abstract author(s):** Constantinescu, Mihai (Fr. I. Rainer Institute of Anthropology; University of Bucharest) - Chicideanu, Monica (University of Bucharest)

**Abstract format:** Oral

The Middle Bronze Age Monteoru Culture had a long evolution (2250-1550 cal BC) in the hilly areas from eastern and south-eastern Carpathians. The cultural relations of the Monteoru culture with the steppe nomads were previously presumed due to the presence of specific artefacts, the catacomb like structures in some cemeteries and were often thought to have a violent component too. The cemetery from Cărlomănești placed in the vicinity of a multilayered Monteoru settlement has 143 excavated graves, most of them containing inhumated individuals. The funeral constructions are usually shallow pits, filled with river stones, with the deceased placed in lateral decubitus, with their legs crouched on the left side and the skull-oriented westwards. Most of the graves have funeral inventory consisting in ceramics, female adornments and rarely stone axes. Five graves have circular or oval-shape shafts as funeral structure, with burial niche at its base, where the skeleton is buried according to the usual local ritual. Comparing to the other graves the funeral inventory of the individuals buried in the niches is scarce or missing and some of the vessels are not typical for the Monteoru culture. Moreover, their biological characteristics (stature, bone dimensions, skeletal lesions and genetic traits) differ from the other individuals buried in the cemetery. The available bioarchaeological data suggests that individuals belonging to the steppe nomads' populations were buried in the local Bronze Age cemeteries from eastern Romania, partly using their specific ritual program while also adopting the local funerary traditions, which hints to a peaceful and common coexistence.

## 22 THE ANTHROPOLOGICAL STUDY OF HUMAN REMAINS FROM THE BURIAL CAVES OF POLLA, SALERNO (ITALY) BETWEEN THE NEOLITHIC AND ENEOLITHIC PERIOD

**Abstract author(s):** Guglielmi, Sandra - Minelli, Antonella (Università degli Studi del Molise)

**Abstract format:** Oral

We present the preliminary results of anthropological and paleopathological analysis on the human skeletal remains found in the cave of Polla, in the province of Salerno (Italy), in the Vallo di Diano area.

The cave, located in the north-eastern part of the Alburni Mountains, appears to have been used as a burial area from the Neolithic to the Bronze Age. The excavations conducted thus far provide important evidence for ritual

practices in the region, and suggest potential continuity in these practices mainly from the Neolithic to the Eneolithic period.

Osteological analyses were performed on a total of 469 human bone fragments and 48 teeth. These fragments represent a minimum (MNI) of five human subjects.

The stress pathologies observed include one case of enamel hypoplasia on the 35-45 year old male and three cases of *Cribrum cranii* associated with porotic hyperostosis.

Careful examination of the skull of the 20–24 year-old male individual revealed a case of scaphocephaly with strong thickening of the cranial vault associated with early synostosis of the sagittal suture. The sagittal suture is in fact almost completely obliterated in this individual, which is an anomaly for a person of such a young age.

The evidence collected so far allows us to reconstruct burial practices involving multiple inhumed individuals. The general absence of anatomical connection of the remains suggests that past depositions were over time deliberately manipulated to “make room” for new ones. The abundance of charcoal confirms the widespread use of fire. The ceramic materials associated with the burial deposits are characterized by their extreme fragmentation, likely a product of deliberate breakage as a part of the funeral ritual. Most ceramic fragments are not diagnostic, which suggests that commonly-used vessels were employed in these rituals.

23

### **OLD BONES – NEW POSSIBILITIES. HUMAN REMAINS FROM SETTLEMENT PITS AT MIDDLE BRONZE AGE TISZAFÜRED-MAJOROSHALOM (EASTERN HUNGARY) SITE**

**Abstract author(s):** Gémes, Anett (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest) - Mester, Edit (Kiss Pál Museum, Tiszafüred) - Dani, János (Déri Museum, Debrecen) - Gál, Erika (Research Centre for the Humanities, Institute of Archaeology, Budapest) - Szeniczey, Tamás (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest) - Kiss, Krisztián (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest; Department of Anthropology, Hungarian Natural History Museum, Budapest) - Szeverényi, Vajk (Déri Museum, Debrecen) - Kulcsár, Gabriella - Kiss, Viktória (Research Centre for the Humanities, Institute of Archaeology, Budapest) - Hajdu, Tamás (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest)

**Abstract format:** Oral

The origins, way of life, and general health of the Füzesabony communities that inhabited the northeastern Carpathian Basin in the Middle Bronze Age (2000/1900-1500 B.C.) are unclear, despite the publication of the anthropological results of some larger cemeteries. This can be explained by the cremation burial rites of the former autochthonous communities that had lived in the same area, which prevents comparisons with the former local populations but also does not make it easier to resolve the issue that the communities of the Füzesabony culture in different regions show a heterogeneous picture.

In the autumn of 2020 – near one of the most important Hungarian Bronze Age cemeteries – a Bronze Age mass grave was excavated in Tiszafüred-Majoroshalom, eastern Hungary. This pit is the first mass grave that belongs to the Füzesabony culture in Hungary.

In this research, we focused on the anthropological processing of the new finds, using macroscopic examination methods. The aim was to find out - as much as possible - the reason for the burial of the corpses and the living conditions of those buried here. We determined the minimum number of individuals, outlined some possible explanations for the burial in the pit, performed paleopathological examinations, and recorded craniometric data. Children and juveniles were placed in the mass grave at a higher rate than adults. There were slightly more males than females among the adults. Lesions were observed on the inner surface of the skulls of several children, which - according to the paleopathological literature - are frequently due to infection but other causes cannot be excluded.

This paper was supported by the Hungarian Scientific Research Fund (OTKA FK 128013) and the Momentum Mobility research project (Institute of Archaeology, Research Centre for the Humanities) granted by the Hungarian Academy of Sciences (Project Nr. LP 2015-3).

24

### **IN THE SHADOWS OF THE EMPIRE: SARMATIAN COMMUNITIES OF THE GREAT HUNGARIAN PLAIN**

**Abstract author(s):** Tica, Cristina (Clemson University) - Hajdu, Tamás (Department of Biological Anthropology, Eötvös Loránd University, Budapest) - Mateovics-László, Orsolya (Hungarian National Museum) - János, István (Institute of Environmental Science, University of Nyíregyháza)

**Abstract format:** Oral

This paper examines the health status of the Sarmatians on the Great Hungarian Plain. The written sources of classical antiquity painted these groups inhabiting the Carpathian Basin as nomadic people of the steppes between the Ural Mountains and the Don River who migrated west and settled on the Great Hungarian Plain, occupying parts of modern Hungary for over four hundred years. Consequently, the Greek and Roman authors described these populations

as skilled equestrian warriors, hostile and destructive, caught in a cycle of peace and war with the Roman Empire, when actually little is known about the biocultural challenges they had to face living in the Barbaricum. This study aims to present a border perspective not available in most of the bioarchaeological scholarship focused mainly on the Roman side of the frontier and provincial life, by looking at health and demographic profiles in the Barbaricum and on the limes, to see if life stresses were different for the two Sarmatian communities. The bioarchaeological analysis of human skeletal remains reveals an intricate picture: individuals experienced differential life stressors by sex, different stress factors also depending on where they lived in relation to the limes. No matter how close to or how far from the border one lived, nobody was spared a harsh life on the fringes of the Roman world.

## 25 FOUNDER SURVIVAL: BIOARCHAEOLOGY OF ROMAN AGE IN ANCIENT SARDINIA

**Abstract author(s):** Serra, Rita (Department of Biomedical Sciences, University of Sassari, Italy; Center for Anthropological, Paleopathological and Historical Studies of the Sardinian and Mediterranean populations, Department of Biomedical Sciences, University of Sassari) - La Fragola, Alessandra - Rovina, Daniela (Superintendence for Archaeological Heritage for the provinces of Sassari and Nuoro) - Posth, Cosimo (Max Planck Institute for the Science of Human History, Jena; Institute for Archaeological Sciences, University of Tübingen) - Mazzarello, Vittorio - Bandiera, Pasquale (Department of Biomedical Sciences, University of Sassari; Center for Anthropological, Paleopathological and Historical Studies of the Sardinian and Mediterranean populations, Department of Biomedical Sciences, University of Sassari)

**Abstract format:** Oral

Introduction

Sardinia, located in the middle of east Mediterranean Sea, along the most important trade route of the past, become a Roman province in 238 BC. Many settlements rose in this period, mainly near the coast. The Roman imperial necropolis of Monte Carru, located in the NW coast of Sardinia, seems to be related to the lost settlement of Carbia (Itinerarium provinciarum Antonini Augusti- 3rd century). This necropolis is included in a recent work (Marcus J.H. et al. 2020) that analyzed genetic Sardinia history and underline the partial survival of island's Neolithic founder population in Roman age. Previous societies' cultural heritage, in this period, is partially evident.

Materials and methods

Survival and innovation seem to be a reality in Roman Sardinia. To understand if this genetic and cultural differences can be underlined also from bio-archaeological data, anthropological results from Monte Carru were being compared with previous pre-nuragic and nuragic settlement in the same area.

Results

Anthropological analyses have underlined some differences between ages:

A different average age at death, that is higher in roman age, with a low percentage of death in subadult age (6%). Stature increases for males from nuragic (163cm) to roman age (168cm), for females it is higher in roman age (163cm). The incidence of dental pathologies (caries, tartar) is higher in roman age. Bone's pathologies, mainly arthritis, decrease from Nuragic to Roman age in both sexes. Markers of occupational stress (MOS) decrease in males, except for the tibia, which is higher in roman age; in females are fewer in nuragic, in the femur as much as in the tibia.

Conclusion

Anthropological data evidence some differences between ages, in aspects related to genetics (stature) and life conditions (pathologies and MOS) related to socio-cultural activities. More macro and microscopic analyses will be necessary to better understand these differences.

## A. HUMAN SKELETONS WITH TREPONEMATOSIS DISCOVERED IN THE NECROPOLIS OF 15TH-19TH CENTURIES AT THE ROMAN CATHOLIC CATHEDRAL OF IAȘI, ROMANIA

**Abstract author(s):** Groza, Vasilica-Monica (Romanian Academy – Iași Branch, “Olga Necrasov” Center of Anthropological Research) - Petraru, Ozana-Maria (Romanian Academy – Iași Branch, “Olga Necrasov” Center of Anthropological Research; “Alexandru Ioan Cuza” University of Iași, Faculty of Biology) - Popovici, Mariana (Romanian Academy – Iași Branch, “Olga Necrasov” Center of Anthropological Research) - Bejenaru, Luminița (Romanian Academy – Iași Branch, “Olga Necrasov” Center of Anthropological Research; “Alexandru Ioan Cuza” University of Iași, Faculty of Biology)

**Abstract format:** Poster

A sample of 89 skeletons was discovered at the “Adormirea Maicii Domnului” Roman Catholic Cathedral from Iași (Romania) (children, adolescents, adults and elders), in inhumation tombs and reburials of 15th-19th centuries. Three skeletons of this sample are suspected to be affected by treponematosis. The most known of the treponematous is the syphilis, a debilitating disease, sexually transmitted and caused by the bacterium *Treponema pallidum*. There is much debate on the syphilis origins and spreading, particularly with regard to ancient populations in preantibiotic times.

The treponematoses evidences are evaluated by macroscopic examination of the bone cortical surface and using a stereomicroscope Carl Zeiss Stemi 2000-C with a Canon Power Shot SX70 HS attached. Subsequent, selected skeletal remains were examined using medical imaging, by radiography (X-rays) and tomography (CT scans). The examined skeletons belonged to individuals of 30-35 years old (one female) and 35-40 years old (one male and one female).

Evidence of a chronic infectious disease, most likely treponematosi, exhibited destructive and proliferative processes (i.e., caries sicca) in frontal and parietal bones. Long bones also present alterations with increased osseous density and non-uniform thickening. In the analysed skeletons, the treponematosi does not appear associated with other significant pathologies.

This is a new study on the skeletal evidence of trepanematosi in archaeological populations discovered on the Romanian territory, providing data to better understand the disease in ancient times.

## **B. SKELETAL INDICATORS OF AMPUTATION PROCEDURE, LOOKING AT THE EXAMPLE OF THE CASE OF PRE-COLUMBIAN MIDDLE ANDES.**

**Abstract author(s):** Lis, Monika (University of Warsaw)

**Abstract format:** Poster

The aim of this speech is to analyse and summarize the indicators of a successful amputation procedure visible in osteological material from excavation. Evidence of this medical surgery is quite abundant in archaeological material all over the world. However, more than missing bones of the limbs is needed to identify individuals with post amputated limbs. Depending on the type of procedure, a number of indicators are distinguished. Determined by the location and period, two methods were used: disarticulation through the joint (Syme's type amputation) and direct cut through the bone. The second one requires specific tools, that were capable to do so. It usually leaves easily recognisable traces on bone. Taking into account the fact that no metal tools capable of cutting a bone were known in pre-Columbian Middle Andes, it is assumed these societies performed Syme's type amputations, accompanied by the use of available plant anaesthetics and antiseptics. This procedure usually does not leave visible cuts on the bone and requires different approaches to be identified. Possible changes might be observed in joint surfaces or musculo-skeletal stress markers analysis. Moreover, these observations may lead to conclusions about the use of crutches and prosthetics, which causes change of the body's centre of gravity, and that leads to bone's reaction to a different distribution of forces.

## **C. BIOARCHAEOLOGICAL ANALYSIS OF THE POSSIBLE SKELETAL REMAINS OF BÉLA, DUKE OF MACSÓ (12TH CENTURY AD)**

**Abstract author(s):** Hajdu, Tamas (Eötvös Loránd University) - Bernert, Zsolt (Department of Anthropology, Hungarian Natural History Museum, Budapest) - Szeniczey, Tamás (Department of Biological Anthropology, Faculty of Science, Eötvös Loránd University) - Major, István - Molnár, Mihály (Isotope Climatology and Environmental Research Centre, Institute for Nuclear Research, Debrecen) - Kelentey, Barna Árpád (Department of Operative Dentistry and Endodontics, Faculty of Dentistry, University of Debrecen) - Angyal, János (Department of Periodontology, Faculty of Dentistry, University of Debrecen) - Horváth, Anikó - Palcsu, László (Isotope Climatology and Environmental Research Centre, Institute for Nuclear Research, Debrecen) - Buzár, Ágota (Department of Anthropology, Hungarian Natural History Museum, Budapest)

**Abstract format:** Poster

Béla of Macsó (after 1243– November 1272 AD) was Duke of Macsó and of Bosnia. He governed the southern provinces of the Medieval Kingdom of Hungary. Béla's father was Duke Rostislav of Macsó (a member of the Rurik dynasty) and his mother was Anna, a daughter of King Béla IV, a member of the House of Árpád. Béla of Macsó was killed in mid-November 1272 on Margit Island.

The skeletal remains of an adult male were found beneath the floor during the excavation of a 13th-century Dominican monastery on the Margit-island, in 1914-1915 (VÁRKONYI 1915, GYARMATHI 1915, HANKÓ 2004). The body was buried head up to the altar. At a depth of 1.5 meters, the skeletal remains of two other individuals were also discovered. According to the Budapest Newsletter of 1929, the remains of Béla came from oak coffins with ornate carvings (NÉMETH 1929). After the excavation, the human remains were transported to the Institute of Anthropology of the University of Budapest (now: Department of Biological Anthropology, EötvösLoránd University) where Lajos Bartucz analyzed them. However, he did not publish the results in detail. Some of his preliminary observations were mentioned in a newspaper (NÉMETH 1929). The skeleton belonged to a 20-25-year-old male. Bartucz observed 23 perimortem cutmarks caused by sharp weapons (swords) on the bones. He thought that Béla did not die in a duel, but he was rather slain with excessive violence as his body was cut more times after he fell to the ground.

The aim of our paper is to present the results of the complex bioarchaeological analysis of the possible remains of Béla of Macsó.

This research was supported by The House of Árpád Programme (2018–2023) Scientific Subproject: V.1. Anthropological-Genetic portrayal of Hungarians in the Árpáadian Age.



## D. CHALLENGING STATUS? INTERPRETING CARE IN AN INDIVIDUAL WITH FACIAL AND LOCOMOTIVE IMPAIRMENTS

**Abstract author(s):** Robinson, Stephanie (University College Cork)

**Abstract format:** Poster

The Early Bronze Age in Ireland is traditionally interpreted as a period of socio-political change. Alongside changes in trade relations associated with the introduction of Bronze, the introduction of what is interpreted as a formalised and restricted individualised burial tradition – in comparison to the collective burial of the Late Neolithic – has often been linked to the rise of the 'ideology of the individual'. In 1935, excavations of Early Bronze Age cists at Ballybrew, Co. Wicklow, Ireland uncovered the skeleton of an adult male whose flexed remains had been inserted into a grave already containing an adolescent. A recent reanalysis of this atypical burial has identified bilateral robusticity changes to the skull and a non-union fracture of the right tibia and fibula. The identification of severe torticollis and a well-healed non-union fracture strongly suggest that this individual would have required differing short-term and long-term care throughout their life. While the Bioarchaeology of Care provides a methodology for assessing care within past populations, it also provides a framework for assessing how the provision of care can reflect upon the culture of the provider. This case study highlights the intersection of presumed high status of a cist burial, apparent reuse of the grave, atypical burial position, and an individual with highly visible facial asymmetry and lower limb injuries that can be used to explore questions not only around how status was viewed in the Irish Early Bronze Age, but also who qualified to receive care and what care entailed.

## E. RELATIONSHIP BETWEEN THE ORBIT SHAPE AND CRANIOFACIAL TRAITS IN A SAMPLE OF CONTEMPORARY HUMAN SKULLS FROM IAȘI CITY, ROMANIA

**Abstract author(s):** Groza, Vasilica-Monica (Romanian Academy – Iași Branch, "Olga Necrasov" Center of Anthropological Research) - Bejenaru, Luminița - Petraru, Ozana-Maria (Romanian Academy – Iași Branch, "Olga Necrasov" Center of Anthropological Research; "Alexandru Ioan Cuza" University of Iași, Faculty of Biology) - Popovici, Mariana (Romanian Academy – Iași Branch, "Olga Necrasov" Center of Anthropological Research)

**Abstract format:** Poster

The orbits are bilateral and symmetrical cavities in the skull, enclosing the eyeballs and its associated structures. By positioning them, below the frontal and anterior to the temporals, the orbits play an important role in the evaluation of craniofacial complex. How orbit shapes covariate with craniofacial features differs depending on the human population, geographic region, environmental or genetic factors of individuals. This is a topic of interest in many current scientific approaches.

The present study is aimed to bring new data on how the shape of the orbit varies in correlation with the craniofacial traits. The sample of this research consists of 50 skulls originated in the crypt of Mausoleum dedicated to the First World War Heroes in Iași city, Romania. This study combines geometric morphometrics with traditional morphometry to quantify the shape of the orbit and the influence of craniofacial indices upon it. The 72 landmarks quantified the shape of the orbit, while 13 craniofacial indices described the craniofacial features in the sample. Canonical discriminant function analysis and Mahalanobis' distance were used to examine the patterns of covariations which defined the clusters within sample.

The orbit shape in the studied human population fits into the pattern described in other studies on European populations, namely an inclined square or rectangle shape. Within the general pattern, it was possible to distinguish variation models correlated with the cranial index and the superior facial index. A constant signalled in the variation models is the lower margin of the orbit. This turned out to have weaker covariates in the craniofacial complex than the inner and upper margins of the orbit.

This work is one of a series of studies that will investigate the strength and direction of the relationships between orbits and cranial traits among geographically separate human groups.

## F. AN INTEGRATED THEORETICAL AND BIOARCHAEOLOGICAL APPROACH TO CATASTROPHIC COMMINGLED ASSEMBLAGES

**Abstract author(s):** Masters, Mackenzie (University of York) - Soficaru, Andrei (Francis I. Rainer Institute of Anthropology) - Alexander, Michelle (University of York) - Holst, Malin (University of York; York Osteoarchaeology Ltd.)

**Abstract format:** Poster

This research introduces a novel approach utilising a chaîne opératoire framework developed to enhance understanding of ancient mass graves by integrating archaeological data, osteological, and biomolecular methods (isotopic and aDNA analyses). Archaeological mass graves are relatively rare and understudied but, these sites provide invaluable insight into complex social interactions within and between communities in response to catastrophe.

The presented chaîne opératoire model is applied two-fold, firstly, to use archaeological data (recording stratigraphy and location of objects in the grave), burial context, and archaeoethnology (taphonomy and the burial

environment) to understand the funerary behaviour surrounding the construction of and deposition within the mass grave. Secondly, the application of osteological methods (paleodemography and paleopathology) and biomolecular analyses allows for an understanding of local and non-local identity, and socio-cultural behaviour in response to a catastrophic event.

This poster presents two historic case studies utilising this approach. Firstly, a site from 11th century CE Leicester, UK (83 individuals) comparing individual and double inhumations to mass graves- most likely created in response to an epidemic- within the same attritional cemetery. Secondly, the Late Roman/Early Byzantine site Ancient Ibida from Slava Rusă, Romania (98 individuals) comparing an attritional cemetery (4th- 6th century CE) with a mass grave (3rd-4th century CE) located outside the city walls likely a result of a violent event.

## G. INVESTIGATION OF THE GENETIC ANCESTRY OF BÉLA OF MACSÓ, AN ÁRPÁDIAN PRINCE FROM HUNGARY

**Abstract author(s):** Borbély, Noémi - Mende, Balázs Gusztáv (Institute of Archaeogenomics, Research Centre for the Humanities, ELRN, Budapest) - Pinhasi, Ron - Cheronet, Olivia (Department of Evolutionary Anthropology, University of Vienna) - Reich, David Emil (Department of Genetics, and Department of Human Evolutionary Biology, Harvard Medical School) - Takács, Ágoston (Medieval Department, Castle Museum - Budapest History Museum) - Hajdu, Tamás (Department of Biological Anthropology, Eötvös Loránd University) - Szécsényi-Nagy, Anna (Institute of Archaeogenomics, Research Centre for the Humanities, ELRN, Budapest)

**Abstract format:** Poster

We genetically investigated Béla, the duke of Macsó and Bosnia, who governed the southern provinces of the Kingdom of Hungary and lived between 1243–1272 AD. He was the son of Duke Rostislav (Rus' prince, Rurik dynasty) and Duchess Anna from the Árpád dynasty (daughter of Béla IV of Hungary) according to the historical records. His remains were excavated in the Margaret Closter on the Margaret Island of Budapest in 1915 and re-explored in 2018. His identification is based on anthropological, archaeological, and historical records on the circumstances of his murder in 1272.

In this study, we investigated his Y-chromosome and analysed the mitogenome of the ancient DNA gained from the skull attributed to Béla of Macsó. The Y-chromosomal haplogroup of Béla is N1a-M46. Further downstream subgroups can be predicted from the STR matches detected with present-day descendants of the Rurikids. Béla of Macsó most probably belonged to the haplogroup N1a1a1a1a1a1a defined by the terminal SNPs L550. We conclude that the N1a-M46 paternal lineage corresponds to his anticipated Rurikid genealogy. The maternal line of Béla belonged to the mitochondrial U3b3 subgroup of U3. No identical mtDNA haplotype to Béla's lineage was detected in the published datasets. As phylogenetic analysis reveals, similar haplotypes are nowadays characteristic in the Near East and the Caucasus. Therefore, the maternal U3b3 lineage also fits into the maternal genealogy as a rare but widespread lineage from the Caucasus to the Near East, most probably also prevalent in the Early Medieval Anatolia and the Aegean – South-Pontic world. The uniparental data, therefore, strengthens the archaeological and anthropological records in the identification of the skeleton.

This research was supported by The House of Árpád Programme (2018–2023) Scientific Subproject: V.1. Anthropological-Genetic portrayal of Hungarians in the Árpáadian Age.

## H. PALEOPATHOLOGICAL INVESTIGATION OF A POSSIBLE SURGICAL TREPHINATION FROM 11-13TH CENTURY

**Abstract author(s):** Kiss, Krisztián (Department of Biological Anthropology - Eötvös Loránd University; Department of Anthropology - Hungarian Natural History Museum) - Gémes, Anett - Gyenesei, Katalin (Department of Biological Anthropology - Eötvös Loránd University) - Karlinger, Kinga (Department of Radiology, Medical Imaging Center - Semmelweis University) - Szeniczey, Tamás - Hajdu, Tamás (Department of Biological Anthropology - Eötvös Loránd University)

**Abstract format:** Poster

The excavation of the Árpáadian Age cemetery at the site of Jászberény- Szent Pál halom (11-13th Century) took place between 1952-1954. The population buried here was under the authority of the Hungarian Kingdom. However, their ethnic representation remained uncertain as these times were characterized by both small- and large-scale immigrations of several ethnicities (e.g. Pechenegs, Cumans, hospes communities from Western Europe) toward the borders of the medieval Kingdom. Cases of trephinations are known all over Europe from the Neolithic to Arpadian Age and can be categorized based to the presumed cause of the intervention. Surgical trephination was practiced as a medical intervention while symbolic trephinations were possibly the results of religious beliefs.. In the Carpathian Basin,, most of the known trephinations are presumably of symbolic origin and related to Hungarian conquerors from 10th Century. A possible case of a surgical trephination from Arpadian Age is presented by a 45-55 years old male (inventory number: 8752). Along the coronal suture on the left, a healed lesion can be observed which characteristics resembles a surgical trephination. Another sign of a well-healed blunt force trauma is evident along the sagittal

suture. Additionally, moderate enthesopathies can be observed on both humerus, radius, pelvis and femur, as well as dental pathologies such like caries, cyst or abscess and linear enamel hypoplasia on the upper and lower teeth. In order to get a more accurate morphological description of the possible surgical trephination and reveal any other hidden lesions on the skull, computertomographic analysis is scheduled. This case may expand our knowledge of trephinations of the medieval Hungarian Kingdom.

This research was supported by the House of Árpád Programme (2018–2023) Scientific Subproject: V.1. Anthropological-Genetic portrayal of Hungarians in the Arpadian Age to TT and Foundation for Bolyai College.

## I. PALEOPATHOLOGICAL ANALYSIS OF THE LATE IRON AGE BURIALS FROM GYŐR-KÁLVÁRIA MERGED SITE

**Abstract author(s):** Gyenesei, Katalin (Department of Biological Anthropology, Eötvös Loránd University, Budapest) - Kiss, Krisztián (Department of Biological Anthropology, Eötvös Loránd University, Budapest; Department of Anthropology, Hungarian Natural History Museum, Budapest) - Szeniczey, Tamás (Department of Biological Anthropology, Eötvös Loránd University, Budapest) - Ujvári, Ferenc - Pesti, Krisztina (Rómer Flóris Museum of Art and History, Győr) - Hajdu, Tamás (Department of Biological Anthropology, Eötvös Loránd University, Budapest)

**Abstract format:** Poster

From the second half of the 5th century BC to the early 1st century BC Celts inhabited the Carpathian Basin. They populated Transdanubia and Slovakia but also had settlements in the Great Hungarian Plain and the southern part of the Carpathian Basin and Transylvania as well. From 2017 to 2019 at Győr-Kálvária merged site excavation shed light on 22 late Iron Age Celtic burials (La Tène Culture). The cemetery dates back to between the end of the 4th century BC and the 2nd century BC. The 22, mainly robbed graves contained 20 inhumated and 2 cremated remains. During the biological anthropological examination, we analyzed various pathological conditions. We detected slight and severe manifestation of a complex hormonal-metabolic disease, hyperostosis frontalis interna (HFI) on female skulls buried in graves S-30, S-69, and S-97. HFI appears on the endocranial surface of the frontal bone in form of bony deposits and mostly affects postmenopausal women. Many pathological changes affected an adultus-maturus aged man buried with several iron weapons in a larger than average grave surrounded by a ditch. We hypothesized that this individual suffered from diffuse idiopathic skeletal hyperostosis (DISH), which is mainly characterized by the ossification of the anterior ligaments of the dorsal and lumbar spine. In this case, we also observed spondylosis deformans on the cervical spine, spondylodiscitis, spondylarthrosis, Schmorl's nodes, vertebral compression fractures on the dorsal and lumbar spine. In terms of pathological changes, no significant difference between sexes or specific (cervical, dorsal or lumbar) spine regions could be found. Women were affected more likely by oral pathologies. In addition to the classical anthropological data, our results also contribute to the understanding of the pathological alterations affecting the Late Iron Age Celts of Transdanubia.

## J. INFECTIOUS DISEASE AT THE MIDDLE BRONZE AGE SETTLEMENT OF TISZAFÜRED (EASTERN HUNGARY) – A CASE STUDY

**Abstract author(s):** Gémes, Anett (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest) - Mester, Edit (Kiss Pál Museum, Tiszafüred) - Dani, János (Déri Museum, Debrecen) - Szeniczey, Tamás (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest) - Kiss, Krisztián (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest; Department of Anthropology, Hungarian Natural History Museum, Budapest) - Horváth, Anikó - Palcsu, László - Major, István (Isotope Climatology and Environmental Research Centre, Institute for Nuclear Research, Debrecen) - Kiss, Viktória (Research Centre for the Humanities, Institute of Archaeology, Budapest) - Hajdu, Tamás (Department of Biological Anthropology, Institute of Biology, Eötvös Loránd University, Budapest)

**Abstract format:** Poster

The Middle Bronze Age of the Carpathian Basin is a period spanning about half a millennium between 2000/1900-1500 BC. The first settlements of the Füzesabony-culture were also known from the beginning of the aforementioned period. The culture's first appearance took place in the valley of the Bodrog and Hernád rivers. Later their area of distribution spread across the Upper- and Middle Tisza region, as well as today's North-Northeastern-Hungary, and the Southern-Slovakia.

In the autumn of 2020, during a construction work, on the border of Tiszafüred, in Eastern Hungary a mass grave, as well as a waste pit belonging to the Middle Bronze Age, Füzesabony-culture was excavated. In the upper layers of the No. 1. pit, large amounts of animal bones (domestic and wild animals), fragments of Middle Bronze Age pottery, shells, fish scales, splinters, and a sporadic skull were found. During the demolition of the grave a large, round beehive-shaped waste pit emerged. In the pit an intact skeleton of a male was excavated in a crouched position in the submerged layer of the sporadic skull in the western half of the pit. There was an almost completely contiguous layer of shells under the body of the adult male, who was buried without any grave goods.

In our poster presentation, we focus on the anthropological analysis of this individual (age and sex estimation), supplemented with paleopathological examinations and with the results of stable isotopes (strontium and carbon/nitrogen) and radiocarbon dating.

This paper was supported by the Hungarian Scientific Research Fund (OTKA FK 128013) and the Momentum Mobility research project (Institute of Archaeology, Research Centre for the Humanities) granted by the Hungarian Academy of Sciences (Project Nr. LP 2015-3).

## **K. BIOLOGICAL ANTHROPOLOGICAL EXAMINATION OF THE LATE IRON AGE BURIALS FROM GYŐR-KÁLVÁRIA MERGED SITE**

**Abstract author(s):** Gyenesei, Katalin (Department of Biological Anthropology, Eötvös Loránd University, Budapest) - Kiss, Krisztián (Department of Biological Anthropology, Eötvös Loránd University, Budapest; Department of Anthropology, Hungarian Natural History Museum, Budapest) - Szeniczey, Tamás (Department of Biological Anthropology, Eötvös Loránd University, Budapest) - Ujvári, Ferenc - Pesti, Krisztina (Rómer Flóris Museum of Art and History, Győr) - Hajdu, Tamás (Department of Biological Anthropology, Eötvös Loránd University, Budapest)

**Abstract format:** Poster

From the second half of the 5th century BC to the early 1st century BC Celts inhabited the Carpathian Basin. They populated Transdanubia and Slovakia but also had settlements in the Great Hungarian Plain, the southern part of the Carpathian Basin and Transylvania as well. At the beginning of the era, Celts practiced inhumation as predominant burial rites however, later cremation became more dominant. The graves excavated at Győr-Kálvária merged site fit well into the Celtic burial customs of the Late Iron Age. The cemetery dates back to between the end of the 4th century BC and the 2nd century BC. The 22, mainly robbed graves contained 20 inhumated and 2 cremated remains. During the biological anthropological analysis morphological sex and age were estimated and anatomical variations were detected on the skull. Due to the fragmentation of the material, skull and long bone sizes were available in small proportions. Typical attributes of the Iron Age series such as the low number of infants and a higher ratio of females were also observed at Győr-Kálvária merged site – but it should be added, that not the entire cemetery was excavated and some of the graves could have been destroyed by construction and industrial works in the 19th and 20th century. In the case of the 2 cremated remains, only the bones of the limbs were found among the micro- and mesofragments. The two female skulls that could be measured showed the general craniometric characteristic of Transdanubian and Great Hungarian Plain Celts. As an anatomical variation bregmatic bone was also noticed on a male buried in grave S-34. In addition to the former research, our results also contribute to understanding the physical characteristic of Late Iron Age Celts of Transdanubia.

## **L. POPULATION HISTORY OF ANCIENT THESSALONIKI. A GEOMETRIC MORPHOMETRICS VIEW IN THE CONTEXT OF URBANIZATION**

**Abstract author(s):** Aidonis, Asterios (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace) - Lyras, George (Department of Historical Geology and Palaeontology, Faculty of Geology & Geoenvironment, National and Kapodistrian University of Athens) - Protosalti, Soultana - Tzevreni, Stavroula - Vasileiadou, Stela - Konstantinidou, Krino (Ephorate of Antiquities of Thessaloniki City, Hellenic Ministry of Culture and Sports) - Papageorgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace)

**Abstract format:** Poster

Thessaloniki is a city with continuous and well-documented occupation since antiquity. The city was founded with the unification of smaller settlements in 315 BC. Its strategic position played a decisive role in its future development. After the Roman conquest of Greece (2nd c BC), it became the capital of the district of Macedonia, and later on, when the capital of the Byzantine Empire moved to Constantinople (330 AD), Thessaloniki emerged as the second largest city of the empire. During these historical transitions, the city flourished and retained its urbanity uninterruptedly. However, despite the good archaeological record, it remains unclear if there was a biological continuity among the city's inhabitants or if there were major population changes such as influxes or replacements, as expected to be due to the successive conquests. To address this question, we investigate the evolution of the craniofacial anatomy of the city's inhabitants from antiquity till the late Middle Ages. We analyze 208 individuals excavated during the construction of Thessaloniki's metropolitan subway. We applied a geometric morphometric analysis of the temporal bone, in order to reconstruct the secular patterns of population variation. We tested whether the historical and sociocultural transformations between 3rd c BC and 14th c AD are interconnected with population changes. The bones were digitized and thirteen anatomical landmarks describing temporal bone morphology were collected. Landmark measurement error was tested and a Generalized Procrustes Analysis (GPA) was conducted to extract the geometric shape from overall size. Principal components analysis (PCA) and Canonical variate analysis (CVA) were performed to examine craniofacial shape differences. Considering also the archeological data, our study examines the continuity hypothe-

sis, according to which a homogenous population pattern is expected, and the influx hypothesis, according to which morphological differentiation between chrono-cultural groups would appear.

Acknowledgment: This research has been co-financed by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH – CREATE – INNOVATE (project title: ECHOES-Development of a methodology for the digital reconstruction of ancient human biographies through the study of archaeo-anthropological material, project code: T2EDK-00152).

## **M. METHODOLOGICAL CONSIDERATIONS REGARDING AN UNFINISHED CRANIAL SURGERY FROM THE 10TH-CENTURY-CE CARPATHIAN BASIN**

**Abstract author(s):** Kis, Luca (Department of Biological Anthropology, University of Szeged; Department of Archaeogenetics, Institute of Hungarian Research, Budapest) - Tihanyi, Balázs (Department of Biological Anthropology, University of Szeged; Department of Archaeogenetics, Institute of Hungarian Research, Budapest) - Király, Kitty (Department of Biological Anthropology, University of Szeged) - Spekker, Olga (Department of Biological Anthropology, University of Szeged; Institute of Archaeological Sciences, Eötvös Loránd University, Budapest) - Neparáczki, Endre (Department of Archaeogenetics, Institute of Hungarian Research, Budapest; Department of Genetics, University of Szeged) - Szabó, Árpád (Department of Forensic Medicine, University of Szeged) - Pálfi, György - Bereczki, Zsolt (Department of Biological Anthropology, University of Szeged)

**Abstract format:** Poster

The aim of this study is to describe a newly discovered surgical trepanation case that was found in the skeletal material of the 10th-century-CE cemetery of Sárrétudvari-Poroshalom. We intend to give a new insight into the indication and preparation process of trepanations, and present the implications of this particular case to the methodological problems of trepanation research. On the right parietal bone of an adult (25–30-year-old) male, a lesion complex with no sign of healing was observed. It is composed of an original sharp-force trauma surrounded by two curved, intentionally created furrows that can be interpreted as attempted but unfinished surgical trepanation, presumably performed with a U-shaped gouge. The presence of the sharp-force trauma inside the unfinished surgical trepanation supports the long-held hypothesis that curing of a primary trauma is one of the possible intentions of surgical trepanation. The significance of the presented case is given by not only the incompleteness of the surgery but the method of intervention that it allows us to investigate, as the use of a U-shaped gouge in ancient cranial surgery has not formerly been documented in the literature. This case may suggest a possible mode of tool use, and aid future reconstruction attempts concerning the hypothesized 10th-century-CE trepan from Tiszaeszlár-Bashalom. Finally, since both surgical and symbolic trepanations can be incomplete, we recommend that the term “incomplete” should not be used as synonymous with “symbolic trepanation” or “skullmark”.

## **N. CROWN DIMENSIONS OF THE M2 MOLAR: COMPARISON BETWEEN PREHISTORY AND MEDIEVAL SAMPLES FROM NORTH-EASTERN ROMANIA**

**Abstract author(s):** Bejenaru, Luminita (Faculty of Biology, “Alexandru Ioan Cuza” University of Iași; Romanian Academy Iași Branch, “Olga Necrasov” Center of Anthropological Research) - Popovici, Mariana - Groza, Vasilica-Monica (Romanian Academy Iași Branch, “Olga Necrasov” Center of Anthropological Research) - Petraru, Ozana-Maria (Faculty of Biology, “Alexandru Ioan Cuza” University of Iași; Romanian Academy Iași Branch, “Olga Necrasov” Center of Anthropological Research)

**Abstract format:** Poster

Due to their excellent preservation based on their hard tissues (i.e., enamel, dentine and cementum) teeth are a valuable source of information for studies concerning the past human populations in archaeological and forensic contexts. Several studies of dental anthropology approached the linear measurements of tooth crowns for assessing dental variations and the sexual dimorphism in both modern human populations and past ones.

The aim of this study is to assess the M2 molar crown variability in samples of archaeological human populations from Prehistory (Chalcolithic and Bronze Age, ~ 5000-1150 BCE) and Middle Ages (13th-17th centuries) discovered in sites of North-Eastern Romania. The two crown linear measurements, mesio-distal (MD) and bucco-lingual (BL) diameters, were performed using ImageJ software on occlusal digital images acquired stereo-microscopically. The crown index (CI), crown area (CA) and the sexual dimorphism index (SDI), along with the two linear measurements were subjected to the univariate and multivariate statistical analysis.

Our results show that the variation coefficient (CV) for the MD diameter of the female upper M2 molars is higher in the medieval sample than in the prehistoric one; also, a higher variability is remarked for the mandibular M2 molar in the medieval sample than in prehistoric one.

According to the bivariate analysis, the two diameters were less correlated in the maxillary M2 molar than in the mandibular M2 molar, especially in females.

In females, the MD and CA variables for mandibular M2 molars and the BL and CA for maxillary molars showed significant statistical differences between the medieval and prehistoric samples, with higher values for Middle Ages. In the male maxillary molars, the crown area (CA) variable showed significant higher values in the medieval sample than in the prehistoric one. The discriminant analysis confirmed the sexual dimorphism on the mandibular M2 crown, in the prehistoric sample.

## 340 NORTH EUROPEAN TRADING NETWORKS FOR IRON AND COPPER

**Theme: 4. Polis, Empire, League and Beyond – Living in Interconnected Societies**

**Organisers: Haggren, Georg (University of Helsinki; Muuritukimus Oy) - Karlsson, Catarina - Magnusson, Gert (Jernkontoret)**

**Format: Regular session**

Iron and copper have been traded in Europe already before the Roman era. In the North this trade involved ports of the Baltic and the North Sea. During the Middle Ages metal trade increased manifold and many ports grew into important towns, and in the 13th century the Hanseatic league became the leading actor in the metal trade. According to written sources from the 16th century dozens of ships left Stockholm every year, with osmund and bar iron as cargo. Recently maritime archaeologists have begun excavations on one of those ships that handled the Swedish iron export. This complete 16th century ship was found in the Stockholm archipelago. Ships with similar cargo have been found along the south side of the Baltic and the wrecks bear witness to the importance of metal trade.

Iron and copper were important for the social development of medieval and early modern European society. Osmund iron appear in archaeological finds since the 12th century and it was a quality product, created for large scale iron trade. Without the iron there would have been no churches, no monasteries and no impressive buildings in the towns.

In this session we will discuss the importance of metal trade in creating and developing a society as well as the technical development in shipbuilding and metal production. The focus is in the Scandinavian and Central European trading networks but we will appreciate papers related to rest of Europe too. We welcome abstracts about:

- Actors in trading and trading networks
- Demand, supply and credit
- Trading routes and trading networks
- Iron and copper findings in trade settings
- The quality of the traded metals
- Different modes of transport of metals
- Shipbuilding, cargo and the packing of goods

## ABSTRACTS

### 1 MEDIEVAL MINING PRODUCTION AND EXPORT FROM – THE ESSENTIAL OUTLANDS

**Abstract author(s): Karlsson, Catarina (Jernkontoret)**

**Abstract format: Oral**

Medieval mining and export from the Swedish outlands is one of the themes of the Atlas project. For 25 years the project has been compiling and analysing archaeological remains, historic sources, place names and maps in 23 mining districts with medieval origins. Within these mining areas there are archaeological remains from more than 750 medieval furnaces (of which 60% are for iron, 20% copper, 10% silver and 10% with undetermined smelting).

The Swedish mining area Bergslagen is situated north and west of the lake Mälaren. Stockholm, the capitol of Sweden, is located by the rapids, where the lake meets the Baltic Sea. The introduction of industrialized mining has had a crucial bearing on our medieval Scandinavian history and the urbanization of the Mälär areas. Stockholm was founded where the iron and copper was controlled before it was exported from Sweden on the Baltic Sea.

Currently seven historians and archaeologists are working on a synthesis of the results, which will give an overall picture of the medieval metal and mining industry and the mining districts effect on the landscape, economy and social transformation. The interdisciplinary approach in our project provides opportunities of further interpretations and a deeper understanding of the ancient mining landscape and the dynamic role of iron and copper in the modernization process in Sweden 1150–1350 AD.

The source material used in the project are: written documents, laws, charters, tax documents, business agreements, and archaeological remains amounting to 7 000 bloomery sites, 12 000 mines, 760 medieval smelting sites and medieval slag deposits in towns.

The work is coordinated by the historical Committee of Jernkontoret (The Swedish steel producers association) in co-operation with several county boards. The synthesis will present a new and more complex picture of medieval mining and export and its impact on Swedish and European history.

## **2 A CENTRE IN ENGLAND'S IRON TRADE? AN INTERDISCIPLINARY STUDY OF MEDIEVAL IRON PRODUCTION AND TRADE IN SOUTH EAST ENGLAND**

**Abstract author(s): Cranfield, Jack (University of Exeter)**

**Abstract format: Oral**

The Weald of Kent, Sussex and Surrey was a major centre of ironworking in Britain from the late Iron Age and into the Romano British period, by which time evidence suggests iron was produced in some localities on an industrial scale. Less is known however on the scale of this industry in the post Roman period and the extent to which iron formed a significant element of the local and wider economy of the Middle Ages. While documentary evidence is scarce for the iron industry, several important accounts imply that iron was more than just a local commodity by the 14th century, but one whose trade was connected to nobility, Royalty, and the Church. Commodities such as nails, arrows, iron bars and horseshoes were transported across England and used to repair Royal houses, castles and equip Edward III's war horses, during the Scottish wars in 1327. At times trade was controversial and in 1300 London ironmongers complained that Wealden ironworkers, were selling iron strakes for cartwheels at shorter than the normal lengths.

How do these historical accounts relate to the archaeological evidence? and to what extent do sporadically recorded trading activities reflect the typical nature of iron trade during this period? Little is known of the relationship between the exchange of iron blooms and secondary products, and the smelting and smithing sites where these products were produced. This paper uses an interdisciplinary approach to contextualise the iron industry and its trade within the Weald, considering the archaeological and documentary evidence from two important sites, Tudeley Ironworks (Kent) and Roffey Ironworks (West Sussex). Through the application of a landscape archaeological approach and a comparison to contemporary documents, it aims to identify the nature and scale of 14th century ironworking and consider the Weald's significance to both local and long-distance trade networks.

## **3 IRON IN BORGUND – OPERATIONAL CHAINS AND NETWORKS OF PRODUCTION AND TRADE**

**Abstract author(s): Hope, Brita (University Museum of Bergen)**

**Abstract format: Oral**

Borgund, a small medieval town situated on the western coast of Norway, not far from the city of Aalesund, relied its existency on a diverse economy exploiting both marine and terrestrial resources. By taking part in international as well as domestic trade and communication, Borgund grew into an important centre, flourishing in the course of the 12th and 13th centuries, holding up to possibly four churches. All together, the town must have been an attractive market for iron until its late medieval abandonment.

Several seasons of excavations in the second half of the 20th century revealed an extensive amount of iron and slag, indicating that production and trade of iron were an important factor in the town's existence. As a part of the archaeological and multidisciplinary research project on Borgund (The Borgund Kaupang Project), this Ph.D. project is studying the archaeological material related to the economy of iron.

Central questions the Ph.D. project encounters are what iron production processes were carried out within the town, and what economic, cultural, and social networks of production and trade the people of Borgund were entangled in. The project aims to see the economy of iron as a whole, following the enchainments of the economy from consumption and demand, to production and supply, linked by aspects of networks and trade. This paper will be angled towards the latter.

## **4 RECTANGULAR IRON BLOOMS – A NEW AND NUMEROUS ARTEFACT GROUP FROM ESTONIA**

**Abstract author(s): Saage, Ragnar - Jegorov, Sander (University of Tartu)**

**Abstract format: Oral**

The rise in popularity of the metal detectors in Estonia have given us thousands of new finds. Among them are the iron blooms – a suspected product of the local iron smelting industry, which took place between the 1st and 15th centuries AD. The blooms are usually hammered into a rectangular shape, but not folded nor stretched out. Now, these blooms are appearing as hoards, put into the ground in times of trouble or other reasons.

This paper investigates this new phenomenon. The blooms were sampled to be investigated metallographically. This gives information about their composition and enables the selection for areas suited for radiocarbon dating. Finally, the blooms were localized using SEM-EDS for the bulk chemical composition of slag and LA-ICP-MS analysis for trace elements. The samples originating from local iron smelting sites were compared with the slag from the blooms. This enables a thorough discussion of the local iron smelting and regional iron trade.

## 5 IRON TRADE IN THE BALTIC AND NORTH SEA IN EARLY MEDIEVAL TIMES

**Abstract author(s):** Magnusson, Gert (Stockholm University; Jernkontoret)

**Abstract format:** Oral

Iron and copper were important for the economic and social development of medieval European society. Osmund iron appears in archaeological finds already in the 12th century. It was a quality product, created for large scale trade of iron and steel. At this point in time iron production was in a stage of technical development. In the mining areas the blast furnace was invented and at Tvååker on the Swedish west coast, one of the earliest water powered iron forges known in Europe was developed. The forge was mentioned in the will of the Danish Bishop Absalon in 1197. It was situated ca 6 km from the nearest port of trade Gamle köpstad (Old port) by the coast. Two wrecks of cargo ships from the 12th century were found in the port in the 1920s. This is a model site of the connection between high developed iron production and regional trading ports for a larger market.

In a similar fashion, ports of trade at close distance to the iron production sites are common in the Baltic. For a long time, iron was traded in small ports as well as major ports. It was traded in local markets along the coasts and in the greater European market organized by merchants in important towns. The finds mirror the scale of the trade. Without iron no churches, no monasteries and no impressive buildings in the medieval towns would have been erected during the "long" 13th century.

## 6 METALLURGICAL ANALYSIS OF IRON BARS FROM THE POLISH 15TH C. COPPER WRECK

**Abstract author(s):** Wärmländer, Sebastian (Department of Archaeology and Classical Studies, Stockholm University)

**Abstract format:** Oral

Iron and steel have been major trade commodities in the Baltic region during the last thousand years. There are however many things that we still do not know about iron manufacturing in ancient times, and about the quality and composition of the iron and steel that was traded. Iron bars in the cargo of ship wrecks are an important source for understanding such aspects of iron production and iron trade. The Baltic Sea provides excellent preservation conditions for such materials, as the brackish water prevents the wrecks from being degraded by ship worm, and corrosion of the iron bars is slow due to the cold and almost oxygen-free conditions at the Baltic Sea bottom. Here, we present the analysis of different types of iron, including bar iron and possible osmund iron, from the so-called "Copper Wreck" that sank outside the harbour of Gdańsk in Poland around AD 1400. In the medieval period, Gdańsk was an important center for iron trade, where raw iron was imported from Sweden and refined in the Polish water-powered iron hammers. The investigation of the composition and manufacturing steps of these bars adds important understanding to Polish 15th c. iron working and iron trade.

## 7 A UNIQUE SHIP WRECK FOUND WITH A UNIQUE CARGO

**Abstract author(s):** Hansson, Jim (Swedish National Maritime and Transport Museums)

**Abstract format:** Oral

The wreck is unusually well preserved for a ship built with clinker technique. It also has its cargo still in place. There are a little over 30 barrels visible, mostly containing so called osmund iron. No similar wreck has ever before been found in Swedish waters. The wreck is dated to 1540's and has been repaired in the 1550's.

The wreck has three masts (the main mast still standing in its original place) and all its rigging seems to be intact at the site.

In October 2022 an excavation was conducted. The aim was to find out how big the cargo was and what content it had. The result was that 20 really well preserved barrels was found and most of them with Osmund iron. The results also showed that that ship contains about 80-100 barrels. When the barrels was documented it was clear that the barrels with Osmund iron had a different construction. The construction might have to do with the custom in Stockholm where you had to show the whole content before export. The excavation gave some stunning result that gave a lot more information.

Iron exports was then, and still is, one of Sweden's most important exports but the knowledge of historic cargo ships, the trade routes and the quality of the iron is almost unknown. This ship is one of the most important finds to date and can tell us much more about how the iron was transported, how export was organized and what kind of ships were constructed.

Based on the archaeological surveys this paper discusses the ship wreck, its construction, export, the rigging, the cargo and the possibilities for further study of the history of the Swedish iron industry through a ship wreck still fully equipped and comparable to a time capsule from 1550.



**Abstract author(s):** Haggren, Georg (University of Helsinki; Muuritutkimus Oy)

**Abstract format:** Oral

Historical archaeology is always multidisciplinary. Historians use written sources in their research, while archaeologists analyze physical remains. When researching the Middle Ages historians often face the lack of well preserved series of sources while in the early modern era the number of written record grows remarkably. This is also the case when researching merchant shipping in the Baltic Sea. The famous Danish Sound Dues were introduced in the 15th century, and beginning from the middle of the 16th century large series of customs records from coastal towns in Sweden (including Finland) have survived.

Historical research has its focus on time and chronology while analyzing the material record and focusing on sites and objects archaeologists have usually to be content with rather inaccurate datings. While historians are used to discuss about single years or precise dates, archaeologist are happy when being able to limit their stratigraphy or time scale to decades or even centuries. Wrecks and especially early modern wrecks offer rare luxury. They are time capsules that scholars are often able to date exactly, and in best cases it is also possible to identify a sunken ship.

The aim of this paper is to show the potential of the 16th century Swedish customs records while analyzing the iron trade. The middle of the 16th century was a crucial period when bar iron began to shake traditional osmund iron's position as Sweden's most important export article. The idea is to discuss here about the possibilities to put together the written sources and the maritime material record in the context of iron trade.

## OVERSEA AND INLAND – CULTURE CONTACT DYNAMICS IN THE MEDITERRANEAN DURING THE 1ST MILLENNIUM BCE

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Gerling, Claudia (University of Basel) - Gigante, Melania (University of Padua) - Billo-Imbach, Marta (University of Basel) - Salfini Semerari, Giulia (University of Michigan)

**Format:** Regular session

The 9th to 7th centuries BCE coincide with a period of increased circulation of objects and ideas (via trade, exchange and human mobility) throughout the Mediterranean. The arrival of Aegean and Phoenician settlers along the Mediterranean coasts was a further catalyst for the intensification of culture contact dynamics with local communities. This process had deep repercussions on the latter's economic and political organization, likely also impacting their earlier interactions with neighbouring communities. This aspect in particular has been under-investigated, yet it is instrumental in understanding local communities' economies and resilience at this turning point in Mediterranean history. Within this historical framework, the recent expansion of bioarchaeological (physical anthropological, isotopic, aDNA analyses etc.) studies has allowed archaeologists and bioarchaeologist to engage in multidisciplinary studies that have the potential to better reconstruct these interconnected processes of mobility, contact and social change. Specifically, material cultural analyses focused on shifts in production and consumption practices and domestic, funerary and ritual traditions can illuminate continuity and discontinuity in local organizations and constructed identities, while bioarchaeological analyses allow us to tackle the demographic changes underpinning these processes. Yet the integration of these two datasets is not devoid of problems, and requires active engagement by experts in both fields to resolve issues of scale, chronology, and theoretical and methodological mismatches.

We would like contributors to focus on how to integrate archaeological (material cultural) datasets with bioarchaeological analyses in order to illuminate (1) regional networks of contact and exchange and (2) interactions between non-local settlers and local populations. Starting point for our session is the early 1st Millennium BCE in southern Italy, but we also welcome presentations focusing on other contemporary Mediterranean regions by combining archaeological and bioarchaeological analyses.

## ABSTRACTS

### SOCIO-CULTURAL EXCHANGE IN THE SIBARITIDE, CALABRIA (ITALY)

**Abstract author(s):** Billo-Imbach, Marta (University of Basel, Department of Ancient Civilizations) - Gerling, Claudia (University of Basel, Department of Environmental Sciences) - Guggisberg, Martin (University of Basel, Department of Ancient Civilizations) - Zaugg, Céline (University of Basel, Department of Environmental Sciences)

**Abstract format:** Oral

Archaeological excavations of the Macchiabate necropolis at Francavilla Marittima (Early Iron Age) led to the discovery of several burials with grave goods of non-local origin. Amber and glass beads as well as various types of bronze and ceramic vessels testify to long-distance contacts with the Baltics, Greece and Phoenicia, while other categories of objects, such as fibulae, indicate interactions with Etruria, Campania and the surrounding region. The prox-

imity to Sybaris, a Greek colony foundation, can explain some of the oversea contacts, while others rather imply intra-Italian connections. Through the application of strontium and oxygen isotope analysis to human skeletal remains, we try to answer whether it is more likely that human individuals or their ideas moved, both oversea and inland, and whether foreign objects are correlated to foreign people. Or are the archaeological indicators of "foreign identity" misleading and archaeological objects that are interpreted as non-local belong to individuals who grew up on site? In this contribution we present the results of our project and discuss difficulties connected to our research question.

## 2 SAME, SAME BUT DIFFERENT? – THE 6TH CENTURY BC BURIAL CUSTOMS IN THE SIBARITIDE

**Abstract author(s):** Gullo, Ilaria (University of Basel)

**Abstract format:** Oral

The arrival of Greek settlers and the foundation of their apoikia Sybaris around 720 BC on the northeast coast of Calabria had a deep impact on the local communities of the surrounding region. The site of Francavilla Marittima – only 10 km away – holds rich archaeological evidence dating back from the 8th to the 6th century BC that bear witness to the changing social dynamics. The 6th century burial customs in the Macchiabate necropolis differ from those dating back from the time before the Greek presence. What is especially noticeable in this case, would be the introduction of numerous new ceramic forms of Greek tradition connected to new funerary practices. In this paper, my aim is to focus on these perceptible changes in the 6th century BC burials of the Macchiabate Necropolis. Whilst comparing them to the other known contemporary necropolis of Amendolara, I will explore to what extent a same but different collective identity might be expressed through new and old traditions.

## 3 OVERSEA AND INLAND – CULTURE CONTACT DYNAMICS IN THE MEDITERRANEAN DURING THE 1ST MILLENNIUM BCE

**Abstract author(s):** Salfini Semerari, Giulia (University of Michigan)

**Abstract format:** Oral

This presentation will consider the case study of Basilicata in the early 1st millennium BC as a starting point to develop further reflections on the methodological challenges presented by studying mobility in the Mediterranean through bioarchaeological and archaeological datasets. Coastal Basilicata was one area where the so-called Greek colonization had a major impact on local developments, though there is still no consensus concerning the details of this process. Specifically, questions regarding the nature of the Greek colonial enterprise and their relations to local communities have seen diametrically opposed interpretations, from organized, centralized conquest by uniform groups coming from the Aegean to piecemeal, gradual migration which saw a deep involvement of the local population. In the hope of testing the validity of these two contrasting hypotheses I conducted a series of bioarchaeological analyses on well-documented indigenous and colonial cemeteries spanning the Greek colonization. The results highlight not only the potential of this approach, but also potential challenges. Some of these are specific to the context of the Mediterranean, which is unique in its long-term history of connectivity – something that should be considered when undertaking such studies.

## 4 WITHIN THE PILLARS OF HERCULES. MOBILITY AND INTERCONNECTIVITY IN THE FIRST MILLENNIUM BCE WESTERN MEDITERRANEAN: AN ARCHAEOLOGICAL AND BIOARCHAEOLOGICAL PERSPECTIVE

**Abstract author(s):** Gigante, Melania - Mazzariol, Alessandro (University of Padua)

**Abstract format:** Oral

The history of the Mediterranean basin is a history of human mobility and cross-cultural interactions. Since prehistory, this region has been a crossroads for people with different origins and cultures. They were purveyors of raw materials and artefacts, as well as idioms and customs, technologies and ideas which have enhanced the biological, linguistic and cultural heritage of local groups.

However, only since the first millennium BCE was there a shift towards more complex mobility dynamics, encouraged by the establishment of permanent outposts along maritime and land trade routes. Particularly, the movement of Eastern people in the West is tied to two fundamental events in the Iron Age Mediterranean, namely the so-called Phoenician diaspora and the eighth century-Greek colonisation. Looking at the Italian coasts, evidence of these encounters has been brought to light in several archaeological sites across southern Italy, Sicily, and Sardinia, pointing out a long-lasting debate on the nature of the often-unclear relationships and cross-cultural interactions between natives and foreigners.

Recently, the use of multi-isotopes analyses (e.g., Sr, O, Pb) on ancient human mineralised tissues has proven to be a useful tool to identify isotopically local and non-local people in melting-pot societies, opening to new and unexplored ways to address the mode and tempo of residential mobility in the past.

Coupling state-of-art archaeological theories and bioarchaeological techniques, this paper builds on the two case studies of Nora (Cagliari, Sardinia) and Pithekoussai (Ischia Island, Gulf of Naples), which respectively represent the first Phoenician emporium and the first Greek outpost in the West. This paper illustrates how merging material culture, osteology, and Sr-isotopes ratio ( $87\text{Sr}/86\text{Sr}$ ) data at both key-sites, it is possible to provide a better insight into mobility and interconnectivity in the first millennium BCE Western Mediterranean.

## 5 RECONSIDERING THE VILLANOVAN PHENOMENON OF PRE-ROMAN ITALY THROUGH AN ISOTOPE-BASED PERSPECTIVE: THE CASE STUDY OF FERMO (9TH-5TH CENTURY BCE, MARCHE)

**Abstract author(s):** Esposito, Carmen (Cardiff University; Queen's University Belfast) - Gigante, Melania (University of Padua) - Miranda, Pasquale (University of Naples Federico II) - Stoddart, Simon (University of Cambridge) - Pacciarelli, Marco (University of Naples Federico II) - Reimer, Paula - Malone, Caroline (Queen's University Belfast) - Bondioli, Luca (University of Padua; University of Bologna) - Müller, Wolfgang (Goethe University Frankfurt)

**Abstract format:** Oral

The Italian Early Iron Age (end of the 10th to the 8th century BCE) was a period characterised by significant population dynamics associated with the increase of exchange networks and expressed by profound social-cultural and structural changes. Diverse local communities represented by unique material culture and funerary rituals – arguably related to specific ethnic entities (e.g., Latial culture= Latins, Atestina culture= Veneti, Golasecca culture= Leponti) – emerged regionally in the archaeological record. Meanwhile, Greek people and Phoenicians settled along the Italian Peninsula, Sardinia and coastal Sicily. The human groups linked to the so-called Villanovan material culture stood out as a result of the organisation of the territory, geographical expansion across the Peninsula, and leading roles in the interaction with foreign and local groups. The main concentration of Villanovan sites was in Etruria in the central Tyrrhenian region. In addition, other sites, such as Bologna, Verucchio, Pontecagnano, Capua, Sala Consilina, and Fermo were scattered across the Peninsula. Some scholars have interpreted these sites as the outcome of the Villanovan expansion, while others have preferred a local formation. Here, we have combined archaeological, osteological, multi-isotope analysis ( $\delta^{13}\text{C}$  &  $\delta^{15}\text{N}$ ,  $n=25$  human samples;  $87\text{Sr}/86\text{Sr}$ ,  $n=54$  human samples,  $n=11$  baseline samples) to investigate human mobility at the site of Fermo (9th-5th century BCE, Marche). The combination of data sources from the Fermo funerary record confirmed the presence of a significant number (24%) of allochthonous individuals, contributing to the knowledge of community connectivity dynamics at this frontier site.

## 6 UNBURNT BODIES AMONGST CREMATED PEOPLE. FIRST ELEMENTS TO DEFINE THE IDENTITY OF THE INHUMED INDIVIDUALS FROM THE NECROPOLIS CUS-PIOVEGO, PADUA

**Abstract author(s):** Capasso, Giusy (Department of Cultural Heritage, University of Padua) - Beck de Lotto, Micheal (Department of Cardio-Thoraco-Vascular Sciences and Public Health, University of Padua) - Lugli, Federico (Department of Cultural Heritage, University of Bologna) - Sperduti, Alessandra (Bioarchaeology Service, Museum of Civilizations, Rome) - Bondioli, Luca (Department of Cultural Heritage, University of Padua) - Cupitò, Michele - Vidale, Massimo (Department of Cultural Heritage, University of Padua)

**Abstract format:** Oral

The pre-Roman necropolis of CUS-Piovego (second half of the 6th-beginning of 4th century BCE, Padua, Northern Italy) is crucial for understanding the transition of the proto-urban Padua in a urban settlement. The graveyard returned more than 132 cremations, 24 inhumations, 6 horse burials, and a double grave of a human with a horse.

As well as for the contemporary graveyards from Veneto, the coexistence of cremations – prevailing, in association with more or less wealthy grave goods – and a few inhumations – usually without grave goods – is recorded at the site.

To date, the reasons for the funerary inhomogeneity are still unclear. The interpretation is divided between two – non-mutually exclusive – hypotheses according to which the inhumed individuals might have been foreigners or belonging of a lower social rank.

In particular, the latter hypothesis seems to be supported by the poverty of the grave goods associated to the inhumed individuals and by the evidence of 'anomalous burials' that suggest violent deaths for some of them. A striking example is the double burial of a man with a horse found in association with a cremation, interpreted as a case of double sacrifice of a stableman and a horse for their rich owner, cremated; moreover, evidence of rope bonding was observed on the upper and lower limbs – held behind the back – in a female individual.

Therefore, in addition to the archaeological data and the recent anthropological analysis, which allowed to assess through the morphometric method the sex for 47 of 59 cremated adults (24 MM and 23 FF), strontium isotopes ratio ( $87\text{Sr}/86\text{Sr}$ ) of dental enamel and sex estimation through amelogenin proteomic analyses of inhumed samples contribute to understand the identity of these individuals and the bio-cultural encounters existing between Padua and other areas during Middle Iron Age.

A.

## CONTINUITY OR DISCONTINUITY? SOCIAL AND BIO-CULTURAL IDENTITIES AT THE LA CONA CEMETERY (9TH CENT. BCE–1ST CENT. CE, TERAMO, ITALY)

**Abstract author(s):** Gigante, Melania - Peripoli, Beatrice - Trevisan, Martina (University of Padua) - Torrieri, Vincenzo (Minister of Culture) - Vidale, Massimo (University of Padua)

**Abstract format:** Poster

The ancient funeral and sacral area of La Cona is located three kilometres SW of Teramo (Abruzzo, Italy). The use of this area as a burial site is attested throughout the Iron Age (9th cent–6th BCE century) by a proto-Villanovan cremation and approximately 41 inhumations. Evidence suggests that La Cona was also regularly frequented during the Republican and Imperial Roman period (1st cent BCE–1st cent CE), when not only 26 cremations took place but also a temple was built. This latter sanctioned the sacral function of La Cona's district. Interestingly, the later cremations were placed between Iron Age inhumations without overlapping or damaging them. According to scholars, this evidence might indicate a possible continuity of frequentation at the graveyard by people with common ancestry, whilst a cultural connection between different human groups who have come and gone at the site cannot be excluded.

Bioarchaeological analysis on skeletal and dental remains from La Cona has been conducted in both the Iron Age and Roman period funerary contexts. At present, morphological and morphometric analyses allowed us to characterise the biological profile of people buried at the site, recognising 43 individuals from Iron Age graves and 28 individuals from the Roman ones. In addition, the strontium ratio analysis ( $^{87}\text{Sr}/^{86}\text{Sr}$ ) in tooth and bone human mineralised tissues will be applied to diachronically quantifying local and non-local individuals at La Cona.

This paper will present the preliminary results of a multi-analytic study, merging archaeological evidence with osteological and isotopic data from the La Cona cemetery. The aim is to characterise the population dynamics in the Abruzzo region during the Iron Age until the Imperial Roman period, pointing out if mobility trends have had a role in the continuity or discontinuity of local organisation and socio-cultural identities.

---

342

## WHAT DO ARCHAEOLOGISTS WANT FROM A DISTRIBUTED SCIENCE INFRASTRUCTURE? INTRODUCING IPERION HS AND E-RIHS

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Campbell, Gillian (Historic England) - Çakırlar, Canan (Groningen Institute of Archaeology)

**Format:** Workshop

As part of introducing two projects, IPERION HS and E-RIHS, this workshop will aim to ensure that future science infrastructure works for archaeologists, whether researchers or practitioners. It will seek the views of archaeologists participating in the workshop on the challenges and opportunities connected with developing an effective European heritage science infrastructure. Is the current infrastructure fit for purpose? Does it provide the tools and the expertise archaeologists need to answer important questions about past lives, livelihoods and landscapes? Are there gaps in provision and how can we fill those gaps? What barriers currently exist in fostering collaboration and how can they be overcome?

Integrating Platforms for the European Research Infrastructure ON Heritage Science (IPERION HS, <http://www.iperionhs.eu/>) is a new initiative funded by the European Commission as part of the Horizon 2020 programme building on the success of the previous IPERION CH project. It seeks to develop a pan-European distributed and connected infrastructure made up of research facilities situated across Europe and beyond. It brings together researchers in humanities and sciences fostering a culture of exchange and cooperation. The core activity of IPERION HS is to provide access to researchers from different disciplines, including heritage and conservation sciences, archaeology, palaeo-anthropology, to scientific instruments, data, tools and expert knowledge outside of their core area of expertise so that they can develop their competence and advance the understanding and conservation of cultural heritage from artefacts to archaeological sites and landscapes.

The future European Research Infrastructure for Heritage Science (E-RIHS; <http://www.e-rihs.eu>) will capitalize on the developments of IPERION HS and its predecessor projects pursuing the integration of European world-class facilities to create a cohesive entity playing a connecting role in the global community of heritage science.

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Saage, Ragnar (University of Tartu) - Wärmländer, Sebastian (Stockholm University) - Neiß, Michael (Uppsala University) - Kurisoo, Tuuli (Tallinn University)

**Format:** Regular session

Archaeometallurgy is a multidisciplinary field where researchers from different fields, and different traditions, come together to answer a range of different questions related to ancient metalworking. In this session we welcome full-length papers on various aspects of archaeometallurgy, with a focus on metals and metalworking in the borderlands. This focus particularly relates to two of the main themes for the 2022 EAA meeting, i.e. "The Carpathian Basin: Integration, Mobility and Diversity" and "Polis, Empire, League and Beyond – Living in Interconnected Societies". In this context, the term "the borderlands" is to be widely interpreted. It can mean the border between a central power, such as the Roman Empire, and its hinterlands or neighbours. But it can also mean the border region between different cultures, such as the Christian and the Islamic world, or the borders between different technological traditions. There may be other ways to interpret the term "borderlands", and to encourage people to come up with their own interpretations, the papers in this session are not limited to a particular time period or culture. Furthermore, we especially welcome contributions from young researchers.

## ABSTRACTS

### 1 METALS AND SOCIETY - THE INFLUENCE OF NEW MATERIALS ON SETTLEMENT STRUCTURE IN MARGINAL ZONES

**Abstract author(s):** Mino, Martin - Fratričová, Monika (Monument Board of Slovak Republic) - Zachar, Tomáš (Archäologisches Museum Frankfurt)

**Abstract format:** Oral

Central Slovakian mountains have always been a border - a geomorphologic border of the Carpathian basin, an ecological border and a north-west cultural border. Yet these mountains are the source of all of the main raw materials in prehistory – lithic, copper and iron. The copper mines at Špania Dolina became one of the most important of Europe's copper sources which provided not only for the Carpathian basin but as far as Scandinavia. Recent field activities in the mining areas and the landscape around it shed some light on the early days of the ore retrieving process and the way it affected the lifestyle, distribution and mobility of the communities of the early copper age. These activities were the basis for the transformation from lithic to metallic age. In many ways similar, yet different situations occurred with the push of the southeastern urnfield cultural complex into the same mountains. With the arrival of the systematic aerial scanning of the landscape and the following survey occurred a strange border zone. While the copper sources were controlled by the Lusatian groups in their borderlands, surrounded by a vast amount of hillforts the people of Kyjatice Culture have established a line of spacious hillforts in the previously unsettled wilderness on the border of the Lusatian domain. This line correlates with the important iron-ore resources. Among them is the Železník Mountain, which supplied the society with iron ore from Middle Ages up to the 20th century. An 11-hectare Kyjatice-Culture hillfort was detected on the top of the ore-bearing mountain. Traces of primitive iron metallurgy were discovered here. This observation could be the features of pioneering activities joined with the transition from copper metallurgy to iron production.

### 2 MULTIMETALITY BEYOND THE IRON AGE CENTRAL-PLACE CRAFT MILIEUS – METAL USE IN THE BORDERLANDS

**Abstract author(s):** Svensson, Andreas (Lund University)

**Abstract format:** Oral

Complex metalworking, i.e. metalworking utilizing several metals within object manufacture, has traditionally been seen as intimately linked to the centralized crafts milieus in a Scandinavian Iron Age setting, as well as in many other prehistoric and historic societies. The notion of the exclusively central character of complex metalworking goes as far as to encompass all aspects of metal use involving both ferrous and non-ferrous metals – multimetallicity.

However, one of the case studies within the project 'From the Crucible and at the Anvil' has clearly shown that the spatiality of complex metal use stretched far beyond the central places and their areas of immediate control. Following this, hypotheses can be forwarded concerning both the reach of multimetallicity emanating from the central metalworking milieus, as well as the utilization of borderlands or peripheral resource areas within the networks of metal production, trade and use.

The results from the project 'From the Crucible and at the Anvil' have in this sense revised previous general interpretative models concerning the spatial dynamics of both ferrous and non-ferrous metal use and their overarching

socio-economic frameworks. In order to facilitate an in-depth understanding of these aspects of metal use, the dichotomy between iron production placed in the periphery and non-ferrous metalworking connected to the central milieus needs to be thoroughly scrutinized.

This paper aims to critically discuss and evaluate the spatial dynamics of metal production, trade and networks, highlighting differences and similarities between ferrous and non-ferrous metal use as well as the utilization of both central and peripheral areas. Results from the project 'From the Crucible and at the Anvil' will be used to drive this critical discussion, specifically elucidating metal use and multimetallicity in the borderlands.

### 3 IRON FOR THE KNIGHTS – THE TEUTONIC ORDER CASTLE SMITHY IN TARVASTU

**Abstract author(s): Saage, Ragnar - Oks, Kristo (University of Tartu)**

**Abstract format: Oral**

The Teutonic Order had an important role as the main military force in medieval Livonia. In the borderlands of the Catholic world, the Order took part in numerous conflicts with its neighbours. A network of castles was an essential part of its defences and the castle of Tarvastu lies in the heartland of the Order. The recent excavations at the castle gave light to numerous weapon finds, which is unsurprising given its function. However, we were also able to locate the smithy site.

In the paper, we will give an example how methodical soil sampling and metallographical analysis enables a thorough characterisation of the production activities. Hammerscale, collected with a magnet from the soil, is a direct indicator of forging. Its abundance, when mapped, can give a clear indication of where the smithing took place. Other finds like slag, animal bones and iron artefacts help to define the layout of the smithy. We will also discuss the provenance of iron bars as it answers a critical question - where did the Order get its iron?

### 4 WHAT IS IT ABOUT METAL OBJECTS? IRON AND COPPER ALLOYS IN THE LATE MEDIEVAL CASTLE OF LORCA (SPAIN)

**Abstract author(s): Molina-Campuzano, María Isabel (University of Murcia)**

**Abstract format: Oral**

The castle of Lorca (Murcia, Spain) is located in the south-east of the Iberian Peninsula and it was a defensive, residential and symbolic place for power during the Middle Ages. This castle, combined with a smaller system of fortresses, occupied a defensive role as an active border zone between the Christian and the Islamic areas of influence (Castilian kingdom and Nasrid Kingdom of Granada).

In addition to its border context, the castle of Lorca is characterised by the discovery of a Jewish Quarter inside its walls (14th and 15th centuries). Since 2009, an interdisciplinary team from the University of Murcia has been leading a research project, in order to define the particularities of the Jewish presence in Lorca from a strictly material perspective. Within the framework of interdisciplinary, this research includes an archaeological study of metal objects (iron and copper alloys) recovered from the domestic area of the Jewish community. The aim is to identify if there were changes in metallurgy after the conquest process of the castle; whether it is possible to determine any differences between quotidian and symbolic objects used by Christian and Jewish communities during the late Middle Ages, and, finally, to understand the production process, the distribution and the "life-cycle" of metal in a borderland.

To conclude, this paper presents the aims, the methodology, the first results and also future approaches (archaeometallurgy and chemical analyses) of this research, which is part of the PhD (3rd year) I am currently working on "metal and medieval metallurgy in the medieval kingdom of Murcia (Spain)" at the University of Murcia.

### 5 A PRE-VIKING AGE IRON PLATE FOR WIRE-DRAWING FROM A WORKSHOP IN OLD UPPSALA, SWEDEN

**Abstract author(s): Wärmländer, Sebastian (Department of Archaeology and Classical Studies, Stockholm University; UCLA/Getty Conservation Programme, Cotsen Institute of Archaeology, UCLA)**

**Abstract format: Oral**

Metal wire is ubiquitously used in modern society, and routinely manufactured by drawing a metal rod through a die with holes of given shapes and sizes. The origin of this wire-drawing technique is however unclear. The earliest wire-drawing tools as well as literary mentions of the wire-drawing technique have been encountered in Mediaeval Europe, but the technology itself could be much older. Before wire-drawing was invented various techniques were used to create metal wires, such as hammering, block-twisting, strip-twisting, and twist-drawing. Here, we report the finding of an iron draw-plate excavated in a pre-Viking Age workshop in Old Uppsala, Sweden. Traces of metal residue show it had been used to draw silver wire. This is one of the oldest draw-plates so far encountered in the archaeological record. In addition to shedding light on the origin of the wire-drawing technology, this find indicates that the local Scandinavian gold-and silversmiths had access to the technology required to craft the exquisite gold and silver jewelry previously known to exist in pre-Viking Age Scandinavia.

## 6 ABI'EL COINS – LOCAL VARIATIONS ON A SUPRA-REGIONAL TRADITION

**Abstract author(s):** Van Ham-Meert, Alicia (Earth and Environmental Sciences, KU Leuven) - Overlaet, Bruno (Royal Museum for Art and History, Brussels) - Yousif, Eisa - Jasim, Sabah (Sharjah Archaeology Authority)

**Abstract format:** Oral

Coins are motors and means of trade, but also objects of power and display. Abi'el coins are found in the Gulf region and especially in the Oman peninsula. Their typology is largely borrowed from Seleucid coins (in the earliest examples the name of Alexander still appears), but over time local types appear, including some that bear the name Abi'el. In the summer of 2021 the largest hoard of Abi'el coins ever uncovered was found at Mleiha, Sharjah, United Arab Emirates. In a pilgrim's flask over 400 silver coins were found with various obverse and reverse iconography. The complete study of these coins is underway by the Sharjah Archaeology Authorities.

This paper presents pXRF analysis of all the coins in the hoard as well as the lead isotopic composition of 10% of the assemblage. The aim is to see whether there are changes in chemical or isotopic composition associated to chronology or typology. Are some of the coins heavily debased with e.g. lead or copper? Since silver is not readily available on the Oman Peninsula the question of provenance is also important for these coins. Is there a single provenance, are there compositional groups present? How similar are those findings with what we know of Seleucid coinage or other pre-Islamic coins from the gulf-region? These are some of the questions we want to tackle in this paper.

Dr S. Jasim and E. Yousif will integrate this information into the study of the chronology and typology of the Abi'el coinage and the upcoming full publication of the Mleiha coin hoard.

## 7 METAL HORSE TACKS FROM THE HUNNIC-PERIOD CARPATHIAN BASIN AND THEIR CLASSIFICATION BY MEANS OF ARCHAEOMETRIC ANALYSES

**Abstract author(s):** Piros, Réka (Department of Archaeology, University of Szeged) - Mozgai, Viktória - Bajnóczi, Bernadett (Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences, Eötvös Loránd Research Network - ELKH)

**Abstract format:** Oral

The characteristic assemblages of the Late Hunnic period (5th century AD, 420/430) are the objects manufactured from pressed gold, gilded silver or copper alloy sheets. In this present study, horse tacks from several archaeological sites in the Carpathian Basin (Árpás, Budapest–Zugló, Debrecen–Agrár park, Léva, Nyíregyháza–Oros, Pannonhalma, Pécsüszög and Szeged–Nagyszéksós) were analysed non-destructively by using a handheld X-ray fluorescence spectrometer (hXRF) and a scanning electron microscope equipped with an energy dispersive spectrometer (SEM-EDX). The main aims were to determine the chemical (elemental) composition of the objects, to characterise the used gilding technique, to determine the provenance of the garnet inlays, as well as to make an attempt to prove whether the groups within an assemblage are from the same set. The results of the chemical analysis give us the opportunity to confirm whether the damaged or presumably lost objects of an assemblage were replaced or repaired.

The hXRF results indicate that the objects were manufactured from gold, gilded silver or gilded unalloyed copper or bronze sheets. Later replacements can be distinguished based on their different chemical composition and quality of manufacture. Two types of gilding were observed: fire gilding with the presence of mercury and leaf gilding. The assemblage from Pécsüszög contains three stone-inlaid bridle mounts. The white and red inlays are microcrystalline quartz and almandine garnets, the latter originate from Sri Lanka.

Upon close observation of the finds and their ornamentation (Pressblechtechnik, punch decoration, stone inlays), some objects presumably show close connection with ethnic groups originating from the Iranian territories (Alans) and Central Asia. However, some new pattern of the decorations (e.g., Pécsüszög) are so far unique in the Carpathian Basin.

## 8 PRECIOUS METALWORK IN THE BORDERLANDS OF THE AVAR EMPIRE (LATE 6TH-EARLY 9TH CENTURY AD): PRODUCTION, DISTRIBUTION AND CULTURAL-HISTORICAL INTERPRETATION

**Abstract author(s):** Bühler, Birgit (Vienna Institute for Archaeological Science - VIAS, University of Vienna)

**Abstract format:** Oral

The material culture of the Avar Empire (late 6th-early 9th century AD) in the Carpathian Basin is a mixture of diverse cultural influences, which reflect the heterogeneous, multi-cultural population of the Avar realm. In particular, there is substantial evidence for a close connection between 'Avar' and 'Byzantine' or 'Italo-Byzantine' material culture. Although the mechanisms and exact pathways of cultural and technological transfer are still subject to debate, it seems that border regions with adjacent cultural regions must have played a key role in facilitating such transfer processes. Archaeometallurgical research can be essential for identifying cultural traditions in archaeological contexts. In many cases, within the framework of technological necessities for creating a particular effect in metalworking, the individual metalworker had a number of choices: The technical decisions taken in each case will have depended on the craftsman's skills, personal preferences and background, on smaller-scale 'workshop traditions', on larger-scale

'cultural traditions', as well as on the demands of the customer regarding motifs, style, material and technique in the finished product. The aim of this paper is to demonstrate, with the help of case studies from border regions of the Avar Empire, how a combination of archaeological and archaeometallurgical criteria may contribute to resolving issues of cultural and technological transfer.

## 9 PRODUCTION AND DISTRIBUTION OF RELIGIOUS AMULETS IN DENMARK AROUND 1100. THE CHURCH AS INITIATOR AND KEY AGENT?

**Abstract author(s):** Søvsø, Mette (Museum of Southwest Jutland)

**Abstract format:** Oral

Finds of small brooches from the period c. 1050-1150 are rising steadily all over Denmark as a result of metal detecting and the Danish treasure trove act. The uniform Urnes-style brooches display motives firmly rooted in Christian symbolism.

Two workshops excavated in Ribe and Aalborg (Jutland) represent key breakthroughs in terms of placing the large number of detector finds in a wider context and to understand the background to their distribution. Both workshops were placed next to churches and their similar range of products suggest that this business was urban, organized and targeted rather than haphazard or scattered. The wide range in the quality of the finished products at both sites suggest they must have been aimed at a relatively broad market.

The production and distribution of these brooches are manifestations of the spread of Christianity. Like the imported, cross bearing brooches from the Late Viking period, the local Urnes brooches can be seen as baptismal tokens. The production was large-scale, they are common finds in almost every village and must have been accessible to most people. The location of workshops adjacent to and perhaps run by the church adorned the products with inherent holy power. A kind of thinking normally associated with the Late Medieval boom in pilgrim badges and souvenirs.

## 10 SCANDINAVIAN BRACTEATES AND ROMAN BORDERLANDS: EMBRACING AND ADAPTING FOREIGN TECHNIQUES

**Abstract author(s):** Wicker, Nancy (University of Mississippi)

**Abstract format:** Oral

Small gold pendants called bracteates, which date to the Migration Period of the fifth and sixth centuries CE, have been considered a specifically Scandinavian phenomenon. More than 1,000 examples of this jewelry have been found, mostly in Scandinavia but also in England, France, Germany, Czechia, Hungary, the Netherlands, and Poland. In this paper I will examine how the idea of these small golden disks harkens back to fourth-century Roman gold coins and medallions, although the technology of northern bracteates differs substantially from the Roman models.

Bracteates most likely were conceived along the borderlands of the Roman provinces, where northern soldiers who had served as auxiliaries in the Empire were paid in coinage, which they may have taken home to the North after they completed their service. Scandinavians adopted the idea of the coin object, but in their non-monetary economy, they adapted it by blending Roman and northern techniques. Whereas Romans minted two-sided coinage with different images on obverse and reverse, Scandinavian goldsmiths made one-sided, stamped disks. This technique is a significant simplification of the Roman numismatic technique, using a method that already was known in Scandinavia. Suspension loops occasionally were added to Roman medallions—perhaps by Romans in the provinces—so that the objects could be worn as pendants, but bracteates were looped during the production process in Scandinavia. Northern goldsmiths expended a great effort to embellish these loops with elaborate filigree and granulation, techniques learned from Roman jewelry.

That some Roman techniques were embraced (filigree and granulation), some modified (casting dies with figural images), and some rejected (two-sided minting) in Scandinavia reflects a careful weighing of which techniques were considered worthwhile. Ultimately, bracteates reflected a cultural border between different technological traditions that were blended in the development of a new hybrid type.

## 11 A PILOT STUDY OF THE WORKSHOP AREAS IN ESTONIA

**Abstract author(s):** Kurisoo, Tuuli (Tallinn University) - Saage, Ragnar (University of Tartu)

**Abstract format:** Oral

The geographical location of Estonia between Eastern and Western cultures has shaped the nature of local archaeological record markedly. These influences are well traceable in the styles of local ornaments and dress accessories, especially in the 9th–13th centuries material culture. Traditionally, the origin of objects (import or local) is determined by typological comparison and only little attention has been paid to intrinsic questions of production techniques and manufacturing locations of non-ferrous ornaments. Moreover, there is only a little discussion about production sites and production series of local jewellery. It is argued that identical or similar forms of artefacts point to one production series and distribution patterns of these series signal the locations of workshop areas.



This paper introduces the first results of a pilot study that specifically targets these questions in Estonia. Firstly, potential production series that can be distinguished on the basis of stylistic analysis and mapping are presented. Secondly, the chemical compositions of selected series are discussed. Lastly, it is hoped that this study will stimulate further research and discussion on local production of artefacts.

## 12 RE-WRITING ANCIENT NARRATIVES THROUGH USE-WEAR ANALYSIS - A CASE STUDY FROM A VIKING AGE BOAT GRAVE

**Abstract author(s):** Neiß, Michael (Uppsala University, Department of Archaeology & Ancient History)

**Abstract format:** Oral

Material culture is the cardinal source of archaeology and needs to be recognised as a natural starting point for theorizing research. A continuous re-evaluation of old finds is therefore essential. Archaeological artefacts carry genuine testimonies with a potential to support or to challenge established narratives within in our discipline. The Viking Age was a dynamic era during which many old constants became obsolete. It is a fair assumption that this development left marks on the material culture. Our challenge is to detect and interpret these marks. A suitable tool for this purpose is an archaeological 'autopsy' that reveals how objects were made and used, damaged and repaired and how they fared after their final deposition. Implementing object-autopsies, provides archaeologists with a genuine chance to reconstruct the biographies of specific objects and restore their historical voices. During the 1972 rescue excavation prior to a motorway construction project in the Swedish region of Södermanland, a previously unknown Viking Age burial ground was found near the farmstead of Årby in Turinge parish. The find included some early Christian graves as well as a boat grave that resembled a pre-Christian burial of a wealthy lady of the late Birka period. However, the results a recent use-wear analysis of the metal objects and beads from the Turinge grave challenge this narrative. As a result, the boat grave seems to date from a much later period than previously assumed. Boat graves and the oval-brooch fashion both belong to a pre-Christian tradition. And yet, there is much to suggest that the Turinge lady was buried sometime well into the 11th century – which is supposedly a Christian era. But why, all of a sudden, revive ancient burial rites? Was it an attempt by the people of Turinge to re-connect with a lost world?

## 13 BEYOND BORDERS: MARGINS IN EARLY IRON AGE SOCIETY

**Abstract author(s):** Murray, Matthew (University of Mississippi)

**Abstract format:** Oral

This paper will examine the idea of marginality (borders and boundaries of interaction) and interconnectivity through an exploration of the results of the excavation of two largely intact early Iron Age (720-400 BC) burial monuments near the Heuneburg in southwest Germany. Mortuary practices at the Speckhau mound group included the use of metal objects, such as weapons and personal adornment, and revealed connections that crossed many different geographic and cultural margins.

My approach in this paper is multi-scalar, revealing connectedness in the 7th to 5th centuries BC that extended from regional cultural boundaries to the continental margins of Europe. At the regional level, female burial costume in the Heuneburg mounds shows a strong connection to an adjacent cultural region in the Black Forest, from which women migrated, likely through exogamous marriage practices. Although they became part of the Heuneburg community, these women were buried in the complex bronze and textile belt assemblages and bronze hair/headdresses of their geographic origins. Metal work in graves also reveals a border-bending connectedness to the margins of continental Europe, culminating in the identification of an individual who was outfitted in the military style of northern Iberia (over 1,000 kilometers from the Heuneburg) with a short single-edge slashing sword and a leather helmet with iron plume clamp adorned with feathers. Other burials yielded additional evidence of connectedness specifically to the northern margins of continental Europe, including amber from the Baltic Sea and shale from the southern British Isles. While detailing the scalar connectedness of the Heuneburg mortuary community, I will also touch upon intriguing information about the construction of liminal spaces, forms of boundaries, in the early Iron Age mounds. These acts were intended to distinguish and highlight processes important in the community's engagement with the mounds.

- 14 THE MINES OF DACIA – ENVIRONMENTAL EVIDENCE OF METAL SMELTING ACTIVITIES BEFORE, DURING, AND POST ROMAN PERIOD**
- Abstract author(s):** Veres, Daniel (Romanian Academy, Institute of Speleology) - Tamas, Calin (Faculty of Biology and Geology, University Babeş Bolyai; Romanian Academy, Institute of Speleology) - Haliuc, Arifina (Romanian Academy, Institute of Speleology) - Longman, Jack (Marine Isotope Geochemistry, Institute for Chemistry and Biology of the Marine Environment - ICBM, University of Oldenburg; Romanian Academy, Institute of Speleology) - Develle, Anne-Lise (Université Savoie Mont Blanc, CNRS, EDYTEM) - Gogaltan, Florin (Institutul de Arheologie al Academiei, Cluj-Napoca; Romanian Academy, Institute of Speleology)
- Abstract format:** Oral
- Mining activities in the Carpathians reached maximum intensity during the Roman rule, with Roman Dacia (106-275 AD) hosting some of the largest underground mining operations in Europe during Late Antiquity. It is very likely that massive mining during the Roman and Medieval periods removed earlier field traces but here we discuss peat geochemical data that can verify the extent of metal processing before - during - after the Roman period. Indeed, the impressive amounts of gold and silver stated in ancient sources as war trophy from the Dacian Wars (101-106 AD) imply significant pre-Roman mining in Dacia. Chance discoveries of mining tools within deep-seated mines, and especially radiocarbon dating of timber remains at Rosia Montana produced some verifiable evidence of pre-Roman mining. Using high-resolution geochemical analyses of several peat profiles from the Apuseni Mountains, including two records from within the Rosia Montana area, we provide a detailed chronology of human activities and mining in one of Europe's oldest mining fields. The Pb isotopes on bulk peat suggest that by 300 BCE exploitation of the Neogene Au-Ag ores within the Apuseni produced a strong environmental pollution signal. Interestingly, the Pb curve as well as the Pb isotopes data suggest that mining activities at Rosia Montana did not cease following the Roman withdrawal from the area, despite that fact that Late Roman times in SE Europe have been marked by significant movements of peoples that triggered severe socio-economic disruptions. Instead, our data indicates that the Pb curve closely match a significant drop following the collapse of Roman authority north of Danube, but then diminished progressively with Pb data still indicating the Apuseni ore fields contributed for several centuries. By 700 CE however, the Pb isotope suggest that the pollution budget reflects only long-distance input of atmospheric metals originating from the Balkans.
- 15 AZOTOS PARALIOS, A LATE ANTIQUITY CITY, ITS STRUCTURES AND PEOPLE – THROUGH A METAL LENS**
- Abstract author(s):** Mazis, Matasha (Technical University Darmstadt) - Fantalkin, Alexander (Tel Aviv University)
- Abstract format:** Oral
- Located in the southern Levant, the Late Antiquity city of Azotos Paralios was important enough to be depicted in the famous 6th century Madaba Mosaic. Today, the city lies buried beneath coastal dunes and remains largely unexplored. Recent rescue excavations have revealed a large basilica church founded in the late 4th century, making it one of the earliest-known Christian compounds. The church represents the periphery of Byzantium but it also existed at the 'border of time' between the Eastern Roman Empire and the Islamic conquest of the Levant. Destroyed by fire in the early 7th century, its collapsed roof not only helped preserve historically significant mosaic floors, but also metal fixtures, fasteners, and tools, as well as functional church equipment. Investigating the metal finds in terms of distribution, morphology, and technology is helping answer questions about Late Antiquity religious architecture, construction, and ritual operations. The latter includes human intra-mural burials, and circumstances involving iron objects that were found injected into skulls. Archaeometric examination of these finds is contributing to forensic anthropological investigations. In this paper, the focus is on archaeology and metallurgy in concert as a means to explore associations between people, places, and objects.
- 16 GERMANIC VERSUS ROMAN COPPER ALLOYS BEYOND THE DANUBIAN LIMES – ELEMENTAL COMPOSITION OF SELECTED SMALL FINDS OF THE ROMAN PERIOD**
- Abstract author(s):** Komoróczy, Balázs - Kmošek, Matěj - Vlach, Marek - Kmošková, Michaela (Institute of Archaeology of the Czech Academy of Sciences, Brno)
- Abstract format:** Oral
- The long-term influx of the metal artefacts from the region of South Moravia (Czech Republic), resulting predominantly from the proactive approach towards the hobby metal detecting, has gradually generated a considerable assemblage of specific type archaeological information, presently counting over 10 thousand database items. Within the long-term institutional, methodological approaches in parallel, there were also collected metallography data from all documented finds. Among others, an extensive set of Germanic and Roman-provincial brooches were examined by elemental composition pXRF analysis of artefacts surface and metal cores, and construction-technological analysis done by radiographic and microscopical survey. In the case of some brooches, more details were observed either by Germanic and Roman variants or by the elemental composition of selected parts of objects. The general results

indicate that Roman and Germanic metalworkers used a similar variety of copper alloys, but they used them differently, yet still following awareness of properties of respective materials. Germanic wrought and even cast brooches were frequently made from copper alloys with high zinc content (brass and gunmetal), which could be considered a specific form of influence between two distinctive spheres of metalworking. On the contrary, Roman-provincial fibulae were usually made using lead-tin bronze with high lead content. It reflects the population's different technological, supplying, and probably even aesthetical attitudes on both sides of the middle Danubian Limes.

## 17 A METALWORKER'S BURIAL FROM THE MIDDLE BRONZE AGE, KAJÁSZÓ, HUNGARY

**Abstract author(s):** Kovács, Ágnes (King St. Stephen Museum, Székesfehérvár)

**Abstract format:** Oral

In the summer of 2021 we were excavating a part of a Middle Bronze Age cemetery at the edge of the village of Kajászó (Fejér County, Middle Hungary). The graves were the characteristic burials of the late phase of the Vátya Culture: cremations in urn graves. The ashes were put in big urns, which were covered with big bowls. There was usually a small bowl in the mouth of the urns, and a small one-handed cup.

One of the graves was exceptional: the western side of the tomb was lined with stones. There were eight polished stone molds among the stones, a clay melting container, pieces of broken stone axes, big pebbles, and polished pieces of stone.

The unique artifact assemblage can be analyzed at several levels. The tool kit of a Bronze Age metalworker is very interesting in itself. The placement of the stones, as part of the burial rite is also remarkable.

Finally we can investigate the place of the burial within the Vátya world. The cemetery of Kajászó belonged to a fortified settlement over the Váli stream. It was a fairly big village, however smaller than the big Vátya centres, the thriving centres of trade and crafts along River Danube. In comparison with them, the settlement of Kajászó, 16km from the Danube was only hinterland. Perhaps this explains why there was no successor to the metalworker and his tools were buried with him.

## 18 METALLURGY WITHOUT A METALLURGIST. THE BIOGRAPHY OF AN ARROWHEAD FROM NE POLAND

**Abstract author(s):** Maciejewski, Marcin (Institute of Archaeology Maria Curie-Skłodowska University) - Szczepański, Łukasz (Ostróda Museum) - Tracz, Michał (Medical University of Lublin) - Fejfer, Mariusz (Biskupin Archaeological Museum) - Osipowicz, Grzegorz (Institute of Archaeology Nicolaus Copernicus University) - Gan, Paweł (Institute of Archaeology and Ethnology, Polish Academy of Sciences)

**Abstract format:** Oral

Is it possible that an inconspicuous object made of copper alloy and discovered by an amateur while searching with a metal detector can enrich the body of knowledge on the metallurgy in the Bronze Age?

The (presumable) eponymous arrowhead was discovered in 2021 in the wetlands near Ostróda and handed to the Museum in Ostróda. What drew our attention first was the preserved piece of the arrow shaft, which offered significant analytical possibilities itself. The form of the metal object is equally interesting; there is nothing corresponding thereto in the Bronze Age artefacts from Central Europe. Thus, we may pinpoint a highly complicated biography of this object. It was hypothesised that the arrowhead had been made from a bigger arrow of a javelin/spear, which was possibly damaged; however, it was not recast but underwent solely mechanical working.

In the Bronze Age the most common way of recycling the object made of copper alloys was recasting it into a different object. However, in this case, there are some evidence that indicate different scenario. The question that should be posed is: is this evidence enough to prove it? Secondly, it is necessary to discuss the reasons for which it occurred. In the Late Bronze Age, NE Poland was a peripheral area in regard to the centres of Lusatian Urnfield culture (e.g. Silesia or Greater Poland). Communities living in these areas were dynamically developing only in the Early Iron Age, which is evidenced by the stabilisation of the settlement network, the rapid development of metallurgy, and the peculiar cultural inventory. Does the presented artefact fit in this scheme? Will the results of the analyses, especially the carbon-14 dating, confirm this? These are the issues we would like to address.

## 19 ON THE BORDER OF THE EARLY METAL WORLD? ENEOLITHIC METALLURGY IN THE MIDDLE WARTA BASIN

**Abstract author(s):** Strózyk, Mateusz (Archaeological Museum in Poznań) - Żurkiewicz, Danuła - Szmyt, Marzena (Adam Mickiewicz University in Poznań; Archaeological Museum in Poznań) - Silska, Patrycja (Archaeological Museum in Poznań) - Garbacz-Klempk, Aldona (AGH University of Science and Technology in Cracow)

**Abstract format:** Oral

The hoard from Bytyń is one of the best known Eneolithic metal deposits in Poland. From the beginning, the debate on this unique find was dominated by the question of the origin of the oxen figurines. In the opinion of most researchers,

they were imported from developed metallurgical centres located in the Middle East or the Carpathian regions. The discussion on the provenance overshadowed the study on manufacturing technology and the relation of the figurines to other metal objects known from Greater Poland. However, based on thorough analyses carried out in recent years, previous assumptions have been questioned, giving rise to new hypotheses.

The paper aims to provide better insight into the issue of raw material and technology of the oxen from Bytyń and to set them in the local context, including both the evidence for the use of metal objects and indications suggesting the knowledge of metallurgy among the Lowland communities in the period between 4000-2500 BC.

The application of modern analytical methods to the study of metal artefacts and other objects associated with early copper and bronze metallurgy, retrieved from a well-recognized settlement context, contributes significantly to the considerations outlined above.

## 20 METALLURGY AT A CULTURAL CROSSROAD: RE-INVESTIGATING SIGNS OF USE AND PRODUCTION OF METALS IN THE LATE BRONZE LEVELS OF TARSUS-GÖZLÜKULE

**Abstract author(s):** Koumari, Marfa (Bogazici University)

**Abstract format:** Oral

The Cilician plain (Kilikia Pedias, Cilicia Campestris) in which the site of Tarsus-Gözlükule lies is situated at the historical junction of central Anatolia and North Syria. Aptly, the decision to excavate the mound of Tarsus-Gözlükule was in anticipation of cultural connections between Anatolia, Syria and the Aegean. As the decision was made, the metal artifacts from Tarsus-Gözlükule were assiduously excavated, examined and published by Hetty Goldman and her team from early to mid-twentieth century. The results of this excavation project galvanized Anatolian archaeology yet also followed the methodological conventions of the time where context was peripheral to the study of artifacts. The re-investigation of metal artifacts resumed within a new phase of archaeological research during the early twenty-first century, yet these focused more so on material composition through chemical analysis. This paper re-investigates the use and production of metals at Tarsus-Gözlükule based on an examination of the excavated artifacts and available excavation records (e.g. unpublished field notebooks, documents and final reports) of the Late Bronze Age levels by the Goldman team. While new evidence on metalworking on site points to continuity in metallurgical practices hitherto unnoticed, the latest comparanda presented for the artifacts reinforces cultural contacts with central Anatolia and the Near East.

## 21 METALLURGY IN THE LUSATIAN URNFIELD CULTURE. THE INFLUENCE OF WATERCOURSES

**Abstract author(s):** Nowak, Kamil (Institute of Archaeology Nicolaus Copernicus University in Toruń)

**Abstract format:** Oral

The presentation will discuss the characteristics of metallurgy in the border areas in the Late Bronze Age and the Early Iron Age in Central Europe. The aim of the research was to check whether in the so-called Lusatian urnfield culture territorial differences are visible in metallurgical production, and whether the natural boundaries - rivers - influenced the development of metallurgy, the repertoire of manufactured items, and used casting tools. The territory covered by the research includes the area of today's eastern Germany and the territory of Poland. The main borders are the rivers Odra and Nysa Łużycka in the west and the Vistula river in the east.

The main determinants of metallurgical activity were investigated: casting moulds, crucibles and tuyeres. Such issues as the presence of hoards with casting moulds and the so-called metallurgist' graves were also studied. The research allows to notice the differences and similarities in a large area of occurrence of the Lusatian Urnfield Culture.

The research was funded by National Science Centre Poland, project no. 2021/40/C/HS3/00097.

## A. MARZABOTTO ON ITS OWN? ARCHAOMETALLURGICAL INVESTIGATION OF COPPER BASED FINDS FROM ETRUSCAN TOWN OF MARZABOTTO (IT)

**Abstract author(s):** Kmosek, Matej - Kysela, Jan (Institute of Classical Archaeology, Faculty of Arts, Charles University in Prague) - Gaucchi, Andrea (Etruscology and Italic antiquities, Department of History and Cultures, University of Bologna)

**Abstract format:** Poster

The paper presents results of archaeometallurgical investigation of copper based finds from Etruscan town of Marzabotto (ancient Kainua). The research focus on finds from different stages of the chaîne opératoire of copper based metallurgy of supposed Etruscan and Celtic origin (slags, raw material, production waste, finished artefacts) found on site and its surroundings. The investigation is done through material analysis (XRF, metallography, ICP-MS) compared with find context, typology and chronology of finds. The use of copper with specific composition in form of "Fahlerzkupfer" (high amounts of As, Sb, and also Ag, Bi) was identified. This specific material is connected mainly with supposed locally produced copper based artefacts unlike alleged imported finds. Appearance and significance of

this specific material was investigated during the Iron Age. For this reason, possibilities of use of local ores for local production are investigated. It seems, that Marzabotto stood somehow on its own in the Apennines.

## **B. PRECIOUS METALS FROM AUGUSTA RAURICA - ARCHAEOLOGICAL AND ARCHAEOMETRICAL INVESTIGATIONS USING NON-INVASIVE X-RAYS**

**Abstract author(s):** Megatli-Niebel, Isabel (Universität zu Köln; Augusta Raurica)

**Abstract format:** Poster

This poster presents the PhD thesis by the author, that was started last year at the University of Cologne. It works on precious metal in the former Roman colonial town of Augusta Raurica. Within this research project the round about 300 objects made of precious metal are planned to be discussed comprehensively and analysed variably. Next to a comprehensive research in the material culture, the metal finds are examined both macro- and microscopically. Furthermore, the interdisciplinary research project "DEEPμ: A non-destructive and depth-resolved element analysis technique using elementary particles – development and applications" in cooperation with the Laboratory for Muon Spin Spectroscopy at the Paul Scherrer Institut (Villigen, CH) provides a truly non-destructive and depth-profiling measurement to analyse the elemental and isotopic composition of archaeological objects. This is achieved by the use of high-energy muonic X-rays. The measurement can go as deep as 1 cm, depending on the material's density. Also, the technique is not only sensitive to all the elements, but moreover, it is possible to determine different isotopes. Within this fundamental research a convolute of archaeological objects will be analysed according to their elemental composition deep beneath the often falsified surface.

---

## **344 INTEGRATING NEANDERTAL LEGACY: NEW OPPORTUNITIES FOR COOPERATION [PAM]**

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Mihelic, Sanjin (Archaeological Museum in Zagreb) - Leskovar, Tamara (Faculty of Arts, University of Ljubljana, Slovenia)

**Format:** Regular session

As a direct beneficiary of a century and a half's research on Neandertals, our present-day scholarly community has at its disposal a vast amount of data pertaining to an incredibly diverse spectrum of facets of this long-lost relative and predecessor of ours. However, during this long period, scientific methods, technological and methodological aspects, theory and practices have developed at different paces—and sometimes followed several trajectories—in different countries. As such, it can often be difficult to evaluate and compare various datasets dealing with Neanderthal legacy, whether biological, cultural or other. Likewise, for numerous reasons, problems exist in relation to access to data and information for various sites and finds. In addition, the research questions asked by different groups and scholars from not only separate disciplines, but sometimes from the same disciplines but following diverse traditions, as well as from a variety of countries, are often difficult to compare, even if their goal is the same.

These overall shortcomings in Neanderthal research and in the general management of Neanderthal heritage have recently been addressed by an international initiative—a COST programme Action entitled 'Integrating Neanderthal Legacy: From Past to Present'—which aims to collate a long-term network of scientists with the goal of creating a usable and inclusive, inter- and multidisciplinary database and data sharing platform for all those interested in Neandertals.

As a follow up to the last year's EAA conference in Kiel, we would once again like to invite all those interested in different aspects of Neandertals and their legacy to join us with their presentations thereby contributing to bridging the geographic, linguistic, disciplinary-and-data specific gaps, as well as the issues created by the diverse traditions of different disciplines operating in various European countries. We especially welcome contributions that offer proactive, realistic and feasible solutions that could lead to synergistic effects in research, management and valorisation of Neanderthal heritage.

## **ABSTRACTS**

### **1 NEANDERTAL AND GRAVETTIAN DIETS: A CONTINUUM OR A REVOLUTION?**

**Abstract author(s):** Jankovic, Ivor (Centre for Applied Bioanthropology, Institute for Anthropological Research, Zagreb) - Voisin, Jean-Luc - Vauzelle, Alexandra - Conde mi, Silvana (CNRS, EFS, ADES, Aix-Marseille Université)

**Abstract format:** Oral

Recently, a number of stones from Gravettian contexts (ca 31 000 to 23 000 years BP) at archaeological sites have been recognized as grinding stones bearing traces of starch. This led to a proposal that the Gravettian people used wild grain flour, suggesting a change in diet (carbohydrate consumption) compared to earlier populations (Neandertals). If so, this would also be reflected in dental pathologies between these two human groups. Testing of this

hypothesis is one of the main goals of the ANR\* grant entitled "Starch4Sapiens" led by one of us (SC). The aim of this presentation is to present the oral health status of late Neandertal and Gravettian peoples. Results of the preliminary study show that teeth pathologies are present in both populations but have different etiologies. In Neandertals, hypoplastic defects are much more common than in Gravettian people, where periodontal diseases are prevailing. Interestingly, caries is very rarely seen in either group. Hypoplasia reflect stresses during dental growth, such as malnutrition, infection or fever. Low incidence of hypoplasia in Gravettian people could be interpreted as a more regular food intake compared to Neandertals, which is in accordance with the use of flour grain. Grains can be stored easily and thus allowed a more regular supply of food. However, the etiology of periodontal diseases need further study, as planned by this grant. Comparative work on Gravettian is supported by the Croatian Science Foundation Grant IP-04-2019. This work is in accordance and supports the goals of the COST Action CA 19141.

\*<http://www.lcqb.upmc.fr/starch4sapiens/>

## 2 INTERACTIONS AMONG NEANDERTHALS, HERBIVORES AND CARNIVORES: DIET AND ECOLOGICAL RELATIONSHIPS IN THE MIDDLE AND LATE PLEISTOCENE

**Abstract author(s):** Rivals, Florent (ICREA, Barcelona, Spain; Institut Català de Paleoeologia Humana i Evolució Social - IPHES-CERCA, Tarragona; Universitat Rovira i Virgili, Tarragona) - Bocherens, Hervé (Department of Geosciences, Biogeology, University of Tübingen; Senckenberg Centre for Human Evolution and Palaeoenvironment, University of Tübingen) - Camarós, Edgard (McDonald Institute for Archaeological Research, University of Cambridge) - Rosell, Jordi (Institut Català de Paleoeologia Humana i Evolució Social - IPHES-CERCA, Tarragona; Universitat Rovira i Virgili, Tarragona)

**Abstract format:** Oral

Neanderthal ecology was strongly driven by the climatic and environmental context that occurred during the Middle and Late Pleistocene in Western Eurasia. They were living under widely fluctuating conditions which affected Neanderthal ecology, including subsistence, land-use patterns, social interactions and interactions with other organisms and with the environment. This presentation will focus on the latter aspect. Biological interactions are the relationships existing between organisms in a community within an ecosystem. Dietary traits of individuals and populations of both Neanderthals and animals, are essential for the reconstruction of biotic interactions among species. These kinds of dynamic relationships with other living species in a shared environment can be seen as a major influence in evolution and ecology, and the timing and type of interaction could have driven many aspects of Neanderthal behaviour. This presentation is aimed at combining the different approaches to studying interactions between organisms or populations: dietary food webs of plants-animals (stable isotopes and tooth wear), animals-humans (stable isotopes) and more complex interactions between humans and other animals, mainly carnivores (based on taphonomy and zooarchaeology). The main types of interactions that can be recorded in archaeological assemblages will be presented and discussed: competition and interaction between resources and consumers, including predation. Studies on the interaction between Neanderthals and animals are suggesting an important plasticity of Neanderthal behaviour in all the territories occupied and, therefore, a broad-spectrum ecological niche characterised by important relationships with a multitude of animals of a very diverse nature. Therefore, the question that must be addressed in the future is how to assess the degree of importance of the relationships determined by the over-representation of each species in the environment and the degree of interactions determined by specific Neanderthal cultural criteria (or similar).

## 3 THE ROLE OF NEANDERTALS IN SHAPING HOMO SAPIENS BEHAVIOR AND CULTURE 50-40KA; EXTENDED WORKSHOP(S) FOR SYNTHESIZING TRANSCONTINENTAL RESEARCH

**Abstract author(s):** Soressi, Marie - Carmignani, Leonardo - Chu, Wei - Djakovic, Igor (Leiden University)

**Abstract format:** Oral

How frequent were interactions between incoming Homo sapiens and Neandertals in Eurasia 50-40,000 years ago? Only a theoretically well-informed investigation of material culture, combined with the identification of its makers and detailed analysis of site formation processes, can elucidate how past knowledge and ideas were exchanged. Here, Archaeologists have much to contribute; however, they face several problems. The analysis of material culture corresponding to the Middle to Upper Paleolithic transition in Europe has been published in many different languages, and meaningful interpersonal opportunities to synthesize diverse, regionally segmented research have been rare.

Here, we propose the organization of a synthesis workshop(s) to bring together the latest research, data, and perspectives on the final stage of Neandertals as a population in Europe, with the aim of paving the way to uncover evidence (or lack thereof) of Neanderthal/Homo sapiens cultural interactions. In our minds, such a workshop(s) would last one week, be located in a major European city, and gather researchers from across Europe. There will be time for reflection on the latest relevant findings, to discuss the quality and integrity of their geological context and their dating, and to evaluate their implications for our understanding of this timeframe. The broad goal is to identify if and how interactions between the different groups identified in Europe between 50 and 40,000 years ago were manifest. There will also be space to display artifacts and examine representative collection samples. Such workshop(s) could

lead to the realization of a publication (for example an atlas) co-authored by the participants, and 3D scans of collections could be produced on the spot or offered in-house.

#### 4 **MASTERING OF UNDERGROUND AREAS BY NEANDERTHALS REVEALED BY SPELEOTHEMS**

**Abstract author(s):** Verheyden, Sophie (Royal Belgian Institute of Natural Sciences) - Jaubert, Jacques (PACEA- University of Bordeaux) - Marinova, Elena (State Office for Cultural Heritage Baden-Wuerttemberg, Laboratory for Archaeobotany) - Gurova, Maria (National Institute of Archaeology, Bulgarian Academy of Sciences)

**Abstract format:** Oral

Speleothems (stalagmites, stalactites, etc.) are one of the best datable terrestrial environmental archives. Currently routinely used in palaeoclimatic studies, the potential of these deposits in an archaeological context is however still poorly explored. Speleothems provide not only a precise (<0.5%) chronology for sedimentary deposits, including incorporated archaeological material, but also give some clues to the overall human behavior patterns in the cave environment. To illustrate this we present two case studies from the Mishin Kamik cave (Bulgaria) and Bruniquel cave (France).

Flowstones of the Mishin Kamik cave, Bulgaria, allowed to date the cave deposits containing archaeological material to the period before 135 ka (Early Middle Paleolithic / EMP). This was achieved through the correlation of the sedimentary units covered by flow stone with the detailed profile of a nearby stalagmite. Additionally The speleothem offered a reliable chronological framework and context for reconstructing the time-span of an intriguing and unique bear skull accumulation of between 250 and 220 ka (MIS 7). In the Bruniquel cave, France, a careful selection and dating of stalagmites covering broken stalagmite-bases provide information on the time of breakage and on the possible nearby origin of the stalagmites used in the 176 ka-old-early Neanderthal construction in the cave. The construction only contains stalagmites, while surrounding speleothems consist of broken stalagmites, stalactites and flowstones, some of them defined as 'speleofacts', i.e. broken and displaced speleothem pieces. A distinct geochemical signature of speleothems from different parts of the cave may bring additional information on the origin of the stalagmites and the extend of Neanderthal activities in this, a priori, hostile environment that before the dating of the Bruniquel structures was thought to be the exclusive playground of modern humans.

#### 5 **NEANDERTHAL BURIAL PRACTICES IN WESTERN ASIA**

**Abstract author(s):** Been, Ella (Ono Academic College) - Barzilai, Omry (Israel Antiquities Authority)

**Abstract format:** Oral

The Middle Paleolithic of western Asia is one of the more complicated periods in human evolution as it hosts at least two hominin species– the archaic Homo sapiens and the Neanderthals. Anthropological and genetic studies indicate these populations arrived at the region in various dispersal events. The archaic Homo sapiens arrived from Africa during MIS 7 and MIS 5 whereas Neanderthals from Europe during MIS 4. These populations exploited similar resources in the same geographical niches and, in some cases, even inhabited the same caves.

As such, the arrival of new populations to the Levant must have had an impact on territoriality. One of the most convincing expressions for land ownership in prehistory are the burials which were common for both populations.

This paper aims to review all published Neanderthal burials in western Asia. Emphasis will be made on incorporating Neanderthal anthropological and archaeological data which is carried under the framework of the COST Action program entitled 'Integrating Neanderthal Legacy: From Past to Present'.

The anthropological data will include the number of buried individuals at each location, body position (supine, side-lying, etc.), gender, age at death, and estimated height and weight for each specimen. The presence of a burial pit, any burial offerings/goods, and special positional remarks (such as - head resting on a square limestone) will also be included. The archaeological data will include characterization of the material cultural remains that were found in burial contexts (i.e., lithic assemblages, faunal remains, shells, ochre, etc.).

The presented material will be synthesized to form a coherent picture of the Neanderthal burial practices in western Asia which could be compared to the burial practices of archaic Homo sapiens. This work is expected to highlight similarities and differences between the two populations who shared western Asia during the Middle Paleolithic period.

#### 6 **NEW ZOOARCHAEOLOGICAL DATA FROM LA ADAM CAVE PALAEO LITHIC SITE (DOBROGEA, SE ROMANIA)**

**Abstract author(s):** Vasile, Stefan (University of Bucharest, Faculty of Geology and Geophysics; Romanian Academy) - Dumitraşcu, Valentin (Romanian Academy, "Vasile Pârvan" Institute of Archaeology)

**Abstract format:** Oral

Accumulated between 151 and 55 ky BP, the cultural layer excavated in La Adam cave (SE Romania) yielded rare lithics, but numerous faunal remains. This study analysed the vertebrate faunal remains unearthed in recent exca-

variations, aiming to assess their taxonomy, taphonomic, and anthropic modifications of the bones. The vertebrate remains were highly fragmented, only allowing taxonomic assessment for a relatively small fraction of specimens. Taphonomic modifications of the bones are very frequent, including signs of chemical corrosion and carnivore bite marks, as well as possible trampling, bone gnawing, and fungal activity. The cave appears to have been a shelter for carnivores, with cave bear remains dominating numerically. Other large carnivores, such as cave hyenas, most probably contributed to bone accumulation as well, with large and middle-sized ruminants being their most common prey. Human activity, most probably related to Neandertals, albeit scarce, is supported by the cut marks seen on several bones, and by the presence of a bone percursor/retoucher.

Work supported by EEA grant 126/2018, contract no. 3/2019 - KARSTHIVES2 and by CNCS – UEFISCDI project number PN-III-P4-ID-PCE-2020-2282, within PNCDI III (both Ș.V.); and project PATCULT#RO (PN-III-P1-1.2-PCCDI-2017-0686 – V.D.).

## 7 PALEOTEJO, A NETWORK FOR NEANDERTHAL AND PRE-NEANDERTHAL INVESTIGATION AND HERITAGE

**Abstract author(s):** Pereira, Telmo (Universidade Autónoma de Lisboa; Instituto Politécnico de Tomar, Portugal; Centro de Geociências da Universidade de Coimbra; UNIARQ, Centro de Arqueologia da Universidade de Lisboa) - Raposo, Luís (Museu Nacional de Arqueologia; ICOM - International Council of Museums) - Figueiredo, Silvério (Instituto Politécnico de Tomar; Centro de Geociências da Universidade de Coimbra; CPGP - Centro Português de Geo-história e Pré-história) - Salvador, Margarida - Sousa, Fernanda (CPGP - Centro Português de Geo-história e Pré-história) - Cunha, Pedro Proença (Universidade de Coimbra, Lisboa; MARE - Centro de Ciências do Mar e do Ambiente) - Martins, António (Universidade de Évora; ICT - Instituto de Ciências da Terra) - Cunha-Ribeiro, João Pedro (Universidade de Lisboa, Portugal; UNIARQ, Centro de Arqueologia da Universidade de Lisboa) - Ferreira, Carlos (UNIARQ, Centro de Arqueologia da Universidade de Lisboa) - Pirata, Vânia (Universidade Autónoma de Lisboa)

**Abstract format:** Oral

Since the 19th century, the Lower Tejo River (western Iberia) provide extensive evidence of Neanderthal occupation. However, due to the absence of long-term, well-funded projects and of fully-equipped research facilities, we still do not have a clear framework for the Neanderthal occupation of this crucial territory. Nowadays, probably more than ever, the increasing impact of urbanization and intensive agriculture potentiates the loss of already known and also the yet to find Paleolithic sites.

Recently, grounded on the extensive work performed by Prof. Luís Raposo for 50 years, and also of decades of work from other colleagues, it was possible to put in place a network project that will integrate previous and new data on the first human communities in Portugal, both pre-Neanderthal and Neanderthal.

In this contribution, we present the PaleoTejo project, highlighting the network of researchers and institutions, but also the strategy, goals and what has been achieved so far.

## 8 PALAEOOLITHIC BIASES: SOME REFLECTIONS ON WHAT IS LIMITING PALAEOOLITHIC ARCHAEOLOGY IN ACADEMIA AND ARCHAEOLOGICAL MUSEUMS. A SPANISH PERSPECTIVE

**Abstract author(s):** Romagnoli, Francesca (UAM - Universidad Autónoma de Madrid)

**Abstract format:** Oral

Paradigmatic biases in Palaeolithic Archaeology go back decades and have their roots in the conception of archaeology as anthropology or history, the debate about objectivity in humanities, and the discussion if archaeology is science. In Spain, where Archaeology is mainly included in Bachelor programmes in History and university departments are called 'Prehistory and Archaeology', these debates are still current. The way in which Palaeolithic has been taught and passed on, significantly affect the perception that large portions of students, academic colleagues, and the society have of ancient Prehistory. It is often seen as a long time in which everything -e.g. technology, cognition, and social dynamics- is extremely simple, and a time for which we cannot gain a proper knowledge because of little archaeological evidence and lack of written sources. It is astonishing to hear today these arguments in academia, and detecting the belief of many students that the knowledge of Prehistory has nothing to do with the understanding of the present, as though Palaeolithic archaeologists do not investigate how and why humans interact with other individuals, the environment and the objects. Furthermore, other issues affect the current idea of Palaeolithic people and life styles. On the one hand, there is a persistent bias in the way in which western societies approach 'diversity'. This generate a weird narrative by opposing 'us' Homo sapiens with 'the others' hominins, and 'primitive' hunter-gatherers with 'modern' producers. On the other hand, Prehistory is biased by the one-side focus that usually makes invisible all the diversity of gender as it is mediated by age, ethnicity, and sexuality. In this presentation, examples related to direct working experience will be presented discussing some thoughts that would stimulate a needed collective reflection on what is today the responsibility of Palaeolithic archaeologists to train (better) archaeologists, citizens and human beings.



## NEANDERTHAL MORPHOLOGY AND THE FRONTAL BONE FROM HAHNÖFERSAND, GERMANY

**Abstract author(s):** Röding, Carolin (Paleoanthropology, Senckenberg Centre for Human Evolution and Palaeoenvironment, Eberhard Karls University of Tübingen) - Profico, Antonio (DFG Centre of Advanced Studies 'Words, Bones, Genes, Tools', Eberhard Karls University of Tübingen; Catalan Institute of Human Paleoecology and Social Evolution IPHES, Tarragona) - Merkel, Michael (Archäologisches Museum Hamburg und Stadtmuseum Harburg) - Harvati, Katerina (Paleoanthropology, Senckenberg Centre for Human Evolution and Palaeoenvironment, Eberhard Karls University of Tübingen; DFG Centre of Advanced Studies 'Words, Bones, Genes, Tools', Eberhard Karls University of Tübingen; Museum of Anthropology, Medical School, National and Kapodistrian University of Athens)

**Abstract format:** Oral

In 1973 the sediments of the river Elbe near Hahnöfersand, Germany, yielded an enigmatic human frontal bone. This well-preserved frontal bone exhibits a rather prominent supraorbital region and a flat frontal squama, whose metric analyses showed affinities to Neanderthals (Bräuer, 1980). In contrast, other features are typical of *Homo sapiens*, like the supraorbital torus divided into lateral and medial portions. The frontal bone was interpreted as showing signs of hybridization between Neanderthals and modern humans due to this mix of features in combination with an initial dating to ca. 36 ka (e.g., Bräuer, 1980). However, later re-dating of the bone produced Mesolithic ages around 7500 B.P. and thereby, rendered previous interpretations implausible (Terberger, Street & Bräuer, 2001).

Here, we aim to objectively analyze the entire preserved ectocranial morphology of the frontal bone from Hahnöfersand in order to explore its affinities to Neanderthals and different modern human populations. Therefore, we employ the novel 3D shape comparative analysis based on surface registration. In this approach surface registration is coupled with an elastic iterative closest point algorithm to create a dataset of meshes with an identical number of corresponding vertices. Multivariate statistics are applied to Procrustes superimposed coordinates derived from the vertices of this dataset. This described method has a great potential for the study of hominin fossils as it allows to analyze the entire preserved morphology of isolated and fragmented remains based on a minimal number of homologous points.

This research was supported by the European Research Council (ERC CoG no. 724703) and the German Research Foundation (DFG FOR 2237).

## IS EVERYTHING LOST? RE-EXCAVATION POTENTIAL OF OLD CAVE EXCAVATION DEPOSITS

**Abstract author(s):** Škrdla, Petr (Institute of Archaeology of the CAS, Brno) - Nejman, Ladislav - Wright, Duncan (School of Archaeology and Anthropology, The Australian National University) - Králík, Miroslav (Department of Anthropology, Masaryk University, Brno) - Mlejnek, Ondřej (Archeologické centrum Olomouc) - Bartík, Jaroslav (Institute of Archaeology of the CAS, Brno)

**Abstract format:** Oral

Most caves, including caves most suitable for human occupation, were excavated in Moravia as early as late 19th century and the first half of 20th century. Recently, we [1, 2] tested the re-excavation potential of discarded sediments from a spoil heap deposited near the entrance of Švédův stůl cave in Moravian Karst – a well-known site where a Neanderthal jaw was found [3]. B. Klíma removed all of the sediments (450 m<sup>3</sup> in total) from the cave during several excavation seasons in the 1950s [4]. The current re-excavation of the spoil heap outside of Švédův stůl cave is aimed at finding lithic artefacts, human skeletal remains, personal ornaments, and other small finds lost during previous excavations as well as monitoring the stratigraphy for potential contexts [2]. In an age in which archaeologists are increasingly attempting to balance their roles as cultural heritage educators and destroyers, and with respect to our volumetric capabilities, we were able to transport and wet-sieve only a small amount of sediments as we believe in more precise methodological attempts in the future [2].

Bibliography:

1. Nejman, L. et al. 2020: Preliminary report of the 2019 excavation at Švédův Stůl Cave in the Moravian Karst. *Přehled výzkumů* 61/1, 11-19.
2. Wright, D. et al. 2021: The archaeology of overburden: method within the madness at Švédův Stůl, Czech Republic. *J. of Archaeol. Sci.* 132, 105429.
3. Rzehak, A. 1906. Der Unterkiefer von Ochos. Ein Beitrag zur Kenntnis des altdiluvialen Menschen. *Verhandlungen des Naturforschenden Vereines in Brünn XLIV (1905)*, 91–114.
4. Klíma, B., 1962: Die archäologische Erforschung der Höhle Švédův Stůl in Mähren. *Anthropos* 13, N. S. 5.

## NEW METHODS TO EXPLORE OLD DATA: APPLYING MODERN TECHNIQUES FROM DATA SCIENCE TO COMPARE NEANDERTHAL BEHAVIOR BETWEEN MIS6 AND MIS5E

**Abstract author(s):** Kandel, Andrew - Bolus, Michael - Bruch, Angela - Groth, Claudia - Hertler, Christine - Heß, Julia - Kanaeva, Zara - Malina, Maria - Sommer, Christian - Haidle, Miriam (Heidelberg Academy of Sciences and Humanities)

**Abstract format:** Oral

Here we present the results of a study that integrates information stored in the ROCEEH Out of Africa Database (ROAD). We examine whether climatic changes observed in Europe between the cooler period of MIS6 and the warmer conditions of MIS5e affected Neanderthal behavior. To address this question, we first examined which sites fit within the periods of interest. Next, we evaluated these sites to establish which ones provide well-dated contexts that lend themselves to such a study. Then, we processed the data and extracted information about stone artifacts and other cultural materials, faunal and botanical remains as well as indications about the climate.

Finally, we used the extracted datasets to test whether the fundamental environmental change between MIS6 and MIS 5e is reflected in Neanderthal behavior through variations in mobility behavior, changes in preference for certain artifacts, or the overall composition of the assemblages. We assessed these questions by applying and validating established archaeological indicators for mobility (e.g. tool diversity, specialization index, tool-flake-core ratio, artifact density, prey diversity), performing statistical analyses (e.g. independence, correlation, Multiple Correspondence Analysis) and borrowing sensitive tools for data discovery from machine learning (e.g. Frequent Pattern Analysis). Our preliminary results indicate an overall stability in the archaeological record with only nuances of technological change during these climatic phases. In sum, we conclude that the Neanderthal tool kit was versatile and offered its users the flexibility to sustain themselves in a changing environment without the need for substantial technological adaptation.

## RAPTORS CLAWS, A NEANDERTHAL BRAND: A DISCUSSION AROUND SHARED PRACTICES ACROSS HUMAN COMMUNITIES IN SOUTHERN EUROPE

**Abstract author(s):** Peresani, Marco (University of Ferrara, Department of Humanities, Prehistoric and Anthropological Sciences Unit Department of Humanities; National Research Council, Institute of Environmental Geology and Geoen지니어ing)

**Abstract format:** Oral

Neanderthals' attention to the aesthetic or uniqueness of certain materials of biological nature is also attested by the use of raptors pedal phalanges, despite the ephemeral occurrence with which these items are discovered in the archaeological deposits across Western Eurasia. The most well-known findings are isolated, cut-marked pedal phalanges of golden eagle, white-tailed eagle, cinereous vulture, other birds of prey, as well as swan found in France, Italy and Croatia in contexts covering a time interval of 100 to 45 ka BP. All these posterior phalanges bear disarticulation striations showing the successful removal of the claw from the toe using lithic tools to cut into the thick skin, the stratum corneum and severing the strong ligaments and tendons. Because claws are not directly compatible with human consumption, they may have served in a limited range of actions, likely symbolically oriented. Furthermore, the presence of diagnostic wear, in addition to the remnants of a string and of traces of ochre has been observed on the Krapina items.

An attractive hypothesis is a Neanderthals' ornamental use thanks to their length and curvature, and possibly their suspension in different ways, a feature for such elements observed in the present-day ethnographic records like tinkling pendants, suspended in isolation or still connected to the entire foot. This interpretation of pedal phalanges' use has also been supported from the over-representation of raptor feet bones bearing comparable traces ascribable to their deliberate removal, recorded for more recent periods of the Upper Palaeolithic in Europe and the Near-East. As striking case, the recent discovery of notched or unnotched eagle pedal phalanges in Initial Upper Palaeolithic contexts sheds light and fuels discussion on the occurrence of shared traditional practices between the late Pleistocene Neanderthals and early modern humans in Southern Europe and the Mediterranean rim.

### DISENTANGLING MIDDLE PALAEOLITHIC TECHNO-COMPLEXES WITHOUT USING LABELS

**Abstract author(s):** Marciani, Giulia (Università di Bologna, Dipartimento di Beni Culturali; Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, U. R. Preistoria e Antropologia, Università di Siena) - Leplongeon, Alice (Department of Archaeology, KU Leuven, Geo-Institute; UMR 7194 HNHP, Muséum national d'Histoire naturelle – CNRS – UPVD, Institut de Paléontologie Humaine) - Bortolini, Eugenio (HUMANE - Human Ecology and Archaeology Dept. Archaeology and Anthropology Institutió Milà i Fontanals de Investigació en Humanidades Consejo Superior de Investigaciones Científicas) - Kandel, Andrew W. (The Role of Culture in Early Expansions of Humans, Heidelberg Academy of Sciences and Humanities) - Negrino, Fabio (Dipartimento di Antichità, Filosofia, Storia, Università degli Studi di Genova) - Ronchitelli, Annamaria (Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, U. R. Preistoria e Antropologia, Università di Siena) - Riel-Salvatore, Julien (Département d'anthropologie, Université de Montréal) - Moroni, Adriana (Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, U. R. Preistoria e Antropologia, Università di Siena) - Benazzi, Stefano (Università di Bologna, Dipartimento di Beni Culturali)

**Abstract format:** Oral

Evaluating and comparing various datasets is a pressing issue in Palaeolithic archaeology. These processes become even more problematic when observations are recorded across a wide spatio-temporal transect, with differential research intensities and research goals, as in the case of research on the Middle Palaeolithic of Eurasia. Different approaches arose from a variety of epistemological backgrounds. These generated marginally comparable – if not irreconcilable – outputs in terms of documentation and questions. Nonetheless, the data collected over the past century, offer a remarkable opportunity for exploring and trying to explain the development and demise of Neanderthal groups across Europe and Asia.

Our current work aims to address questions concerning the development of an integrated approach to comparatively study this considerable amount of empirical evidence at a broad spatial and temporal scale of observation, while controlling for problems arising from: a) different epistemological perspectives; and b) different labels or “NASTIES” (named stone tool industries) characterising published datasets. Here we present a study comprising 67 layers from 29 different sites dating to the end of the Middle Palaeolithic of Europe and the Near East. Preliminary results show that our approach makes it possible to effectively compare contexts through different descriptive systems, as well as new and published data, and to use the proposed systematics to present novel insights on the European Middle Palaeolithic.

### NEANDERTHALS AND “US”: HOW THE GOLDEN AGE OF NEANDERTHAL RESEARCH CHALLENGES HUMAN SELF-UNDERSTANDING

**Abstract author(s):** Peeters, Susan (Erasmus School of Philosophy - ESPhil, Erasmus University Rotterdam; Institute for Science in Society - ISIS, Radboud University Nijmegen) - Zwart, Hub (Erasmus School of Philosophy - ESPhil, Erasmus University Rotterdam)

**Abstract format:** Oral

Our image of Neanderthals is changing rapidly, and this affects long-standing views about ourselves. Neanderthals (our most proximate other) serve as a mirror to reconsider who we are. They are more like us than other early humans, but the guiding conviction was that they were different. Precisely this (genetic, behavioural, cultural) difference allegedly confirmed our exceptionality. The overall trend was to frame humans as favoured evolutionary “winners”, whose alleged “superiority” led to the demise of Neanderthals. Research is rapidly questioning this. Allegedly unique markers of humanness are redefined and it becomes increasingly difficult to single out specific human characteristics as decisive. In the face of the current global environmental crisis, this triggers us to reconsider the story of our evolutionary narrative. Although the scientific image of Neanderthals has dramatically shifted, research still tends to focus on anatomical, genetic, psychic and cultural differences between “them” (*Homo neanderthalensis*) and “us” (*Homo sapiens*). Our interdisciplinary project combines insights from palaeolithic archaeology, philosophy, and post-colonial gender studies to analyse how transitions in Neanderthal research challenge our self-understanding, reopening the question: what makes us human?

### TAKE A WALK ON THE VIRTUAL SIDE OF NEANDERTHALS. EXHIBITIVE SOLUTIONS TO TRAVEL INSIDE POGGETTI VECCHI (CENTRAL ITALY)

**Abstract author(s):** Florindi, Silvia (Istituto Italiano di Preistoria e Protostoria; Cyprus Institute - STARC) - Aranguren, Biancamaria (Soprintendenza Archeologia Belle Arti e Paesaggio per le province di Siena, Grosseto, Arezzo - retired) - Puzio, Daniela - Revedin, Anna (Istituto Italiano di Preistoria e Protostoria)

**Abstract format:** Oral

Poggetti Vecchi (Grosseto, central Italy) is a Middle Pleistocene site dated to around 170 ka, with remains of *Palaeoloxodon antiquus* and artefacts referred to early Neanderthals, comprising the extraordinary wooden tools. The site is also an exceptional case study for the reconstruction of a peculiar thermal ecosystem at the beginning of MIS6.

The site was entirely excavated during a preventive archaeology campaign in 2012. The materials found - faunal bones, as well as lithic, bone, and wooden tools – are still waiting for a permanent exhibit venue.

The variety of the archaeological, paleontological, and palaeobotanical remains, together with the specific environmental context, is particularly suitable to communicate different topics to the general public. To make aware a wide audience of these topics, it is fundamental to adapt them in a modern perspective, focusing on the man-environment relation during climate crisis, the complexity of the prehistoric research, and on specific issues on restoration and conservation of heritage.

In the frame of the research project of the Istituto Italiano di Preistoria e Protostoria (IIPP), we present the virtual exhibition "170,000 years ago at Poggetti Vecchi. Neanderthal and elephants in the Tuscan Maremma, the climate challenge".

The virtual tour aims to engage the public in the climate change topic through human history, by means of innovative scientific methods and the artistic suggestions given by Tom Björklund's illustrations.

Since the physical space is becoming less and less available, while digital technologies became of common use in everyday life, we substitute the real space with a digital one, to enhance the visitors' experience and the valorisation of this extraordinary heritage.

## 16 NEANDERTALS AS STAKEHOLDERS IN CULTURAL TOURISM: THE STORY SO FAR

**Abstract author(s):** Mihelic, Sanjin (Archaeological Museum in Zagreb)

**Abstract format:** Oral

One of the salient features of the recent COST programme initiative—or Action—entitled Integrating Neanderthal Legacy: From Past to Present (abbreviated as iNEAL) is the wish to fully appraise the wide spectrum of present-day perspectives on Neanderthals, from the public appreciation of their role as long-gone partial ancestors of modern Eurasian populations to the valorisation of their legacy in broader cultural terms, including for instance the cultural tourism angle.

Within the iNEAL special attention is awarded to potential positive impacts different aspects of Neanderthal heritage, like museum displays or archaeological sites may have on the socio-economic development of a given community through mediation of tourism. This perspective underscores the public and touristic attractiveness of tangible and intangible aspects of the Neanderthal story, while exhibits and heritage sites are considered as tourist resources. Consequently, their management and valorisation for purposes of tourism enter the domain of destination management, as a continuous process in which tourism industry, administration at various levels, and other stakeholders develop a destination with a view to fulfil a shared vision of its future.

In addition to this, the Action seeks to develop a package of informational, educational and didactic tools to be used for communicating topics relating to various facets of Neanderthal legacy. The package will be designed to cater for different publics, from general public, schools, civil society and local communities, tourism sector, heritage institutions, small and medium enterprises, and all others interested in these topics. This paper aims to present and discuss the philosophy behind this key feature of the iNEAL Action, as well as the work done so far.

---

## 345 LET IT BURN! EXPERIMENTAL AND ETHNOARCHAEOLOGICAL APPROACHES IN PYROARCHAEOLOGY

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Stahlschmidt, Mareike (Department of Human Evolution, Max Planck Institut für Evolutionäre Anthropologie, Leipzig) - Mallol, Carolina (Departamento de Geografía e Historia, Campus de Guajara, Universidad de La Laguna, Tenerife; Archaeological Micromorphology and Biomarkers - AMBI Lab, Instituto Universitario de Bio-Orgánica Antonio González, La Laguna, Tenerife) - Miller, Christopher (Institute for Archaeological Sciences, University of Tübingen) - O'Neill, Brendan (School of Archaeology, Centre for Experimental Archaeology and Material Culture - CEAMC, University College Dublin)

**Format:** Regular session

The reconstruction of fire use behaviours can provide valuable insights into technologies, subsistence strategies and domestic activities of the past. For the interpretation of specific behaviours and the preservation of their evidence in the archaeological record, experimental and ethnographic studies present a helpful interpretative framework. In this session, we welcome presentations from experimental archaeology or ethnoarchaeological research on pyroarchaeology topics from hunter-gather contexts to complex urban societies. Such pyroarchaeology topics may include, but are not limited to:

- Taphonomy and preservation of fire residues
- Wildfire signatures and impacts on human behaviour, environments and the archaeological record
- Identification of burnt materials and their characterization
- Early fire use behaviours

- Fuel use and management strategies
- Cooking technologies and constructions
- Pyrotechnology
- Fire use for landscape-management
- New approaches, methodologies and techniques in pyroarchaeology

We invite researchers from all disciplines of the archaeological sciences to contribute to this session with talks or posters including short elevator pitches.

## ABSTRACTS

### 1 EXPERIMENTAL BIRCH TAR MAKING ALLOWS TO IDENTIFY ANCIENT PRODUCTION METHODS

**Abstract author(s):** Schmidt, Patrick (Department of Early Prehistory and Quaternary Ecology, Eberhard Karls University of Tübingen; Applied Mineralogy, Department of Geosciences, Eberhard Karls University of Tübingen) - Koch, Tabea (CEPAM, Université Côte d'Azur, CNRS, Nice)

**Abstract format:** Oral

Birch tar was the first adhesive produced by early humans. Its study has important consequences for our understanding of human evolution and, in later periods, the development of specialised craftsmanship. Little archaeological data on the way birch tar was made are known and it remains unknown what techniques were used for tar making in the Palaeolithic. Here, we present the results of an experimental programme aiming at producing birch tar with different techniques that could have been used in the Stone Age. We found that several methods allow to produce birch tar, some being more time and resource efficient than others. The resulting reference collection of experimental tar was used to recognise proxies of specific methods. We found that infrared spectroscopy allows separating the spectral signatures of different techniques. The implications of our findings are that it is possible to investigate which techniques were used to make birch tar in the Palaeolithic. This makes it possible to work on aspects like technical complexity, difficulty or the dynamics of invention of ancient birch tar.

### 2 EXTRAS PROGRAM NEW RESULTS: UNRAVELLING TEMPERATURE FROM FUEL INFLUENCE ON RAMAN SIGNAL

**Abstract author(s):** Vandeveld, Ségolène (Laboratory of Climate and Environment Sciences - LSCE UMR8212) - Delicque, Damien (Laboratoire de Géologie de l'ENS)

**Abstract format:** Oral

First part of the ExTraS program (an Experimentation program on Traces of Soot) was conducted in order to better understand the processes of fixation, recording and preservation of combustion products in speleothems and thin parietal carbonated crusts that form at cave entrances and on rock-shelters walls and vault.

Among the numerous results, we found that soot has different properties depending on the fuels used and the combustion temperature. We wanted to better define the source of these differences (in color, texture, etc.). Therefore we designed a new step of the ExTraS program, in the laboratory, to produce soot in a controlled environment.

We will present here the protocol used to unravel the two factors that can modify the soot structure (documented in Raman microspectroscopy): the combustion temperature and the fuel used. We will also present the results of this new experimental phase, which contributes to a better understanding of what the soot Raman signal indicates.

### 3 LESSONS FROM A LONG TERM WOOD FIRE EXPERIMENT

**Abstract author(s):** Karkanas, Panagiotis (Malcolm H. Wiener Laboratory for Archaeological Science, ASCSA)

**Abstract format:** Oral

More than 30 years of experimental studies of wood fire have produced a large body of knowledge about the formation of ash and its preservation. However, the unrelenting interest on fire experiments shows that there is still lack of critical information on this complex phenomenon. Recently, an 8-year experimental study involving hundreds of open wood fires and laboratory experiments has enriched our understanding of ash formation, its physical and chemical alteration, and preservation in the archaeological record. In addition to the implications for the emergence and use of fire in the Pleistocene and the interpretation of ash remains in later periods, some important lessons have been learned from this study about the experimental strategy, plan, and execution of wood fires. The traditional approach of defining accurately the problem, designing the experiment carefully, and precisely recording the variables works fine when the material under study is relatively well known and only certain aspects of its behavior are unknown. Contrary to what is believed, making a fire is not a simple task, and its behavior and relation to the environment is complex and depends on many variables. Therefore, a fundamental step is to understand the material aspect of wood ash as best as possible, particularly its physical and chemical characteristics. Moreover, long term experimental fires with several rounds of investigation of certain variables are required in order to reveal trends with time. Contrary to the

common belief, experimental procedures have to be revised continuously as new observations prompt additional measurements. Investigations in other fields unrelated to archaeology (e.g., combustion industry and forest science), are highly relevant. Finally, in addition to rigorous scientific inductive judgment, intuition, and luck are not to be dismissed and their positive effect increases with repetition of the same experiments.

#### 4 **RE-LIGHT MY FIRE: THE POTENTIAL OF MAGNETIC SUSCEPTIBILITY AS A PROXY FOR IDENTIFYING RELIGHTING EVENTS IN PREHISTORIC COMBUSTION FEATURES**

**Abstract author(s):** Hoare, Sally (Dept. Archaeology, Classics and Egyptology, University of Liverpool) - Albert, Rosa (ERAAUB, Department of History and Archaeology, University of Barcelona; ICREA) - Gowlett, John (Dept. Archaeology, Classics and Egyptology, University of Liverpool) - Halsall, Karen (Liverpool Hope University) - Stahlschmidt, Mareike (Department of Human Evolution, Max Planck Institutur for Evolutionary Anthropology, Leipzig) - Ian, Stanistreet (Department of Earth, Ocean and Ecological Sciences, University of Liverpool; Stone Age Institute, Bloomington)

**Abstract format:** Oral

The Lower Palaeolithic site of Beeches Pit (Suffolk, UK), dated to MIS11, is well-known for evidence of fire in the form of heated flints, heated bone, calcined shell, charcoal and seeming combustion patches. It has been interpreted to preserve some of the oldest evidence for human use and control of fire in northern Europe, including the presence of hearths. As the latter can be disputed it is necessary to approach the issues with a range of new techniques as previously, the presence of human hearths was determined based on macroscopic observations. While a first micro-contextual analysis of these sediments is on-going. We report on data from mineral magnetic studies of the affected sediments. Results show that while some of the sedimentary properties have arisen through heating others are, in fact, the results of natural redox processes. We further investigated the sedimentary properties of the heat affected sediments to investigate whether Magnetic Susceptibility (MS) can be used to determine re-lighting events in the archaeological record. Our experimental approach demonstrates that increases in MS are determined by the temperature of heating, total Fe content of the sediments, and composition of the parent material. Furthermore, our data shows that similar MS values can be achieved by successive episodes of heating or heating for longer periods. Our data also demonstrate that under some circumstances changes in MS values can be used as a proxy for re-lighting events in the archaeological record, when compared to an experimentally heated assemblage of the same substrate, and when other influences, such as duration of heating are also accounted for.

#### 5 **HOW ABOVE GROUND HEAT ALTERS MATERIAL UNDERGROUND: A HIGHLY CONTROLLED HEATING EXPERIMENT FOR BONE BURIED IN SEDIMENT**

**Abstract author(s):** Gallo, Giulia (UC Davis Anthpology) - Aldeias, Vera (Interdisciplinary Center for Archaeology and the Evolution of Human Behavior - ICArEHB) - Stahlschmidt, Mareike (Max Planck Institute for Evolutionary Anthropology)

**Abstract format:** Oral

The ability to clearly identify heated bones and reconstruct the conditions under which they were heated is crucial in investigating fire use practices. Most prior research has focused on the thermal alteration to bone with direct heating, and there is not currently a consensus on the degree to which indirect heating conditions can impact and transform buried bone. Recent studies have shown that the heat of a fire event can penetrate into underlying sediments, potentially altering buried archaeological materials. We investigate here the degree and nature of the heating of buried bones in an effort to differentiate heating during and after use.

The present study introduces the results of a controlled experiment utilizing a fire simulator setting following Aldeias et al. (2016). An indirect heating source was placed above fresh modern bones buried at -2, -6, and -10 cm in two substrates with differing pore spaces (dry gravel, and dry gravel with fine sand). An additional reference set of bones were burned sitting on crucibles of identical substrate utilizing a Nabertherm Muffle Furnace exposed to air, all trials burnt to 950° C for a period of 6 hours in addition to an extended cooling period. Subsequent to burning, bones were analyzed utilizing Fourier-transform Infrared Spectroscopy (FTIR) with an Attenuated Total Reflectance (ATR) attachment and x-Ray Diffraction (XRD) to provide information on bioapatite crystallinity and organic loss, as well as monitor structural changes.

Preliminary results indicate that bone buried in both substrates did have access to oxygen atmosphere with calcination seen at -2cm. Overall, heat penetration and alteration of bones was greater than expected, including bones buried at -10 cm having clear indications of burning . Our study shows that post-depositional heating can alter previously deposited materials underground and needs to be considered as a contributing factor to burnt bone assemblages.

## 6 LIVING IN DESERT ZONES, FORMATION PROCESSES OF ARCHAEOLOGICAL FIRE SIGNATURES IN THE ATACAMA DESERT SOILS FORMATIONS

**Abstract author(s):** March, Ramiro (CNRS – SCTD – UMR 6566 – CD0941) - Bastos, Galaad (CNRS UMR 6566) - Santoro Vargas, Calogero (Universidad de Tarapaca)

**Abstract format:** Oral

Human adaptation in extreme arid desert zones has been a recurrent strategy of human being around different parts of the world in different prehistoric periods. Nevertheless experimental studies of formation processes of fire structures formations in these contexts are rarely. This paper present the recent experimental studies carried out on the desert formations of the Atacama Desert and the different processes of formation and transformation of the mineral and organic components of soils and combustion residues from a realistic and laboratory experimental approach and the application of various analytical techniques (FX-DRX GC- GC-MS et GC-C-IRMS) aimed to characterize and understand the transformation processes of these soils under the effect of heat and combustion episodes of anthropogenic origin and the formation processes of fire structures signatures to facilitate the study of the human relation with thermal energy and the signification of the data that could be obtained from these archaeological structures in these kind of particular ecological environment.

## 7 MAMMOTH DUNG AS A FUEL RESOURCE IN PLEISTOCENE EURASIA? AN EXPERIMENTAL APPROACH

**Abstract author(s):** Miller, Christopher (University of Tübingen; Senckenberg Center for Human Evolution and Palaeoenvironment; SFF Centre for Early Sapiens Behaviour - SapienCE, University of Bergen) - Haidle, Miriam (The Role of Culture in Early Expansions of Humans - ROCEEH, Heidelberg Academy of Sciences and Humanities, Senckenberg Forschungsinstitut und Naturmuseum)

**Abstract format:** Oral

Mammoth extensively shaped the environment of the northern latitudes of Eurasia during the last glacial period and were a key species targeted for hunting by both Neanderthals and modern humans. Beyond the meat provided by these large proboscideans, mammoth also provided a wealth of other secondary products, including their bones for building structures and the ivory from their tusks for producing sculpture, personal ornaments, and musical instruments. A number of researchers have suggested that the large volumes of dung produced by mammoth would have potentially provided a significant source of fuel in the largely treeless steppes of Ice Age Eurasia. Here we present the results of experimental fires that use modern elephant dung as a proxy for Mammoth dung, exploring the firing and burning properties of this material. We use the results to investigate the energetics of burning and collecting dung, relying on ethnographic analogy, and examine methods for identifying burnt proboscidean dung in the archaeological record.

## 8 EXPERIMENTAL FUMIER DEPOSITS: A MICROMORPHOLOGICAL APPROACH TO FORMATION PROCESS

**Abstract author(s):** Polo-Diaz, Ana (University of the Basque Country UPV/EHU; University of Sheffield) - Burguet-Coca, Aitor - Allué, Ethel - Expósito, Isabel - Vergès, Josep (IPHES Institut Catala de Paleoecologia Humana i Evolució Social; URV e Area de Prehistoria, Facultat de Lletres, Universitat Rovira i Virgili)

**Abstract format:** Oral

Since the 1980s, high-resolution geoarchaeology has lead the investigation of early animal herding in caves and rock-shelters of the Mediterranean region. Micromorphological analysis in particular, has proved its suitability for the characterization of the sedimentary deposits so-called fumiers resulting from livestock practices of agropastoral groups since the Neolithic. In the Iberian Peninsula these studies have provided much relevant data, enabling the contextualization of artefact, bone and archaeobotanical assemblages and the construction of theoretical models on animal management, natural resource exploitation and territorial organization of early farmers. Given the relevance of archaeological interpretations of fumier deposits research hypotheses need to be tested to ensure accurate reconstruction of the dynamics involved in the accumulation and alteration of the sedimentary record. To address this issue an experimental and ethnoarchaeological interdisciplinary programme has been conducted at the rock-shelter of Mas del Pepet (Northeast Iberia) since 2014. The works have involved replication of prehistoric fumier activities consisting of seasonal herding of ovicaprids and recurrent burning of residues.

This presentation introduces the first results of the micromorphological analysis of the sediments from the experimental works conducted at the site of Mas del Pepet. The samples studied show a range of fumier stratigraphies which layering and composition allow us to improve our understanding of the impact of fire on plant and animal materials, deposit formation and taphonomy.

## FROM FUEL TO EMBERS: EXPERIMENTING ON IRON AGE COMBUSTION STRUCTURES IN THE WESTERN MEDITERRANEAN

**Abstract author(s):** Belarte, Maria Carme (ICREA - Catalan Institution for Research and Advanced Studies; ICAC - Catalan Institute of Classical Archaeology) - Portillo, Marta (Department of Archaeology and Anthropology, Institució Milà i Fontanals - IMF, Spanish National Research Council - CSIC) - Mateu, Marta - Saorin, Carme (GRAP - Grup de Recerca en Arqueologia Protohistòrica, Institut d'Arqueologia de la Universitat de Barcelona - IAUB) - Pastor, María (ICAC - Catalan Institute of Classical Archaeology) - Pou, Josep (Calafell Town Council) - Morer, Jordi (GRACPE, Institut d'Arqueologia de la Universitat de Barcelona - IAUB) - Castells, Georgina (Calafell Town Council) - Vila, Sílvia (Universitat de Lleida) - Pescini, Valentina (ICAC - Catalan Institute of Classical Archaeology)

**Abstract format:** Oral

The study of fuels related to the use of domestic combustion features in Iron Age contexts in the Western Mediterranean region is commonly based on wood charcoal remains found within the firing installations or within secondary deposits. Although macrobotanical records are common in the study areas, direct microscopic evidence from phytoliths and thin-section micromorphology is still limited.

Further, macroscopic combustion remains on hearths and ovens or on the floors around them are commonly scarce in the contexts here analysed, as these structures were cleaned after use, and pavements were also regularly swept. Interdisciplinary analyses such as those above-mentioned are needed in order to obtain more information on the fuels used and, also, to distinguish the components related to that purpose from those that were part of the constructions themselves. Experimental archaeology may provide valuable records that can be used as comparative data in order to identify the combustible materials used as well as the taphonomical processes related to them.

This study integrates macro and microscopic records from both archaeological and experimental firing installations in order to better understand fuel use in the Iron Age.

## NEOLITHIC OVEN BUILDING TECHNIQUES: EXCAVATION OF THE OVEN FROM THE SITE OF VINČA – BELO BRDO AND ITS EXPERIMENTAL RECONSTRUCTION

**Abstract author(s):** Đuricic, Ana (Laboratory for Bioarchaeology, Faculty of Philosophy, University of Belgrade)

**Abstract format:** Oral

Even though ovens are often found at the Vinča culture sites, they are frequently preserved only at the floor level (firebed), while parts of the upper structure are almost always missing. At the beginning of the XX century, at the site of Vinča – Belo Brdo, several fully preserved ovens were found. These ovens were extremely valuable for the reconstruction of the shape of these fire installations, as they were the only fully preserved Vinča culture examples. On the other hand, their building techniques were not documented, so we could only guess which techniques were used by the members of this Late Neolithic community. Usually, ethnographic examples were used to bridge this gap. Luckily, in the year 2006, at the site of Vinča – Belo Brdo, a fully preserved oven was found in the house 01/06. In order to gather data about the oven building techniques, this oven was partly excavated in the spring of 2015. Dome fragments were carefully removed and examined so that breaking patterns can be determined. The inner surface of the dome was closely observed to determine the presence or absence of a wooden frame. By not cutting through it, but removing dome fragments piece by piece, we were able to determine the exact building techniques, previously not taken into consideration by other authors. In order to test these techniques, two experimental ovens were constructed. Later on, one of the experimental ovens was taken apart. The experimental wall fragments had the exact breaking patterns and shapes as the original oven, confirming the supposed building technique. The aim of this presentation is to show, previously not considered, Late Neolithic Vinča culture oven building techniques.

## THE PROXEMICS OF FIRE IN CERAMIC TECHNOLOGY. THE CASE OF THE UP-DRAUGHT KILN

**Abstract author(s):** Gheorghiu, Dragos (National University of Arts - Bucharest; ITM Macao)

**Abstract format:** Oral

Up-draft kilns with perforated platforms represent the final phase of the evolution of the design of a machine for the serial production of ceramic objects, avoiding all the deficiencies of the previous combustion methods. In the form of a (hot) black box, the up-draft kiln can be controlled by visually connecting the in-put and out-put processes generated by combustion. These can then be perceived simultaneously by the operator, thus acting similarly to a contemporary machine.

Experimental archeology has so far studied only the physicochemical processes that occur during the combustion inside the furnace. Due to the operator's proxemic relationship with this type of machine, s/he can follow the (hot) black box process with the help of sight. Data from archaeological experiments, combined with ethnographic data, has led to a new image of the proxemic relationship between the operator and the machine, highlighting the use of all the senses in the technological process. The paper will discuss various proxemic issues that arise when using Chalcolithic and Roman replicas of up-draft kilns.



## TRACKING SEAWEED FUEL IN THE ARCHAEOLOGICAL RECORD THROUGH RAMAN SPECTROSCOPY OF CHARRED PARTICLES

**Abstract author(s):** Sitzia, Luca (Universidad de Tarapacá - Departamento de Antropología) - Power, Ximena (Instituto de Arqueología y Antropología - IIA, Universidad Católica del Norte) - Carcamo, José (Investigador Externo Dirección de Investigación, Postgrado y Transferencia Tecnológica - DIPTT, Universidad de Tarapacá) - Maalouf, Jean-Paul (Independent researcher) - Zurro, Débora (HUMANE Research Group. Institució Milà i Fontanals de Investigación en Humanidades IMF-CSIC) - Salazar, Diego (Departamento de Antropología, Facultad de Ciencias Sociales - FACSO, Universidad de Chile) - Ibacache, Sebastian (Independent researcher) - Silva, Claudia (Museo de Historia Natural de Concepción) - Borie, Cesar (Instituto de Arqueología y Antropología - IIA, Universidad Católica del Norte) - Roa, Constanza (División Arqueología Museo de La Plata - Laboratorio 129, Facultad de Ciencias Naturales y Museo, Universidad Nacional de la Plata)

**Abstract format:** Oral

The use of seaweed as fuel has been mentioned in ethnographic and historical sources in different coastal regions, including the North and South Pacific of America, North Atlantic, and Australia. In contrast, the archaeological record of seaweed burning is limited to contexts where preservation is exceptional and macroscopic discrimination of charred remains is possible. Among the known sites, those of the North Atlantic and the Atacama Desert coast stand out. In this work, we evaluate the effectiveness of Raman spectroscopy in the discrimination of algal vs. wood charcoals. First, we created an experimental dataset with current macroalgae and plants from the Atacama Desert (Northern Chile), burned under controlled temperature conditions (550°C) to obtain charcoals. Forty-four carbons (25 algae - 19 wood) were analyzed, and the spectra obtained were processed to identify valuable parameters. Parameters were fed into a Random Forest classification model to predict carbon class, and the model resulted in an out-of-bag accuracy of 86.3%. The model was then used to predict carbon class for 37 Raman spectra of charred particles identified in sediment and micromorphological thin sections from two archaeological sites on the Atacama Desert coast. All the charcoals were classified as algal charcoals, consistent with the working hypothesis. We suggest that Raman spectrometry is a valuable tool for discriminating algal and wood charcoals in the archaeological record, allowing future discussion of their use as fuel in past societies in this desert and other coastal environments around the globe.

## THE USE OF FIRE IN A METALLURGICAL SITE FROM THE INCA PERIOD (1450-1536 DC) IN THE ATACAMA DESERT, NORTHERN CHILE

**Abstract author(s):** Grimberg, Daniela (Independent researcher) - Cifuentes, Ariadna (Antropología UCN-UTA, Universidad Católica del Norte) - Figueroa, Valentina (Instituto de Investigaciones Arqueológicas y Museo R.P. Gustavo Le Paige, Universidad Católica del Norte)

**Abstract format:** Oral

The development of archeology in the Atacama Desert has had important advances in the understanding of the different areas of their daily lives of the past societies that occupied this challenging territory. Subsistence, domestic and economic activities have been approached by different proxies by national researchers, providing new results from the application of archaeometry. However, the study of fire has not been incorporated into the lists of topics of interest in local archeological research, even though this element constitutes one of the key resources for the daily activity of human communities, including metallurgical production.

Ethnographic works indicate that wood to be used as firewood or charcoal must go through a selection process, focused mainly on its heating properties, and then be subjected to drying or carbonization treatments, depending on the object of its subsequent use (Grimberg et al. 2021). Also, it is frequent the combination of woody elements from a tree or bush (branches, trunks, leaves) of similar or different species to get fire and, in this way, achieve the desired temperature in response to the need to be covered (Arre et al. 2015, Miller Alva 2017). In this sense, the combustion structures were designed to maintain a controlled environment (Rodríguez 2018), where domestic, economic, productive, or ritual activities could be carried out. The foregoing shows that for the generation of fire it is necessary to follow a series of steps that are not capricious, being the result of a thorough knowledge of vegetable fuel.

The present work is a first approach to the use of fire in the prehistory of the Atacama Desert, from the study of woody fuel and a combustion structure, oriented to metallurgical production of cooper from the Inca period (1450-1536 AD).

14

## DEATH AND FIRE.THE IDENTIFICATION AND CHARACTERIZATION OF PYRE GOODS AND THEIR USE IN CREMATION BASED ON EXPERIMENTAL AND ARCHAEOLOGICAL OBSERVATIONS

**Abstract author(s): Fülöp, Kristóf (Institute of Archaeology Research Centre for the Humanities)**

**Abstract format: Oral**

In addition to many parts of life, fire is an essential element of the concept of death to this day. Regardless of time or culture, the ritual of cremation is at the centre of many burial processes. Its special role derives from the purifying and transforming power of fire.

The most obvious form of this meaningful role is the transformation of the corpse into ashes, which has long been the subject of funerary and experimental archaeology. At the same time, however, we often forget that the objects and accessories placed on the funeral pyre are an equally important elements of the complex event of cremation. Therefore, this presentation focuses on the burning and transformation of pyre goods.

In order to thoroughly document the entire process of transformation of ceramic vessels and bronze artefacts and to understand the characteristics and conditions of burning, I performed two cremation experiments.

Then I examined more than 300 cremation burials of two Late Bronze Age cemeteries in Hungary. The experimental observations made it possible to divide the objects into two categories: grave goods and pyre goods. At the same time, it enabled me to outline the special circumstances and certain rules of cremation rite based on the type, condition and burning characteristics of the pyre goods.

The relationship between man and fire in this way appears in the unique context of death through the various use and deliberate manipulation of objects.

15

## LODOVICO BRUNETTI'S EXPERIMENTAL STUDIES FOR THE CONSTRUCTION OF A CREMATORIUM IN THE LATE 19TH CENTURY

**Abstract author(s): Magno, Giovanni (University Museums Centre CAM, University of Padua) - Zanatta, Alberto (Department of Cardiac, Thoracic, Vascular Sciences and Public Health - University of Padua)**

**Abstract format: Oral**

Cremation practices has been documented since prehistoric times and it was a common funerary custom until the advent of Catholicism. After a long hiatus, new movements arose during XVII-XVIII century to bring cremation back with modern criteria, mainly due to hygienic reasons and overcrowding of cemeteries.

Lodovico Brunetti, professor of Pathological Anatomy at the University of Padua (Italy) in 1855, was one of the first to investigate ancient roman cremains and started to carry out a crematory experimental research to improve the ancient open-air pyre practice. His studies and experiments led him to prototype a new crematory oven and become formally the father of modern cremation.

To evaluate the validity of Brunetti's crematorium, it was provided a comparison with modern experiences of experimental pyroarcheology. Furthermore, the social and theological dimensions of Brunetti's innovations demonstrated how the use of fire has aided the development of new tools and technology, as well as the evolution of cultural context, thus allowing cremation to be once again accepted as an alternative to inhumation.

A.

## THE EXPERIMENTAL BURNING DOWN OF A LATE NEOLITHIC HOUSE RECONSTRUCTION

**Abstract author(s): van Gijn, Annelou (Faculty of Archaeology, Leiden University) - Pomstra, Diederik (Leiden University)**

**Abstract format: Poster**

From 2012 to 2019 a reconstruction of a Late Neolithic house could be found in the woods of one of Holland's polders. It was the result of a collaboration between the State Forest Service and archaeologists. For the first it served as a base to show the public how life close to nature could have taken place, whereas the archaeologists carried out all sorts of experiments. The construction was carried out with stone age tools only and the amount of building materials, labour input and duration of use of the various tools was quantified. The house was however never occupied on a regular basis and although several repairs took place, after seven years the roof was in need of substantial upkeep. Money was lacking and it was therefore decided to burn the house down and excavate it at a later stage. From the start the approach of the project was a biographical one: we wanted to document all stages of the life of the house, how it was built and used, which repairs took place and ultimately how it "died". Before setting the house to fire, we furnished it, adding items of daily life like wooden stools, skins, pottery, basketry, various foodstuffs and tools. The actual fire was filmed and temperatures were recorded by pyrometers. Immediately after burning the area was documented photographically and by 3D scan and three months later it was excavated. We will show what was left of both the house and its contents, comparing the situation before and after the fire and discuss the taphonomical processes that affected the house during its life and death.

## B. EXPERIMENTAL CREMATIONS AND THE EFFECTS ON BONE MICROSTRUCTURES

**Abstract author(s):** Bantavanou, Panagiota (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace) - Trantalidou, Aikaterini (Hellenic Ministry of Culture & Sports, Independent Department of Press, Communication and Promotion, Athens) - Papageorgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace)

**Abstract format:** Poster

Osteological analysis of burnt animal and human bones, is a challenging task due to the severe modification of the skeletal elements after cremation. At high temperatures (<300o C), bones are severely damaged, and standard methods (i.e. age and sex estimation) do not perform efficiently. However, analysis of cremated skeletal remains is essential for anthropological, zooarchaeological and even forensic studies.

Up to date, most studies of experimental cremations concentrate on superficial alterations of the burned bones, like discoloration, warping and fragmentation. Few studies extend the research to the microlevel, analyzing the effects of high temperatures on the bone microstructures. Preliminary results studies indicate that specific patterns on firing process (i.e. temperature) can be identified. Experimental cremations, therefore, can offer valuable insights reconstructing cremation practices in ancient times.

In this study in order to observe and determine the effects of high temperatures on bones, at macro- an microscopical level, and to understand the cremation as a burial practice, we performed open field experimental cremations using animal bones. We created two different open field cremations that fired with different wood fuel (yew and beech), to examine the effects of wood on the bones at histological level. The experiment included lower limbs of domesticated pigs (*Sus scrofa domestica*) (n=10), and sheep (*Ovis aries*) (n=5) that was burned in different Celsius degrees (500, 600, 700, 800, 900). We retained two unburned bones as a reference sample.

We sampled femur cross-sections and proceeded to histological analysis. For the histological analysis we developed two protocols for sample preparation of the cremated and unburned bones. The microscopical analysis included the observation of: a) the discoloration, microfractures, and carbon concentrations on the cross-sections, b) the histological deformations of the microstructures, c) the differences of the wood fuel and d) the way that cremation was possibly performed in ancient times.

Acknowledgment: This research has been co-financed by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH – CREATE – INNOVATE (project title: ECHOES-Development of a methodology for the digital reconstruction of ancient human biographies through the study of archaeo-anthropological material, project code:T2EDK-00152).

346

## BRINGING ROMAN COARSE WARE TO THE POINT: THE CHALLENGE OF A COMMON APPROACH

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Venditti, Caterina - Taloni, Maria (Ministry of Culture Italy) - Froehlich, Thomas (German Archaeological Institute) - Polito, Eugenio (University of Casinum and Southern Latium)

**Format:** Regular session

Material culture impacts the world in which people live, their interactions with each other and the social structure they build and coarse wares, with their enormous informative potential for the reconstruction of social-economic changes, are among the most interesting indicators. Despite being the most attested class in excavations of every regional and temporal horizon, they still represent a challenge, especially because of the preponderance of the local productions, that are prevalent in the contexts.

Nevertheless, researches carried out in the Mediterranean area show that the morphological repertoire is also composed of forms that can be traced back to a craft tradition of medium to wide range, in a horizon that goes beyond the chronological and territorial barriers and is based on strictly functional characteristics, linked to usages.

An integrated approach includes morphological classification, distinction of mixtures, selection for analysis and the recognition of production areas with a distinction between local and external production centers. Each step implies criticalities and the amount of potential data is enormous. The time is ripe for a management based on automatic systems of recognition that exploit complex algorithms, so far developed to recognize similar shapes and therefore very well applicable to highly standardized productions.

The new technologies and the collaborative work approach impose a reflection and sharing of best practices, guiding principles, lexicons, structures.

The aim of this session is to create a moment of dialogue in which the traditional typological approach can find a synthesis with the modern technologies of AI and the new frontiers opened by Social Network Analysis.

Expected papers may include but are not limited to:

- Presentation of excavations and findings.

- Analysis of traditional typological classifications.
- Use of AI in Roman coarse wares classifications.
- The contribution of Social Network Analysis to the study of Roman coarse wares.

## ABSTRACTS

### 1 ROMAN COARSE WARES IN FABRATERIA NOVA. AN ATTEMPT OF CLASSIFICATION

**Abstract author(s):** Venditti, Caterina Paola - Taloni, Maria (Ministry of culture - Directorate general for Education, research and cultural institutes)

**Abstract format:** Oral

15 years after the beginning of the scientific research in the roman city of Fabrateria Nova (southern Lazio, Italy), significant data are coming to light, thanks also to the study of finds, which is helping us to better define chronologies, external networks, consumptions and life-style. In the grand scheme, the most interesting data for the knowledge of the relationships between city-suburbs-production centers and in general the system of relations between Fabrateria Nova and the neighboring and contemporary centers of the territory are expected from the common ceramics. Quantitatively preponderant in every context, only recently they have been the subject of a classification work, with in a system based on a traditional formal / typological approach.

The purpose of this paper is to present the classification, underlining the metodological difficulties encountered in drafting the typology: the absence of parameters for comparison - there are no in fact, for the area and for these ceramic classes, extensive classifications of reference; the uncertainty of the nomenclature - for different chronological ranges and the various ceramic classes, different terms are used to indicate the same case; the difficulty in identifying the correct hierarchy and in deciding whether to favor the formal / typological or functional criterion.

In a scenario that has recently seen a flourishing of similar research in the sub-regional context, the prospect is to be able to compare our data with those of urban contexts and of similar chronology.

The aim is also to re-open a discussion on these issues and to understand how the automatic recognition softwares of ceramic forms, based on AI, can be effective with common wares and how social network analysis can help the typological classification, which is decisive not only in the chronological characterization of an excavation, but also and above all for historical reconstruction.

### 2 ROMAN COARSE WARE FROM AN ARCHEOLOGICAL AREA NEAR MILVIO BRIDGE. VIA CAPOPRATI (ROME)

**Abstract author(s):** Ciarrocchi, Barbara (MiC)

**Abstract format:** Oral

In October 2017, preventive archeology interventions of the Soprintendenza Speciale di Roma were carried out in a suburban area near the Milvio Bridge, in via Capoprati. The excavation continued in 2018 with an activity that lasted several months bringing to light an important archaeological area, where an important 5th century AD funerary complex was unearthed which is imposed on commercial structures of the I-III century AD. C. An abundant quantity of roman coarse ware was recovered, in particular from the 5th-6th century AD. C. which allowed the framing of the burial evidence of the late imperial age showing a chronological and typological sequence with types that circulated in the western and eastern Mediterranean in those centuries.

This archaeological area it's very important because is in the suburban area of the City not very known about roman coarse wares.

### 3 THE USE OF DEEP LEARNING ALGORITHMS FOR THE STUDY OF ROMAN POTTERY FABRICS (FABRICAI)

**Abstract author(s):** Willems, Sonja (Royal museums of Art and History, Brussels/Université Catholique de Louvain) - Chaidron, Cyrille (Université de Picardie Jules Verne; Artéka; Arkéocéra) - Borgers, Barbara (Universität Wien)

**Abstract format:** Oral

Building upon extensive Roman pottery reference collections, French and Belgium researchers have classified correlations for locally produced ceramics distributed in the North of Gaul. This methodic approach to fabric variants by macroscopical comparison has resulted in the defining of production zones, enabling analysis of transport routes and economic exchanges, or wider reflections on e.g. Romanization processes, consumption site status, cultural identities...

Since 2014, a multi-analytical approach to the study of production waste permits to answer questions on technology and knowledge transfer. Nevertheless, much more work is needed before all regional production sites are compositionally characterized. Furthermore, the excavation of consumption sites brings about quantities of fragments difficult

to identify at the macroscopic level, certainly when reference material lacks. Moreover, the identification process remains cumbersome, demanding extensive experience.

In 2021, Arteka and the design department Arkeocera developed an analytical programme, using image recognition with a Deep Learning algorithm, which permits to tackle precisely these identification issues. This approach, undoubtedly a major step forward, joins other recent projects where AI is applied to archaeological data (e.g. Archaïde). The outset is the implementation of a database of scientifically identified fabrics, which will then lead to the development of an application providing time gain during post-excavation, the education of specialists and extensive distribution mapping. The first results, using local pottery, confirms the utility of artificial intelligence, permitting the attribution by probability to known groups, or the creation of new fabric groups and their attribution to reference zones. In the future, the principle can also be extended to other data, such as decoration forms on archaeological objects, permitting easier identification and conservation for museum purposes.

#### **4 COARSE AND ROUGH AND IRRITATING: COARSE WARE OF DOLENJSKA**

**Abstract author(s):** Stemberger Flegar, Kaja (PJP d.o.o.) - Kovačič, Ana (Independent researcher)

**Abstract format:** Oral

In 2019, Roman pottery waste including various table ware and coarse ware items was unearthed at Drnovo (Slovenia). In Roman times, the settlement was known as Municipium Flavium Latobicorum Neviodunum. Beginning already in the 15th century, excavations have been conducted at Neviodunum. During various pre-modern excavations, the discovery of several cemeteries, an aqueduct, a couple of metalworking shops and at least five pottery kilns was documented, but most artefacts were published without a context. It is therefore impossible to know for example which finds come from the settlement and which from the cemeteries, and also what type of pottery was produced at the site, with exceptions such as bricks and water pipes that are known to have been exported from Neviodunum as far as modern Belgrade. The latter imply large a pottery production, of which we knew next to nothing until a 2019 find shed some light on the issue.

No comprehensive study of the coarse ware from Dolenjska has yet been published. This paper aims to present the preliminary results of the first comparative Dolenjska coarse ware analysis focussing on spatial distribution across both settlements and cemeteries (including newly excavated nearby sites at Trebnje, Medvedjek, Draga, and Ribnica), typo-chronology, and fabric analysis.

#### **5 POTTERY TRADITION IN THE NORTHWEST OF THE IBERIAN PENINSULA. TIMES OF CHANGE DURING THE ROMAN EMPIRE**

**Abstract author(s):** Hernández-Tórtoles, Alicia - Romero-Perona, Damian (Spanish National Research Council)

**Abstract format:** Oral

Pottery material culture is inherent to practically all human groups from the end of Prehistory to the present day. It has to be studied within its spatial-temporal frame, and it must be understood in the context of the society that produced it. We present a new state of the issues regarding pottery manufactures and their archaeological contexts in the Northwest area Iberian Peninsula (between the end of the 1st century B.C. and early 1st century AD). It includes the north of Portugal, the provinces of Galicia, the north of León and the western part of Asturias. The conquest and domination of this region during the Augustus' government were characterized, among other aspects, by an intense gold mining exploitation in the Early Roman Empire period.

Ancient gold mining has dramatically shaped the landscape. The "fossilized" remains have left an extremely rich geo-historical heritage. These are the so-called "mining landscapes", due to the variety of mining techniques, infrastructures and the diverse ancient settlement documented at these mining areas. The archaeological record shows up tributary peasant communities under the rule of Rome, as well as evidences of hierarchical relationships.

Some pottery productions maintain technical and typological local traditions, dating back to the Early Iron Age. However, the quantity and the variety ceramic artifacts increases with the emergence of new techniques from abroad and the arrival of objects produced out of these regions (Roman pottery, Mediterranean imports, and other Hispanic productions). Our aim is to assess the impact of the Roman imperial economy on local economies in order to see how and how much it transformed production, distribution and consumption of pottery in several archaeological sites in which the research group carries out research.

(\*This study belongs to LOKI Project, within the "Social Structure and Territory. Landscape Archaeology" Group (from Spanish National Research Council).

## 6 COARSE WARE'S STRATIGRAFICAL EVOLUTION IN THE WESTERN ATLANTIC SHORE OF HISPANIA (V-VI C. AD): THE CASE OF ALMOÍNHAS (LOURES, LISBON)

**Abstract author(s):** Quaresma, José Carlos - Lopes, Marfim (Universidade Nova de Lisboa)

**Abstract format:** Oral

This work follows the most recent studies and developments regarding the stratigraphy of the site of Almoíñas, that has over forty contexts between the V and VI centuries AD with a good quantity of material evidence and statistical quality.

This study is of importance for the study of the coarse ware in the western Atlantic shore of Hispania, especially in the territory associated with Olisipo, given that until recently the available stratigraphical data on coarse ware for the region was very scarce. Thus far, it aims the broadening of the knowledge related to these ceramic productions in a chronological period that is usually of complex analysis.

The contexts here presented are associated with the last phases of occupation of the site, namely the last habitational evidences, with marks of squatting, and the phase of abandonment of the two main buildings that have certainly collapsed in the first half of the VI century AD.

## A. INVESTIGATING ROMAN COARSE WARES IN NORTHERN ITALY: METHODS AND FIRST RESULTS FROM THE CASE STUDY OF AQUILEIA

**Abstract author(s):** Riccato, Anna (Università degli Studi di Padova)

**Abstract format:** Poster

Recent research carried out by the University of Padua in the Roman town of Aquileia (Northern Italy) brought to light a few thousand coarse ware shards, dating back to the period comprised between the 2nd c. BC and the 6th c. AD. The vessels displayed different characteristics in terms of morphology and technical features, which were hypothetically reconducted to both the chronological evolution of the ceramic technology and the presence of imported products. To address these research topics, a multidisciplinary approach was adopted. Some well-established methods were applied (i.e. typology, distributional analysis, thin section analysis), in association with others less frequently used in the study of Roman coarse ware (digital image analysis, in-depth study of the forming techniques). The systematic application of these methods made it possible to recognize the main morphological and technological features of the pottery of local/regional production and to trace the evolutionary trajectory of the manufactures regarding raw materials supply, fabrics "recipes", skills and economic resources involved in the productive process, and possible location of the workshops. Moreover, the presence of vases imported from other regions of Northern Italy was confirmed, thus allowing the reconstruction of the exchange network which connected Aquileia with the neighbouring territories. In conclusion, the study has highlighted the role of the coarse ware as a preeminent source of information to reconstruct local economies and productive systems, as well as short- and medium-distance market dynamics.

---

## 347 NATURAL RESOURCES OF HIGHLANDS AND HINTERLANDS IN THE MEDITERRANEAN

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** de Neef, Wieke (Ghent University) - Attema, Peter - Maurer, Arnoud (University of Groningen)

**Format:** Regular session

This session explores the environmental and economic entanglement between lowland and highland zones in Mediterranean landscapes. Although highland zones remain generally underrepresented in archaeological landscape research, their economic importance to past societies has long been acknowledged on account of the availability of a wide range of resources. These include primary materials such as metals, stone, salt, timber, game etc., but also pastures. Transit routes through upland areas are crucial to their availability and thus a major factor in the economic entanglement between lowlands and highlands.

Information on the long-term human impact related to the exploitation of these resources is, apart from archaeological studies, increasingly becoming available through environmental research. For instance, palynological studies indicate that Neolithic communities in various parts of the Italian peninsula systematically deforested woodland areas to expand their pastures.

Our aim is to integrate the ephemeral archaeology of resource extraction and human impact on highland areas into models of settled lowland areas, and to explore the means and infrastructure through which diverse landscape zones were connected in past land use. Our session covers three broad themes:

- The archaeology of natural resources in highland areas: methodological issues including detection and dating of past extraction practices;
- Environmental impact of highland exploitation: approaches to reconstruct the human footprint on fragile upland zones;

- Infrastructure and connections in highland economies: route networks and practical aspects of transport.

We invite contributions with case studies from around the Mediterranean and from all archaeological periods, including the recent ethnographic past.

## ABSTRACTS

### 1 INTRODUCTION: REFLECTIONS ON SOCIO-ECONOMIC, ENVIRONMENTAL, AND SPATIAL LINKS BETWEEN LOWLANDS AND HIGHLANDS

**Abstract author(s):** de Neef, Wieke (Ghent University) - Attema, Peter - Maurer, Arnoud (University of Groningen)

**Abstract format:** Oral

In the introduction to this session the organizers will discuss the importance of the study of highland exploitation and human impact on upland zones in reconstructions of past socio-economic systems in the Mediterranean. In recent years the archaeology of mountain areas has taken up speed, with exciting new research offering new perspectives on the long-term entanglement between lowlands and highlands. This includes not only new primary archaeological data, but also environmental studies highlighting the impact of resource extraction strategies on sensitive upland ecologies, and spatial approaches to the connections between various landscape zones.

The study of vertical landscapes poses several methodological challenges related to the ephemeral character and low visibility of archaeological traces, the dynamic nature of landscape processes, and the varied resolutions of archaeological, environmental, historical, and ethnographic sources. In this introduction we draw attention to established practices as well as recent theoretical and methodological advances in the study of upland areas and their integration into long-term regional occupation models. Our expectation is that the cases presented in this session will help explore a broad range of configurations in settlement and land use systems between lowlands and mountains.

### 2 THE HISTORICAL RELEVANCE OF MARGINAL AREAS IN THE AEGEAN: A CASE-STUDY OF THE DIKTE MTS, CRETE

**Abstract author(s):** Kalantzopoulou, Tina (NKUA - National and Kapodistrian University of Athens)

**Abstract format:** Oral

The aim of this paper is to explore the ways in which Bronze Age polities on the island of Crete organised their countryside and its ensuing production. Mountainous areas as peripheral zones are studied regarding the extent of sustenance they provided the palatial system necessary for its survival or, on the other hand, regarding the possibilities they offered for alternative modes of political and economic organization. Essentially, we examine the level of integration of remote and seemingly marginal areas into the palatial political and economic system and territory from the bottom-up. The study wishes to explore the clusters of labour and production in peripheral zones and to approach the political and economic organisation of the Bronze Age starting with areas that were as remote as possible from the centralised manifestations of power concentrated in the monumental and palatial complexes. Our goal is to offer a fresh perspective to the debate concerning the functional character of Minoan polities, one that contrasts the usual top-down interpretations. As a case-study we have elected two separate but comparable mountain regions on the massifs of east Crete. The research focuses on architectural remains belonging to both habitation and exploitation infrastructure (terraces, enclosures, pens, wells etc) and on movable finds in their immediate surroundings.

### 3 HIGH ALTITUDE EXPLOITATION SYSTEMS OVER TIME: THE CASE OF THE WESTERN VENETIAN PREALPS

**Abstract author(s):** Migliavacca, Mara (Dipartimento di Culture e Civiltà università di Verona)

**Abstract format:** Oral

Surface researches, followed by excavations, have been carried out for years in the high altitude areas (1200-1600 m asl) of the western Venetian Pre-Alps, specifically in the Lessini and Piccole Dolomiti zones. Several methods have been employed: field-walking survey, analysis of aerial photos, ethnographic and archival research, GIS-based landscape analysis and predictive modelling, and LiDAR data for feature detection in wooded areas. These researches have brought to light the traces left by the human frequentation, necessarily seasonal but attested starting from the farthest phases of the prehistory, to reach the protohistory, the Roman age, the Middle Ages up to the great wars of the last century. We are thus discovering systems of exploitation of the resources of the high altitudes that are diversified from period to period, but always necessarily interrelated to the economy and systems present at lower altitudes. In this contribution I shall illustrate the case of the pastures of Malga Campodavanti (Recoaro Terme, Vicenza), where a medieval-modern exploitation system and a protohistoric one have been recognized. In both ages pastoralism and exchange/working of metals seem to be connected and refer to the wider economic system of the region.

#### 4 SALT, SHEPHERDS, SMUGGLERS IN N-E ITALY FROM THE PRESENT BACKWARDS TO PREHISTORY

**Abstract author(s):** Montagnari Kokelj, Manuela (University of Trieste) - Boscarol, Chiara (Divulgando srl, Trieste)

**Abstract format:** Oral

The idea that salt might have played an important role already in Late Prehistory in settlement strategies of Karst and Istria, regions bordering the N-E Adriatic, emerged on the basis of direct and indirect indicators. As to direct indicators: saline had been active in the area of Trieste and its surroundings at least from the Middle Ages till 1830, in Istria even later, but salt production/trade were attested already in Roman times - one of the tradesmen operating until Dacia (ca. N-E Balkans and Carpathian basin) was registered as conductor pasculi, salinarius. Abundant remains of briquetage found at Elleri, a hillfort close to the coast, would indicate the production of salt by using fire even earlier, in the Bronze Age. Before hillforts were built, Karst caves were used by human groups, in some cases by shepherds with flocks of sheep and goats, as demonstrated by sedimentological and soil-micromorphological analyses. The connection between pastoralism/transhumance and salt is an accepted fact, and the high number of exotic materials – pottery, flaked/polished stones first identified on typological grounds, then confirmed by archaeometric analyses – would strengthen it.

If the N-E Adriatic coastal areas were attractive already in Prehistory for the possibility of collecting sea salt produced by natural elements, the study of geomorphological features of hilly and mountain areas more or less distant and potentially complementary for pastoral movements, of the origin of raw materials and artefacts, of the distribution of contemporary sites in the territory so delimited could help to reconstruct the routes from the coast to the hinterland. Studies of paths used in different historical periods – including the present, by using an ethnographic approach – by transhumant shepherds, but also by salt smugglers or migrants, can help too.

All the preceding topics will be discussed at the EAA 2022 meeting.

#### 5 COMMUNICATION AND RESOURCE USE OF SOUTHERN VELEBIT COMMUNITIES

**Abstract author(s):** Serventi, Zrinka (University of Zadar, Department of History) - Vuković, Morana (Archaeological Museum Zadar)

**Abstract format:** Oral

Velebit, a large mountain range spanning parallel to the Eastern Adriatic coast, has always been a place of communication and separation, being in most instances insurmountable with just a few mountain passes of great strategic importance. Among its territories, Southern Velebit is more hospitable and as such it played an important role in communication between lowland and highland zones (e.g. territories of Bukovica and Ravni kotari with Lika and deeper hinterland), particularly in Iron Age but in later periods as well. This territory throughout centuries has been used by mobile cattle-breeders that laid down the first trails over the mountain and used important trade hubs and settlements established on higher zones of Velebit. These communities, however, had to acquire many resources from far away areas, creating a culture with distinct identity, opened to foreign influences. Unfortunately, this territory has been poorly researched and only few studies have been conducted on the settlements of this area. Among such sites is the Iron Age hill-fort Kneževići (situated near one of the mountain passes and the still inhabited hamlet), which has been recently excavated by the Archaeological Museum Zadar and it has given good insights into the life of people in this territory, their trade, use of materials and resources as well as burial rituals.

Therefore, in this paper we shall present the Iron Age communities living in the area of Southern Velebit, with primary focus on the hill-fort Kneževići. Apart from the recent finds, we intend to analyse the most important routes leading to said hill-fort as well as other nearby settlements and discuss possible goods that were both produced in the area and acquired from other territories. In the end we shall also consider the continuities of transport, trade and production in Southern Velebit from Iron Age to present days.

#### 6 NORTHERN PARALLELS: WAS NORWEGIAN OUTLAND RESOURCE EXPLOITATION JUST A SERIES OF SIDE HUSTLES?

**Abstract author(s):** Hill, David (NIKU - Norwegian Institute for Cultural Heritage Research)

**Abstract format:** Oral

The Norwegian landscape sets absolute limits for rural settlement, 95% of Norway is non-cultivable. Annual seasonality sets further harsh limits for agrarian / pastoral strategies – May to September is the growing season. When winter comes producers have to be ready to meet it. The outland economy has therefore played a strong and necessary economic role in times of expansion and crisis. The strategies that Nordic society developed to build a sustainable economy were varied, complex and closely linked to a duality of infield and outland exploitation. The range of outland activities practiced in Norway was strikingly varied. Was the outland economy just a series of 'side hustles' to make ends meet? Or do the economic dividends within production variability provide a perfect toolbox for creating a robust and economically sustainable economy? Was outland surplus production less easy to tax and control by elites? Does this result in attractive flexibility for primary producers? A case study from the north.



7

## NATURAL RESOURCES OF HIGHLAND IN SICILY: FROM THE ARCHAEOLOGICAL SURFACE SURVEY TO A CHEMICAL CHARACTERIZATION OF ORGANIC RESIDUES

**Abstract author(s):** Forgia, Vincenza (Dipartimento Culture e Società, Università di Palermo) - Vallejo, Asier (Department of Analytical Chemistry, University of the Basque Country - UPV/EHU, Faculty of Pharmacy; Bioaraba, Metabólomica Biosanitaria, Alimentaria y Medioambiental) - Ollé, Andreu (Institut Català de Paleoeologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Vergès, Josep Maria (Institut Català de Paleoeologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art)

**Abstract format:** Oral

Archaeological landscape research on the uplands of Sicily has shown the economic importance of highlands and the central role they played within raw material exploitation, exchange and transit networks.

Our research is focused on the Madonie mountain range, on the northern part of the island. We started with the surface survey of sample areas, then with the excavation of a key-site and test-pitting of specific places. Our results inform about a "persistent place-making" of a mountain territory since ~ 10 ka BP. The early peopling of the highlands has to be ascribed to the interest for wild species seasonally migrating to the uplands and coincide with an open landscape, while the repeated phases of intentional burning of vegetation cover, during the several following millennia, correspond to the "domestication" of the place by pastoral groups. At the Vallone Inferno rock-shelter (800 m a.s.l.), these groups based a persistent pastoral refuge seasonally occupied from the middle Neolithic (mid 6th millennium BC) onward. At 1400 m a.s.l., at Fonte Castellaro we opened a test pit (1x2 meters), inside a recently abandoned pastoral pen, which yielded archaeological traces spanning from the Upper Paleolithic to the Middle Ages. Here, the use of the same place for millennia can be explained by the presence of a spring water source (the "Fonte" of the place name) and the abundant chert nodules embedded in the local geological formation. To prove the presence of herds, so the use of highlands pasture along the millennia, we are testing organic residues in sediments. These organic residues are fecal biomarkers with which the biogenic origin of the sediment can be determine and hormones, such as progesterone, with which herding practices can be determine as the separation of the pregnant females or the recent lamb ewes and their lambs from the herd.

8

## TRACING NEOLITHIC AND MEDIEVAL LIVESTOCK FARMING IN THE EASTERN PYRENEES: THE COMBINED ARCHAEOLOGICAL AND PALAEOENVIRONMENTAL STUDY OF MOLLERES II (PUIGPEDRÓS-MASSIF)

**Abstract author(s):** Carbonell, Arnau - Colominas, Lúdia - Pescini, Valentina (Catalan Institute of Classical Archaeology. Landscape Archaeology Research Group - ICAC-GIAP) - Mayoral, Alfredo (Catalan Institute of Classical Archaeology. Landscape Archaeology Research Group - ICAC-GIAP; GEOLAB, UMR 6042 UCA-CNRS) - Egúez, Natalia (Archaeological Micromorphology and Biomarkers - AMBI, Research Lab, Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna) - Gallego-Valle, Abel - Martínez, Jesús - Palef, Josep Maria (Catalan Institute of Classical Archaeology. Landscape Archaeology Research Group - ICAC-GIAP)

**Abstract format:** Oral

The reconstruction of livestock practices in high mountain areas is of crucial importance for understanding the integration of these spaces into the economy of ancient societies. However, it is often challenging to characterize this activity due to the poor preservation of archaeological remains in these extreme and sensitive environments. Over the last years, interdisciplinary landscape archaeology combining archaeological and palaeoenvironmental analyses allowed documenting both the long-term occupation and landscape impact of ancient pastoral societies in the eastern Pyrenees. Here, we present the study case of Mollerés II, a site located at 2.424m a.s.l. We have applied an archaeological and palaeoenvironmental approach, focused on test pit digging of archaeological structures and on the analysis of wood charcoal and other botanical microremains, micromorphological analysis of soils, and lipid biomarkers and their stable isotope signatures (carbon and deuterium). This combined approach has allowed us to document the presence of several enclosures of about 20m<sup>2</sup> with a high-intensity mountain livestock farming activity. Radiocarbon dating has shown that these enclosures were built during the Neolithic (the end of the 4th millennium–the start of the 3rd millennium BC), and also reused during Medieval times (13th-14th c. AD). This early pastoral activity is exceptional and forces us to rethink the use of these high mountain spaces and their complementarity with the lowlands.

9

## THE CONNECTED HIGHLANDS: MULTIDISCIPLINARY INVESTIGATIONS OF RESOURCE EXPLOITATION IN THE POLLINO RANGE (SOUTHERN ITALY)

**Abstract author(s):** de Neef, Wieke (Ghent University) - Attema, Peter - Maurer, Arnoud (University of Groningen)

**Abstract format:** Oral

In this paper we discuss the results and perspectives of three fieldwork campaigns by the Pollino Archaeological Landscape Project (PALP), a collaboration between the Universities of Groningen and Ghent and the Gruppo Spe-

leologico 'Sparviere'. The PALP seeks to understand highland exploitation of the Pollino mountains (southern Italy) within the context of changing upland and lowland socio-economic and cultural relationships, from prehistory up to the present. We apply a multidisciplinary approach combining landscape archaeological, environmental, historical and ethnographical sources to understand past land use practices and their ecological impact.

We highlight the various natural resources available in the Pollino range and the extent to which they were relevant in various phases of past occupation: wildlife; timber; flint, chert and quartzites; pastures; water and snow; edible plants. The results of our studies so far have brought to light previously unknown traces of human occupation which we can in various extents link to these resources, ranging from a Palaeolithic hunting camp at an important mountain pass to 20th century charcoal burning platforms. We connect these newly discovered sites to the archaeology of the much more intensively studied coastal lowlands, drawing attention to the deep past of path networks, location preferences, and the availability of resources such as salt for upland pastoral systems. The diachronic perspective of our work is reinforced by botanical and pedological studies which provide a long-term environmental framework of this dynamic mountain landscape, and the way it was affected by human impact.

10

## **TASKSCAPING THE CHALCOLITHIC LANDSCAPE OF SOUTH-EASTERN IBERIAN: MOBILITY AND RESOURCE EXTRACTION IN THE GUADIX-BAZA-HUÉSCAR HINTERLANDS (GRANADA)**

**Abstract author(s):** Pinillos de la Granja, Paula - Barruezo Vaquero, Pablo (Universidad de Granada)

**Abstract format:** Oral

Since its coinage in 1991 by T. Ingold, the concept of 'taskscape' has been widely used in archaeological narratives. The concept is useful for understanding the landscape from the point of view of its cultural transformations due to socio-economic patterns (e.g., working, mobility, etc.). Moreover, the concept also adds new layers of epistemological complexification from the point of view of humans/non-humans interrelationships. This paper addresses this concept applied to the Guadix-Baza-Hués-car hinterlands (Granada, Spain) to understand the mobility patterns associated with extracting and allocating raw materials. Furthermore, such an analysis helps better analyse social explanations associated with pottery production during the Chalcolithic (III Millennium BC).

To deploy this study, the paper aims at analysing the connectivity between two Chalcolithic sites: Cerro de la Virgen and El Malagón. Recent archaeometrical analyses have shown that the pottery production of Cerro de la Virgen contains a quantity of schist—which is somewhat surprising, given that the immediate environs of the settlement lack this geological component (as per the geological map IGME 951). For its part, the pottery production of El Malagón presents an important quantity of schist. Contrary to Cerro de la Virgen, though, the environs of El Malagón do have natural metamorphic rock -schist- resources (as per IGME 973). Considering this context, we argue the existence of a connection between both sites, at least regarding pottery production and landscape exploitation. Yet, no previous study has considered such a hypothesis. This paper thus follows this argument and tests it through multivariate analyses based on Least Cost Path (LCP). The results from these analyses are then integrated within the concept of taskscape, which serves for understanding the landscape from the point of view of social interactions between communities in the hinterlands of this Mediterranean area.

349

## **DARK HORSE – ARCHAEOLOGIES OF HORSES AND HORSE CULTURE IN THE MIDDLE AGES**

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Benkert, Helene (University of Exeter) - Orlando, Ludovic (Centre for Anthropobiology & Genomics of Toulouse - CAGT; CNRS UMR 5288, Université Paul Sabatier) - Creighton, Oliver - Outram, Alan (University of Exeter) - Liddiard, Robert (University of East Anglia)

**Format:** Regular session

The warhorse was the most iconic animal of the Middle Ages. As distinctive symbols of status, horses were central to the aristocratic image and closely bound up with concepts of knighthood and chivalry across a wide geographic area. As weapons of war, bred for strength and stamina, warhorses contributed crucially to the rise and fall of empires. But while the development and military use of the warhorse has been intensively studied by historians, the archaeological evidence is too often dispersed, overlooked or undervalued. However, to fully understand the cultural significance and functional role of the medieval warhorse, a systematic study of the full range of archaeological evidence for warhorses (and horses more generally) from medieval sites across Europe and beyond is necessary. More importantly, it is crucial to integrate the various disciplines and lines of evidence to comprehend the multifaceted socio-economic value of medieval (war)horses.

Similarly, this session aims to bring together researchers from a variety of disciplines to explore this important species, its material culture and impact on human history. We will present findings from the UK Arts and Humanities Research Council-funded Warhorse Project as well as the European Research Council-funded Pegasus Project, looking at zooarchaeological and genetic evidence as well as equestrian equipment and breeding landscapes. While our focus is on the European experience, we would like to invite papers from around the world to complement our re-

search. We especially welcome contributions that highlight the impact of horses as active agents. The horse in the medieval (or equivalent) period and its role in military and society stands at the centre of this session, without disciplinary restrictions.

## ABSTRACTS

### 1 INTRODUCTION. THE MEDIEVAL WARHORSE PROJECT: INTERDISCIPLINARITY AND INTEGRATION

**Abstract author(s):** Creighton, Oliver (University of Exeter)

**Abstract format:** Oral

This opening paper for the session introduces the current UK-based research project, Warhorse: The Archaeology of a Medieval Revolution? (<https://medievalwarhorse.exeter.ac.uk/>) as a case study of the potential of genuinely interdisciplinary, integrated research. The project, which is based at the Universities of Exeter and East Anglia and is funded by the Arts and Humanities Research Council, UK, is engaging with material evidence for horses in medieval England at a wide variety of scales — from zooarchaeological samples for genetic and isotopic analysis and individual artefacts through to excavated assemblages and landscape-wide datasets — dating between the late Saxon and Tudor period (c. AD 800–1600), all contextualised by new historical research. This paper stresses how these different lines of evidence, from cutting-edge archaeological science through to re-analysis of primary documentary sources, interact with and complement one another to create the potential to create new understandings about the medieval horse and its social context.

### 2 'TO WORK FOR THE KING': EQUINE NETWORKS IN 14TH-CENTURY ENGLAND

**Abstract author(s):** Liddiard, Robert (University of East Anglia)

**Abstract format:** Oral

This paper examines the physical and administrative frameworks in which royal warhorses were bred, trained and kept during the first half of the 14th century. Contemporary documentary records associated with the management of royal equines are exceptionally rich and permit the identification of a series of overlapping 'networks' within which high-status animals lived and worked. One such network comprised studs – chiefly at royal castles and palaces – in which horses were born and kept until they reached the threshold of adulthood. Those destined for military use were subsequently drawn off into a larger network of the king's 'great horses', characterised by its own pattern of stabling and itineration, where they were trained for war. It was this 'pool' of elite beasts that provided the households of successive English monarchs with significant numbers of warhorses during their military campaigns.

The detail of the evidence is such that it permits the locations of studs, stabling, supply chains and physical infrastructure to be mapped with great accuracy as well quantifying the number of horses involved and, in some cases, providing evidence for the life course of individual animals. This paper therefore aims to give a spatial dimension to one aspect of the military organisation that underpinned England's war effort in the Hundred Years War, a conflict in which its kings achieved hitherto unparalleled military success. In so doing it provides an historical and geographical context alongside which the archaeological evidence for equestrianism can be evaluated.

### 3 HIGH HORSE: THE IDEAL CONFORMATION FOR WARHORSES IN THE FRENCH TRANSLATIONS OF JORDANUS RUFUS'S DE MEDICINA EQUORUM

**Abstract author(s):** Vo Van Qui, Camille (University of Exeter, Centre for Medieval Studies)

**Abstract format:** Oral

The conformation of medieval warhorses is still the subject of intense debate among historians and archaeologists, with new evidence on their size and morphology regularly coming to light. Information about the physical appearance of medieval warhorses can be found in textual sources, for instance in one of the chapters of Jordanus Rufus's veterinary treatise, the *De medicina equorum* (c. 1250). The way the text is reinterpreted in its vernacular French translations (dating from the 13th to the 16th centuries) can give interesting information on the ideal morphology for a warhorse, and to what extent the criteria were of an aesthetic or practical nature. Some physical aspects can also be linked to specific horse types and complement zooarchaeological findings, either confirming them or contrasting with them. This paper will explore how the ideal (war)horse is described in those texts and how this can be linked back to specific horse types, or potentially breeds. It will also analyse whether this theoretical morphology would have had any effects on the horses' performance and explore the reasons behind the favouring of certain physical traits over others.

## 4 SIZE AND CONFORMATION OF MEDIEVAL HORSES OF NORTHWESTERN EUROPE BASED ON OSTEOARCHAEOLOGICAL EVIDENCE

**Abstract author(s):** Niskanen, Markku (University of Oulu)

**Abstract format:** Oral

As reconstructed from published osteometric dimensions, medieval Northwest European horses were generally similar in size and conformation with large Gotland Russ ponies and small Icelandic horses. Warhorses likely averaged somewhat larger because they had to be strong enough to carry heavy rider weights with adequate agility in mounted combat. For example, early medieval Merovingian horses from Childeric's tomb in Tournai, Belgium, were similar in size and robusticity with current Icelandic horses. Although average size of horses remained stable until Modern Period, later medieval warhorses likely included larger horses because heavier armor required the development of the destrier (the 'great horse'). Only about five percent of Medieval warhorses were destriers and their identification is difficult in medieval horse bone assemblages. Some archaeological horses are potentially destriers due to their large size, but size was hardly the only criteria. None of these potential destriers were even remotely similar with modern heavy draft horses. Instead, their size and build ranged between large Norwegian Fjord horses and modern light riding horses of medium size. Medieval artistic representations indicate that destriers were generally similar with small and sturdy warmblood riding horses. Biomechanical reconstructions suggest that destriers should have weighed at least 400 kg to be able to carry heavy rider weights (both the rider and the horse in full armor) with adequate agility in mounted combat.

## 5 ALL HORSES GREAT AND SMALL – HORSE STATURE AND MORPHOLOGY IN MEDIEVAL EUROPE

**Abstract author(s):** Benkert, Helene (University of Exeter)

**Abstract format:** Oral

Despite its importance for the medieval world, archaeological research has so far generally neglected the horse. Though usually only found in relatively small numbers, horse remains are present on the vast majority of medieval sites in Europe and present a valuable tool to study past human-animal relationships as well as many other aspects of human society, such as warfare, status and identity.

This paper presents the findings from my PhD project. Using traditional zooarchaeological techniques, it examines the available biometrical data of horse remains from European sites, covering the time between the 8th and 16th centuries, and explores morphometric changes through time and space. A special focus is on the question whether it is possible to detect different morphological types, and warhorses in particular, in the faunal record. Drawing on other lines of evidence, studied as part of the Warhorse Project, it discusses what horses looked like in the Middle Ages and how they were likely used. Such insights can be used to better understand the impact of horses on society in the medieval period and beyond.

## 6 WOUNDED WARHORSES: USE, PATHOLOGY, AND INJURY IN MEDIEVAL HORSES FROM ENGLAND

**Abstract author(s):** Kanne, Katherine (University of Exeter; Northwestern University)

**Abstract format:** Oral

Medieval horses worked hard in a variety of roles, from 'Great Horse' to cart horse, and often have pathologies and injuries that testify to how they were used and treated. The study of use, pathology, and injury in archaeological horses has had a somewhat contentious history which has been hampered by the lack of large comparative datasets. This paper presents the results of pathologies and injuries recorded from the largest sample of horses compiled from the late Saxon to Tudor period (c. AD 800–1600) in England. This data is used to detail types and rates of injury by body part, site, and period, and subsequently to infer use (ridden, draught, or mixed), and to identify individuals as likely warhorses. With this interdisciplinary study, the injuries can be contextualized by genetics and metrics (traditional and geometric morphometrics), stable isotope analyses, as well as medieval textual and iconographic evidence for veterinary care. The results then are compared to other known instances of use, injury, and care of horses in the archaeological record, providing examples how this robust dataset that can be utilized in additional studies.

## 7 HORSES IN THE BATTLE FOR EVERYDAY LIFE.

**Abstract author(s):** Klontza-Jaklova, Vera - Tengeriová, Romilda - Smíšek, Michal (Department of Archaeology and Museology, Faculty of Arts, Masaryk University) - Sedláčková, Lenka - Kolařík, Václav - Zúbek, Antonín (Archaeia Brno)

**Abstract format:** Oral

The horse was the essential means of transport and production for the medieval communities. Their value and price were always high. Although the horse had to do hard work, whether in the army, transport, agriculture, or as a moving and driving force, it was not possible to treat it too insensitively so as not to degrade its work potential rapidly. Therefore, we welcomed the opportunity to explore a set of several dozen horses and cattle buried south of medieval Brno

(CR). The skeletons were discovered in suburban villages south of Brno during rescue excavation, supplying the urban agglomeration with vegetables.

All studied individuals were young (exceptionally more than ten years). All skeletons bore significant signs of human treatment (bit wear, deformity of the occipital bone, punctured thoracic vertebrae, hoof bones deformed by careless horseshoeing); signs of severe physical exertion (outgrowths on the long bones, vertebrae, in spinal canal, and vertebral adhesions). The pathology of the examined individuals was also very pronounced: deformed orbits and neoplasms on the bones indicate severe inflammatory diseases. Inverted rib fractures were noted in one individual.

The size of horses, which corresponds to the European average (140 - 150 cm), was also examined. The massiveness of the bones indicates a wide variety of body types. Strontium analyzes were performed on the skeletons and compared with cattle buried in the same region. The dating of all skeletons was confirmed by the radiocarbon method. All individuals were buried in the habited area, in the houses' backyards. Neither shows signs of consumption. Horses were apparently used for both riding and work.

## 8 HORSE IN EVERYDAY LIFE, MAGIC AND RELIGION OF THE SLAVS OF THE POLISH LANDS (8TH-13TH CENTURIES) - AN ARCHAEOZOOLOGICAL APPROACH

**Abstract author(s):** Makowiecki, Daniel - Chudziak, Wojciech - Szczepanik, Paweł (Institute of Archaeology, Nicolaus Copernicus University in Torun) - Pasicka, Edyta (Department of Biostructure and Animal Physiology, Wrocław University of Environmental and Life Sciences) - Janeczka, Maciej (Department of Biostructure and Animal Physiology, Wrocław University of Environmental and Life Sciences) - Wiejacka, Martyna (Institute of Archaeology, Nicolaus Copernicus University in Torun)

**Abstract format:** Oral

The importance of the horse in everyday life of Slavs and their mythological and religious systems in the territory of Poland was quite often a subject of archaeological considerations. They were based mainly on very limited written records and archaeozoological data. One must also admit that the archaeozoological data has never been the subject of a deeper analysis, so those used by archaeologists were highly fragmented. In this paper, thanks to the project\* aimed at collecting scattered archaeozoological information, the issues listed in the title of the paper will be discussed. Thanks to archaeozoological analyzes and anthropological reflection, the aims of the project went beyond the problems familiar in archaeology, indicating manifestations of utilitarian or non-utilitarian activities of Slavs interpreted on the basis of horse bones found among faunal collections. By analyzing archaeological contexts of horse remains, and such archaeozoological data as anatomical composition, sex, age, taphonomy, bone measurements and pathological changes, a number of issues were addressed, such as horse consumption, military and prestige value of horses, their biological condition and diversity of forms. Thanks to the analysis of skulls and skeletons, the existing issues of the importance of the horse in magic and religion have been reinterpreted. In this case, an important topic was the inclusion of objects with an image of a horse, as well as miniature figurines of these animals found more and more often during excavations. Taphonomic studies allowed to take up not only the issue of horse meat consumption by the Slavs but also a different genesis of depositing horses' heads and bodies in sacral sites and living spaces.

\*) The research is a part of the project "Horse in Poland in the Early Piasts and Internal Fragmentation" (2017/25/B/H3/01248) financed by the National Science Centre, Poland.

## 9 MULTIPROXY ANALYSIS OF EARLY MEDIEVAL PRUSSIAN HUMAN/HORSE GRAVES: A REAPPRAISAL OF OLD ASSUMPTIONS

**Abstract author(s):** Shiroukhov, Roman (Centre for Baltic and Scandinavian Archaeology - ZBSA) - French, Katherine (School of History, Archaeology and Religion Cardiff University) - Madgwick, Richard (Cardiff University, ATTN: BONEZ Project) - Meadows, John (Centre for Baltic and Scandinavian Archaeology - ZBSA) - Skvortsov, Konstantin (-)

**Abstract format:** Oral

The Sambian peninsula (Kaliningrad Oblast, Russia) is well-known for a distinctive burial rite – cremation graves accompanied with horse burials/sacrifices. The rite is introduced in the early first millennium AD, increases through the Migration period, and represents 80-90% of Sambian Prussian cemeteries by the Early Medieval period. Of greatest interest are the so-called double-layer burials, represented by the equestrian cremation in the upper layer and the remains of a horse in the lower one. These complex deposits contain cremated and unburnt bone and other preserved organic materials like charcoal, wood, and fabric. The cremated individual(s) and underlying horse have been assumed to be contemporary, with the burials generally interpreted as a male horseman buried with his personal steed (though the gender interpretation can be different).

In order to test these assumptions, horse bone and teeth were sampled from three cemeteries (Alejka-3, Berezovka and Kholmny) for 14C dating, dietary stable isotope analysis ( $\delta^{13}C$ ,  $\delta^{15}N$ ,  $\delta^{34}S$ ), and 87Sr/86Sr analysis. The integrated results of these analyses establish the chronological relationship between the human and horse burials, reconstruct the diet of selected remains, and determine whether the human and the horses buried together were local or non-lo-

cal to the Sambian peninsula. The results of our multiproxy study, which are presented to the public for the first time, will be discussed in relation to the most recent studies of archaeological horse remains from modern Lithuania and Poland.

## 10 GENETIC CHARACTERIZATION OF THE HORSES IN THE EARLY MEDIEVAL POLAND

**Abstract author(s):** Popovic, Danijela - Baca, Mateusz (Centre of New Technologies, University of Warsaw) - Makowiecki, Daniel - Wiejacka, Martyna - Chudziak, Wojciech (Institute of Archaeology, Faculty of History, Nicolaus Copernicus University, Torun)

**Abstract format:** Oral

During the formation of the Polish state in the Early Middle Ages horses had very important meaning in social, economic and military life. The rich archaeological and archaeozoological evidence of subfossil horse remains emphasize the importance of this species in the Medieval societies. Biometric data showed great diversity of horse subfossil remains excavated on the territory of the present-day Poland especially in the estimated wither height. To deeper investigate this morphometric diversity, we combine ancient DNA analyses with macroscopic and biometric methods applied in archaeozoology. We performed target enrichment and high throughput sequencing of 5,000 genomic SNPs which covered polymorphisms associated with coat colour, genetic disorders and functional traits as well as SNPs which are not under selection. We found that Polish medieval horses grouped with other ancient and modern domestic horses without significant differentiation between separate populations. The chestnut coat colour was dominant. We found strong sex bias with ca. 80% specimens genetically identified as males. This corroborated with morphological sex determination performed on the larger set of samples.

The research is part of the project "Horse in Poland in the Early Piasts and Internal Fragmentation" (2017/25/B/HS3/01248) financed by the National Science Centre, Poland.

## 11 BREEDING A WEAPON. MORPHOLOGICAL DIVERSITY OF HORSES IN MEDIEVAL ENGLAND

**Abstract author(s):** Ameen, Carly - Benkert, Helene - Rapp, Karina - Townend, Tess - Kanne, Katherine - Outram, Alan (University of Exeter)

**Abstract format:** Oral

Popular culture presents a deep-rooted perception of medieval warhorses as massive and powerful mounts, but identifying real warhorses from the zooarchaeological record is challenging. This is due to both a paucity of horse remains relative to other domesticates, as well as the tendency of researchers to focus almost exclusively on osteological size, making it difficult to reconstruct in-life usage and activity related changes. This paper presents our work on the largest zooarchaeological dataset of English horse bones from a wide range of contexts dating between AD 300 and 1650. Consisting of both traditional metric analysis and novel 3D geometric morphometric approaches, we examine trends in osteological size and shape to explore the diversity of equid skeletal conformation, reflecting different domestic, elite and military roles. In particular, we investigate a chronology of changing horse morphology, in an attempt to detect conformations specifically associated with military activities. Results highlight the importance of accurately exploring the morphological characteristics of skeletal elements and in-life activity-related remodeling to aid our understanding of these animals' lives. Contextualised by both the historical record and a modern comparative dataset, this paper explores the complex biological factors contributing to the development of this iconic medieval animal.

## 12 WHAT CAN BE DETERMINED ABOUT THE SIZE AND SHAPE OF MEDIEVAL HORSES FROM METRICAL ANALYSES OF HORSE ARMOUR AND HORSESHOES?

**Abstract author(s):** Outram, Alan (Department of Archaeology, University of Exeter) - Creighton, Oliver - Benkert, Helene - Rapp, Karina - Townend, Tess (University of Exeter)

**Abstract format:** Oral

Metrical analysis of horse bones, when sufficiently complete, allows zooarchaeologists to approximate horse wither heights and create indices of robusticity. Such analyses rely on a series of 'factors' that approximate the relationship between elements of the skeleton and the dimensions of a live horse. However, to what extent is it possible to model in the opposite direction, from a horse's artificial exoskeleton, such as its armour and shoes? Such artefacts have the advantage of being quite closely dateable. Furthermore, armour tells us specifically about horses used by the nobility in warfare or jousting, something that it is hard to ascribe to bones definitively. This presentation considers the methodological challenge of relating such material culture to the size and shape of horses. These challenges include different object designs and whether identifiable anatomical landmarks have a clear relationship to stature. The paper also presents preliminary data from our analysis of shaffrons (head defences) and horseshoes from major collections and databases.

**Abstract author(s):** Webley, Robert (University of Exeter)

**Abstract format:** Oral

Taphonomy has not been kind to the examination of the medieval warhorse through its equipment, with the leatherwork, fabric caparisons and iron mail armour depicted in manuscript illustrations all but vanished. This paper therefore focuses on the underlying metal elements that have survived, such as bridle bits and stirrup components, to provide a new perspective – one that offers the kind of technical detail that iconographic evidence lacks. It draws upon the collated evidence of a large corpus of historic excavated objects and brings to bear newly recorded metal-detected finds; this second data source has now captured significant numbers of objects lost while traversing the landscape. Stirrups are often acknowledged as one of the most understudied elements of horse equipment, due to vagaries of survival outside burial or settlement contexts. This presentation outlines work undertaken for the Warhorse project to provide a new analytical framework for medieval stirrups, before focusing in on the 11th century. Using the new framework, excavated and metal-detected data will be brought together to locate changes in stirrup form and size. This will be compared with evidence from bridle bits to reconsider the impact on horse equipment of the Normans in England, the archetypal mounted warriors.

#### A. THE DIVERSITY OF LATE ANTIQUE PERIOD AND EARLY MEDIEVAL HORSES IN THE CARPATHIAN BASIN: INTRODUCTION TO AN INTEGRATIVE RESEARCH PROJECT

**Abstract author(s):** Szecsenyi-Nagy, Anna (Institute of Archaeogenomics, Research Centre for the Humanities) - Koncz, István - Csippán, Péter (Institute of Archeological Sciences, Eötvös Loránd University) - Bollók, Ádám (Institute of Archaeology, Research Centre for the Humanities) - Bárány, Annamária (Hungarian National Museum) - Gerber, Dániel - Mende, Balázs (Institute of Archaeogenomics, Research Centre for the Humanities)

**Abstract format:** Poster

Human societies have used and valued horses since prehistoric times, and their presence was closely linked to people's lifestyles and social status. Our research focuses on the Carpathian Basin, where we mostly find horses in burials during the Roman as well as Early Medieval (Migration) periods. While their importance and role might have changed, suggested by their frequency and associated burial customs, their presence in human communities is continuous on both sides of the Danube throughout the 4-9th centuries.

The aim of the project is to study the relationships between horses and humans, with a special focus on the Avar Period (late 6th-9th century AD). Horses were buried alone or with humans, who were most probably members of the elite in this era. Horses served as companions for afterlife or as prestige goods representing the social status of the deceased. Yet the possibly diverse relations between humans and animals have not been explored from interdisciplinary angles. Through joint historical, archaeological, archaeozoological and paleogenomic studies of ca. 150 horses, we aim to get further answers about the way and role of the horses in the life of late Roman, early medieval communities, both in Pannonia and east of the Danube.

For detailed observations, we pay special attention not only to cemeteries but also to horse remains from settlements to see whether there are differences in breeds, genetic markers and morphology between horses used and probably also kept differently.

This poster presents the concept of our research along with some preliminary results.

#### [RE]INTEGRATING A DISPERSED AGENDA: ADVANCING ARCHAEOLOGICAL RESEARCH IN CENTRAL EURASIA

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Rouse, Lynne (German Archaeological Institute, Eurasia Dept; Washington University in St. Louis) - Dupuy, Paula (Nazarbayev University)

**Format:** Discussion session

As with our peers worldwide, archaeologists with a research focus on central Eurasia have had to deal over the past two years with lapses in fieldwork and funding, lost opportunities for professional networking, and to various degrees, stagnation in overall research development. Notably, these setbacks have come at a pivotal time in the evolution of the region's archaeology, as emerging highly specialized laboratory and bioarchaeological analyses are entangling with deeply-rooted methodological and epistemological approaches to studying the past. Our discussion session is intended to set the foundation for (re)integrating the scholarly community of central Eurasian archaeologists by (re) opening dialogue across the fissures brought on by two years of fragmented, punctuated research. Focusing on the pre-Silk Roads periods in an area spanning the Caspian Sea to Xinjiang in far western China, we bring together archaeologists with expertise in a particular research method/ methodology, geographical area, and/or intellectual approach – with the goal to (re)integrate colleagues and their various strands of data and knowledge within a ho-

listic, regional perspective. Our open discussion will be anchored in the public abstracts of fifteen participants who will address the current state of – and next steps for – archaeology in the region, and interrogate the mutual interests driving forward our shared research agendas. Ultimately, our aim is to provide a forum to communicate insights that stem from specialist knowledge in our field, as well as a backdrop for constructive ongoing dialogue as the discipline of archaeology in central Eurasia continues to unfold in the 21st century.

## ABSTRACTS

### 1 HISTORIOGRAPHY AND TERMINOLOGY: TOWARDS A MORE INCLUSIVE PAST

**Abstract author(s):** Kidd, Fiona (New York University Abu Dhabi)

**Abstract format:** Oral

Inclusivity plays out variously in academia: the literature we read, the ideas we are exposed to, the conversations we have and with whom, depends on our language knowledge; where we live and the institutions we work in impact access to funding. Terminology, too, plays a critical role in discussions of inclusivity. Words used to frame our conversations about the past can subconsciously include or exclude certain communities. The term 'Silk Roads' is increasingly challenged. Yet terms like urbanism, nomad, and sedentary can entrench divisions less pronounced in the past. 'Nomad', for example, rarely appears in vernacular sources. In the earliest 2nd century CE Sogdian sources, as well as later Persian and other vernacular sources into the 18th century, mobile populations are referred to as 'people of the tent' or as steppe dwellers. Words documenting Turkmen groups in the 19th century, such as chovra and chomur reference pastoral and farming communities respectively. But contemporary observations indicate that such categorisations were more fluid. Chronological terms are similarly exclusionary: 'antiquity', Achaemenid, and Hellenistic, for example, anchor top down perspectives, often Eurocentric. Critically, many of these terms deny the place of Central Asia, rendering it a transitional zone rather than an area of study in its own right.

Of course, many of these terms are undeniably useful because they provide a chronological or historical shorthand. Yet they simultaneously frame the standard narratives of centre/periphery, nomad/sedentary, urban/rural etc. that we challenge. How can we think more productively about the terminology we use to frame our discussions? How do we scaffold our research with terminology that accurately reflects the diversity of Central Asian communities and lifestyles, temporally and spatially? How do we move away from the tropes that have continued a Eurocentric narrative, to share a more inclusive narrative of the past?

### 2 ARCHAEOLOGY OF CENTRAL ASIA THROUGH THE HISTORICAL PRISM

**Abstract author(s):** Shnaider, Svetlana (L.N. Gumilyov Eurasian National University)

**Abstract format:** Oral

Beginning in the early 20th century, the research on Prehistory in Central Asia can be divided in three major historical phases marked by different dynamics of research.

1. Building of scientific knowledge (1930s-1950s).

Led by scholars from the major institutes of the Soviet Union (Moscow, Leningrad), the story of Prehistory started with the systematic research of new sites in order to build a regional sequence of the archaeological events in the Union.

2. Mass studies (1950s-1990s).

The post-war period was marked by the development in Central Asia of infrastructure and large-scale irrigation constructions, resulting in intensive site discoveries led by Soviet scientists, active publishing of results, and building of the main hypothesis on the Prehistory of Central Asia territories.

3. International projects (1991-present).

Due to the disintegration of the USSR, few scholars were trained during the 90s and a generation of scientists is missing. The renewal of the archaeological research is now notably driven by a new generation of archaeologists from the republics under the influence of European and American scientific centers.

One of the important problems in the archaeology of Central Asia that I note is the linguistic barrier. The Iron Curtain was not only geopolitical, but also linguistic, and much of the previous research published in Russian is still sadly ignored by Western colleagues, and major scientific works and actors are being forgotten. Thus, some modern international projects present their results as worldwide discoveries, although these ideas have been discussed in Central Asian and Russian-language literature for decades.

Accordingly, in frame of our round table I would like to propose the preparation of a series of summaries that would encapsulate the history of the study of the region, and the main discoveries and hypotheses proposed by Soviet archaeologists.



### 3 RE-INTEGRATING ARCHAEOLOGICAL RESEARCH IN CENTRAL AND EASTERN EURASIA: RE-VISITING REGIONAL ARCHAEOLOGIES

**Abstract author(s):** Wright, Joshua (University of Aberdeen)

**Abstract format:** Oral

Looking at the growing number of researchers, growing breadth of research fields, and increasingly complex international collaborations across central Eurasia there are great opportunities for future years. Areas of recent Eurasia archaeology that can reintegrate archaeological research include, firstly short range interaction and local patterns. The increasing density of all types of data available to us in many regions of Eurasia means that large scale narratives are becoming less compelling and that our ability to create resilient and detailed local narratives is increasing. With regionally focused research projects come developing models of adaptation and socio-political activity centered on human scaled regions. We will be able to look at a Eurasian cultural landscape in which local adaptations are engines of change and the contrast, comparability and interaction of regions is the main avenue of study of past societies in Eurasia. This could have some interesting effects in terms of how we understand relative mobilities, knowledge exchange and learning, the ways that general proxies are used to understand past practices (e.g. monuments for people, dairying for mobile pastoralism) and the resilience of our models and interpretations in the face of networks of technological and biological diffusion that can be reorganised with the addition of only a few data points. The second area that could use some critical attention is typological structures. The underlying principles of typology of material culture in Eurasia go back to the deep roots of modern archaeology. Now these essentially 19th century structures are no longer just play things for the ceramic or architectural specialists, but key foundations for the biomolecular research of the 21st century. We are at a moment when those typologies can be critically examined, both in terms of how they are constructed by archaeologists and what they represent in terms of forms, practices and identities.

### 4 (RE)INTEGRATING THE ARCHAEOLOGY OF THE STEPPES THROUGH ARCHAOMETALLURGICAL RESEARCH

**Abstract author(s):** Radivojevic, Miljana (UCL Institute of Archaeology)

**Abstract format:** Oral

Recent debates in central Eurasia have focused on identifying genetic markers of migrating Bronze Age steppe populations into Europe, the scale of the bubonic plague pandemic or the transmission of domesticated crops and animals. However, the ample scale of the genetic and domesticate models being presented is frequently underpinned by smaller sample sizes due to their scarcity. Equally, the low spatial and temporal resolution of these datasets makes the assessment of environmental impact in relation to technological change and/or increased connectedness fraught with difficulties. The mostly anglophone orientation of key project investigators, as well as the limitations of their professional networks, add yet another layer of bias to the available datasets. This low level of resolution can contribute to interpretations of the Eurasian Steppe communities as relatively homogenous and mobile societies who mainly carry objects, ideas, languages, diseases or genes between settled worlds at their boundaries. Archaeometallurgical studies, on the other hand, are not deficient in robust evidence, of which metal production debris proves to be particularly resistant to post-depositional processes due to the very nature of high-temperature inorganic materials.

New archaeometallurgical research in the steppes shows varied extents of involvement of pastoralist communities in metal production, from small scale to specialised metallurgical communities, including the estimates of environmental impact of these activities. It also demonstrates the power of regional communities connected through chains of metal and ore supplies, the size of which varies across the steppes and the Inner Asian Mountain Corridor. As such they demonstrate the potential of materials science research in the area as well as complexities of networks of connectedness that led to the formation of Silk Roads as we know them.

### 5 [RE]INTEGRATING RAW MATERIALS AND TECHNOLOGIES IN CONTEXTS OF SOCIAL AND SPATIAL MOBILITY IN CENTRAL EURASIAN BRONZE AGE

**Abstract author(s):** Luneau, Elise (Deutsches Archäologisches Institut, Eurasien-Abteilung)

**Abstract format:** Oral

Within the session "[Re]Integrating a Dispersed Agenda: Advancing archaeological research in central Eurasia", I would like to address the potentials and progress gained from the archaeology of materials in Bronze Age central Eurasia, especially ceramic material. The use of archaeometric methods on archaeological objects enables archaeologists to examine production, circulation and use of the material culture. Investigating raw materials is particularly important for better understanding technological processes sometimes forgotten behind the decorative/stylistic aspects of the material culture, and which are highly indicative of social identities of communities. The approach also enables to trace circulation of raw materials and/or objects. Studies on the movement of peoples, animals and plants recently brought crucial knowledge on the spatial and temporal dynamics of connections between major

cultural entities in central Eurasia. Combined with isotopic and genetic data, the analysis of raw materials and technology makes it possible to understand links between mobility and material culture, bringing new evidence for inter-regional connections and diffusion of the material culture. Understanding the evolution, dispersal, practices related to the material culture requires accurate and further identification of raw materials and technology of production. This analysis also raises questions on cultural contacts at the level of individual interaction and on processes of technostylistic transmission in contexts of social and spatial mobility. Further developments in the study of interactions can be addressed through the lens of technological and compositional studies of archaeological objects: how raw materials and technology reflect interactions in Central Eurasian Bronze Age, and which role do the mobility play in the person-to-person (or group) contacts?

## 6 FRUITS, CEREALS, AND SPICES ALONG THE SILK ROAD: CONNECTING PLANTS REMAINS AND PEOPLE'S DISPERSAL

**Abstract author(s): Dal Martello, Rita - Spengler, Rob (Max Planck Institute for the Science of Human History)**

**Abstract format: Oral**

In the past decade archaeobotanical sampling has been increasingly incorporated in archaeological excavations across Central Asia. The new data generated by this effort has not only contributed in expanding our understanding of plant use by past Central Asian populations, but it has especially helped unveil the great diversity of subsistence practices that people living in this vast area in late prehistoric and early historic times engaged in. This has led to a shift in the narrative to a more nuanced and diversified view of past Central Asian lifeways and economies that more accurately depict past social complexity, encompassing both mobile and sedentary, pastoral and agricultural populations.

Continuous efforts in this direction are being undertaken particularly by researchers attached to the "Fruits of Eurasia, domestication and dispersal" project. The results obtained through active collaborations in Uzbekistan, Turkmenistan and Kyrgyzstan, among others, allow us to incorporate systematically collected ancient plant remains in the Central Asian archaeology discourse and discuss the valuable contribution archaeobotany can make toward reconstructing a more well-rounded understanding of the human past. Beyond fundamental questions, such as what were people eating and producing, more complex questions can now start to be asked. These include how linked was agriculture to the flourishing movement of goods, ideas, and people across the region, when did plants originating elsewhere, such as rice, reach Central Asia, and how did these exotic plants change the cuisine traditions? When and how were important Central Asian fruits, such as peaches, plums and apricots domesticated and how did they spread through the Silk Road? Since the production of food is among the most essential aspects for human life, integrating plant remains with other archaeological evidence, such as animal rearing, goods manufacturing and trade, can help better reconstruct past societies and understand the development of these up until today.

## 7 THE RESULTS AND PERSPECTIVES OF COMPLEX RESEARCH ON THE TERRITORY OF KYRGYZSTAN

**Abstract author(s): Tabaldyev, Kubatbek (Kyrgyz-Turkish Manas University)**

**Abstract format: Oral**

Relying on the results of archeological research with a greater degree of certainty

the following conclusions should be drawn:

- collapse of the Soviet Union, the scientific works of Europe and America on antiquities of Central Asia were revealed to the scientists of the newly independent states
- after the establishment of scientific ties organized joint archeological research;
- complex studies of archeological objects began to be organized more and more, we are talking about joint studies of specialists in various fields;

At times, differences are noticed in the consecration of research results between early local researchers and researchers who arrived from scientific organizations far abroad. There are many practical useful directions that you can learn from each other.

Often, when studying the culture of the population of the intermountain valleys of the Tien Shan, excavations of barrows were carried out selectively. Purposeful searches and studies of settlements were carried out very rarely. The presence of agriculture was determined by the discovery of bronze and iron sickles, hand mills, grain graters.

The experience of a specialized new project led by Associate Professor of Vilnius University Giedre Motuzaitė Matuzėviciute provided qualitative and quantitative evidence for the reconstruction of the appearance of the settled part of seasonal pastoralists (nomads). Field research was carried out as part of the detachment directly by field specialists in zooarchaeology and ceramics. With the help of an aircraft (drone), important information was obtained for characterizing the landscape, activities, and the nature of the development of the foothill zone in various historical eras.

In Soviet times, the tangible contributions of the works of physical anthropologists were noticed. Their conclusions, made on the basis of a statistical study of bone, craniological material, still retain their significance

One of the important problems is the preservation of archeological sites.

## 8 A STEPPE IN A NEW DIRECTION: CAPACITY BUILDING IN CENTRAL AND INNER ASIAN ARCHAEOLOGY

**Abstract author(s):** Hermes, Taylor (Max Planck Institute for Evolutionary Anthropology)

**Abstract format:** Oral

A large increase in foreign-run research projects in Central and Inner Asia arguably reflects the great importance that this region bears for understanding critical social processes of the past across the wider expanse of Eurasia. However, scientific equitability and capability in state-of-the-art methods for local researchers remain out of reach. Here, I argue that the most ethical and optimal way to integrate "dispersed agendas" in the archaeology of central Eurasia is to invest in capacity building in the archaeological methods that foreign teams employ, so local scientists can also better engage with the rapidly moving "global" scientific community. The granting of co-authorship or field collaborations should no longer be an acceptable voucher to access the rich archaeological record of Central and Inner Asia as part of an effectively extractive system of research that garners great scientific merit. Instead, foreign research teams should always involve local archaeologists and researchers from allied fields in bottom-up project design, work to train collaborators in cutting-edge methods, and help develop new scientific infrastructure. Only through a balanced system of collaboration and research independence for local archaeologists will there be a true global representation of the cultural heritage originating from the great Eurasian steppe landscapes.

## 9 SCIENTIFIC STAGNATION AND PARADIGM SHIFT IN KYRGYZSTAN

**Abstract author(s):** Abdykanova, Aida (American University of Central Asia)

**Abstract format:** Oral

Since collapse of Soviet Union, the archaeological science in Kyrgyzstan faced many challenges such as lack of research funding and training of professional archaeologists, inconsistency of legal basis, misunderstanding or lack of collaboration between organizations, absence of local journals for publications, weak dissemination of research results among wider public audience. As a result, today active archaeological works in the country is represented mostly by research of international teams, and course of works in sphere of archaeological expertise lead by the Ministry of Culture. The latter is developing rapidly and cover broad issues of protection and use of cultural heritage objects.

Among many internal issues raised due to systematic lack of funding thus lack of research, I would like to focus on issues of scientific stagnation and the level of theoretical background of that research in Kyrgyzstan.

Archaeology as a discipline is actively changed in the light of the development and implementation of new theoretical approaches. The requirements to qualified research are also changed. Traditional site reports and monographs are not enough, interdisciplinary research and publications in peer-reviewed journals became an indicator of success. Majority of local archaeologists trapped by mindset of traditional views of conducting research.

Interesting that the facing these challenges Kyrgyz archaeology has quite favorable position. Our cultural heritage still waiting for its discoveries and proper research. And I do hope that Kyrgyz archaeology still has a time to broadening of collegial networks, getting a new experience, thinking and rethinking on contemporary approaches and practices to mold specific sets and use them in the field.

## 10 WHAT ARE THE "POST-ISMS" OF CENTRAL ASIAN ARCHAEOLOGY IN THE 21ST CENTURY?

**Abstract author(s):** Brite, Elizabeth (Purdue University)

**Abstract format:** Oral

Contemporary experiences of profound social change often raise questions about what is rebuilt from a dismantled past. In scholarship since the 1980's, these questions have been encapsulated by a variety of "post-isms" that explore the implications of such changes for theory and practice in the humanistic disciplines. In archaeology, "post-isms" have brought us a range of new practices – most recently, decolonizing methodologies, archaeologies of the contemporary past, and new approaches to socionature, among others. These are predominant concerns in some regional archaeologies today, but only rarely do they appear in Central Asia specifically. Why is this the case, and what might be the appropriate "post-isms" for Central Asian archaeology going forward in the 21st century?

Post-processualism was an outgrowth of broader movements related to postmodernism and post-colonialism and had profound implications for theory and practice in archaeology. Its more muted appearance in Central Asian archaeology might be explained by the presence of other, contending "post-isms" specific to our region – post-communism and post-Sovietism – which chart a different path and sometimes present challenges for contending with the region's imperial and colonial past. For example, are decolonizing agendas for archaeology suited to such spaces, which were built upon an exceptional history of ethnos development, with ongoing implications for identity politics in

the region today? Is post-Sovietism a more relevant and equally useful category that we should employ, and does it necessarily entail an abandonment of archaeological theory with connections to reworkings of Marxism? Lastly, the triumphalism implicit in the post-Soviet concept raises yet other "post-isms" to consider – post-humanism and a post-Silk Road – which engage and challenge the prioritization of geographic space over modern history as guiding analytical frameworks, a feature that may typify archaeological constructions of ancient Central Asia in the 21st century.

## 11 THE SCIENTIFIC REVOLUTION IN CENTRAL EURASIA

**Abstract author(s):** Ventresca Miller, Alicia (University of Michigan)

**Abstract format:** Oral

It has been over a decade since the publication of Hanks (2010), which focused on the Archaeology of the Eurasian Steppes and Mongolia. This work highlighted the key developments in this broad region, from the peopling of northern Eurasia to horse domestication, and eventually the rise of the Xiongnu polity. However, over the past five years, the utilization of new scientific methods in archaeology have led to dramatic changes in the timing of these key developments. This new evidence has altered our understanding of societies, economies, and politics in prehistoric and historic periods. This is especially pertinent to research on human population flow and the introduction of domesticates. As we begin to resolve the timing of the influx of people and transmission of domesticates, we need to focus on how these changes impacted societies. While in some cases these led to immediate changes, there were also slower transformations unfolding on centennial or longer timescales. Thus, the challenge is to reconsider broad questions that led to these key developments, in an effort to advance archaeological research in central Eurasia.

---

## 351 ROUTED ARCHAEOLOGY III – GETTING AROUND

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Mele, Marko (Universalmuseum Joanneum) - Fábíán, Szilvia (Hungarian National Museum) - Mihelić, Sanjin (Arheological Museum Zagreb)

**Format:** Regular session

Following on the previous Routed Archaeology sessions organized at the last two EAA Annual Meetings in this session we continue to explore different aspects pertaining to the functioning and management of archaeological routes. This time our primary focus is placed on one of the essential features of all cultural routes – i.e. mobility, naturally, with the underlying rationale of promoting travel and stimulating people to move along the routes.

The topic itself is approached from a variety of angles. The first angle tackled by the session is how to make a route as a touristic product more visible among the many offers in the leisure market. Since the usefulness of the work invested in the management and organization of the network is ultimately measured by the response of the public/tourists, an indivisible question we wish to raise is that of the marketing of cultural routes.

Once the attention and the interest have been raised many questions concerning logistics of movement from one place to another within the route network emerge. Starting from individual travellers acting on the spur of the moment with preference for designing their own on-the-fly itineraries at one end of the scale, and ending with minutely organized general or bespoke tours for overseas groups on the other, well-organized routes are expected to entertain a plethora of options catering for different travelling tastes and habits.

This subject logically segues into that of the different modes of transport that can be employed on the route, among which we would specifically like to encourage contributions promoting al fresco travelling styles such as hiking, cycling, horseback riding, kayaking and other outdoor activities. Furthermore, as routes may widely differ in terms of scale, we invite contributions discussing local, regional, national and transnational networks with case studies detailing different responses to mobility.

## ABSTRACTS

### 1 SITES AND ROUTES OF ARCHAEOLOGY AND THE CULTURAL IDENTITIES

**Abstract author(s):** Varga, Benedek (Hungarian National Museum / Magyar Nemzeti Múzeum)

**Abstract format:** Oral

Ever since modern archaeology appeared during the early modern period in Europe it has always been a recurring problem how we can present (besides the beauty or rarity of some artefacts) the views and perception of archaeology to the general public. How can we make it comprehensible, relevant, and interesting to various groups of laic spectators? How can we attract enough attention from the public which may produce serious numbers of visitors? If we take apart the most common motivation of visitors, which, I presume, is based on remembrance of national and/or cultural identity and pride, all other historical era which archaeological sites may represent, fell short of interest.

To solve these questions, however, we usually apply various technical solutions in order to increase public awareness. Modern methods of disseminating and representing knowledge are widely used, and to a certain extent they are successful, indeed. We produce properly designed packages for leisure activities and tourism, and provide, the public with various forms of on-line and on-site accessibilities.

These are all essential tools to build up our presence in cultural life, but probably they still miss the point, and as a consequence, are in short of accumulating public interest any nearer to those we see in respect of archaeological sites of the ancient Mediterranean, or of national remembrance in each country.

How can we form the presentation of the remote past of other regions of Europe to a comparable attraction? I suggest the answer lies, at the first place, not in the technicalities applied, but in understanding the representation of the structure of European cultural identities. The core question is, perhaps, how can we reach behind routine interpretations and present a renewed and more sophisticated conception of the cultural history of Europe through many millennia.

## 2 ACCESSIBILITY, VISIBILITY AND INFRASTRUCTURE OF IRON AGE SITES IN THE DANUBE REGION – THEORY AND PRACTICE

**Abstract author(s): Mele, Marko (Universalmuseum Joanneum) - Štuhec, Seta (Austrian Academy of Sciences, Austrian Centre for Digital Humanities and Cultural Heritage) - Fera, Martin (University of Vienna, Institute of Prehistoric and Historical Archaeology)**

**Abstract format: Oral**

Over the past few decades, European archaeological heritage gained major attention by connecting prominent archaeological sites to wider transnational networks, which have become a popular tool for their protection, promotion and tourist use. The Iron-Age-Danube project focused on monumental archaeological landscapes of the Early Iron Age.

The Iron-Age-Danube project ran between 1st January 2017 and 30th of September 2019. In 2017 and 2018 eleven project partners and nine associated partners from Austria, Croatia, Hungary, Slovakia and Slovenia conducted research and established common strategies for research, protection and sustainable touristic use of archaeological heritage in the Danube area.

As a tool for the implementation of the strategies a database was created in collaboration with the Austrian Centre for Digital Humanities and Cultural Heritage (ACDH-CH) / Austrian Academy of Sciences. The database was used to evaluate and understand the research activities, status of monument protection and potential for touristic use of Iron Age heritage in Austria, Slovenia, continental Croatia and Transdanubian Hungary. In total 1046 Iron Age archaeological sites with multiple entities were entered, of which 3 sites extend over 2 countries. The collected data are accessible to researchers and the general public (<https://iron-age-danube.eu/>). In our lecture we will present the results of the data evaluation from the perspective of accessibility, visibility and infrastructure of Iron Age sites in the mentioned area. We see these elements as a key points for development of mobility plans and touristic strategies for future locations.

## 3 DEVELOPMENT OF ARCHAEOLOGICAL SITES IN OUR MOUNTAINS FOR TOURISM PURPOSES

**Abstract author(s): Czifra, Szabolcs (Hungarian National Museum) - Deminger, Csilla (Kuny Domokos Museum) - Pálinkás, Adrienn - Fábíán, Szilvia (Hungarian National Museum)**

**Abstract format: Oral**

The pandemic period has brought a lot of new habits to people's everyday lives around the world. One of these was the explosion-like increase in forest visits as a result of which a large number of tourism developments began in the Hungarian mountainous areas.

Archaeological sites in these regions could also be integrated into this type of tourism development. Experience shows that the vast majority of hikers are unfamiliar with the archaeological sites along the routes they visit. A shocking example is that in the Pilisi Parkerdő - where there is about 1,000 km of marked hiking trails - no signpost leads to the Árpádvár site, from where a significant late Bronze Age and a medieval fortress are known. It is especially interesting because this site is located between the Rám-szakadék and Dobogókő, which are among the most popular tourist destinations in Hungary (60,000 people/year).

In this presentation, we will look for the answers to the above-mentioned problems. We will examine the forest visiting and hiking habits of the population. How could the archaeological heritage be incorporated into outdoor activities? How much need is there to get to know these places better? How could these archaeological sites be used for educational purposes and protected in cooperation with forestry, municipalities and local communities? How could the surviving archaeological sites in our National Parks be presented? How could we achieve positive economic and social changes with these developments (on a local or regional level), from which further research and developments could be implemented?

## 4 ARCHAEOLOGICAL ROUTE MANAGEMENT: A LOOK BEHIND THE SCENES

**Abstract author(s): Mihelic, Sanjin (Archaeological Museum in Zagreb)**

**Abstract format: Oral**

From a cultural-tourist perspective, cultural routes are well-organized and highly dynamic networks connecting different locations and points of interest – in other words, tourist attractions. Ideally, tourists are presented with a variety of options to pick from, starting from a list of sites, to different modes of transport and a range of accommodation choices, to organized guided tours of various durations. Add to this general and/or site-specific products and services and you arrive at a first-class tourist experience: just the way things should be.

However, things may take a different turn once you start approaching the subject from a diametrically opposite perspective, namely, that of the organizer and manager. This comes particularly to the fore when we discuss the topic from the archaeological professional standpoint. As archaeologists, we are seldom equipped with knowledge and skills, let alone the means and resources that are the preserve of the tourism sector – yet many of us are still willing to invest time and effort into first developing, and then also maintaining cultural routes, because we believe that by opening up and working with the tourism sector and other key stakeholders in cultural tourism we may at the same time pave the way for a better protection, preservation and appreciation of our archaeological heritage.

The aim of this paper is to take you behind the scenes of the archaeological route management, with a specific emphasis on topics pertaining to marketing, as well as on those regarding the mobility and transport along the routes.

## 5 CULTURAL ROUTES AND HERITAGE TOURISM

**Abstract author(s): Wollak, Katalin (Independent researcher; Hungarian Ass. of Archaeology and Art History; Archaeolingua Foundation) - Jerem, Erzsébet (Archaeolingua Foundation)**

**Abstract format: Oral**

In the paper we gave last year, we provided an overview of how Iron Age archaeological monuments in West Hungary—especially around Lake Fertő, Sopron and its wider surroundings—can be integrated into the network of cultural tourism. This year, we would like to give an update on the implemented projects and discuss new possibilities and the attitude of stakeholders. Our study area includes two counties along the Hungarian-Austrian border (Vas and Győr-Moson-Sopron counties), with the Iron Age fortified settlements and tumuli of Velem and Sopron as key points, in addition to other Iron Age landscape features.

In this paper we present the initiatives launched so far, the NGOs and professional organisations that have supported these, and suggest further possible cross-border connections. The Baedeker (Prehistoric Monuments and Collections in Hungary - Itinerarium Hungaricum), published 10 years ago, divided the country into seven regions from a practical, touristic point of view. The two counties under study in the north-western part of Transdanubia formed the second region in this classification, from which 14 locations were included in the thematic guide, most of which offer attractions classified in the highest category. We also aim to explore how these authentic sites can be linked to the increasingly popular slow tourism industry by taking advantage of the regional opportunities for hiking and biking. Taking into consideration that the recent and future development of biking routes around Lake Fertő will affect a number of Iron Age sites, it is definitely worthwhile to build on existing local attractions and explore the further potentials this region has for heritage tourism.

## 6 IRON AGE DANUBE ROUTE IN THE POŽEGA VALLEY REGION

**Abstract author(s): Rakvin, Marta - Balen, Jacqueline (Archaeological Museum in Zagreb)**

**Abstract format: Oral**

The fact that most of the Iron Age sites are located in more or less remote areas holds a number of advantages. It allows visitors to experience archaeology in a new kind of way – out of the museums and immersed in the landscape. In addition, it opens up a wide array of possibilities for joining the Iron Age sites with the al fresco travelling styles and adventure tourism. However, this approach is not without challenges.

In recent years, in the scope of the Interreg Iron Age Danube and the Danube's Archaeological eLandscapes projects, Archaeological Museum in Zagreb initiated and played a vital part in novel ways of site presentation in Kaptol. As one of the Iron Age Danube Route founding members, it commenced the revitalization processes in the region by introducing new approaches to cultural heritage presentation and developing tools for future sustainable management.

In this paper, we would like to explore and share the challenges and offer possible solutions focusing on the network of the Iron Age Danube Route members and stakeholders in the Požega Valley, which are centered around the archaeological site Kaptol.

## CLAUSTRA ON THE ROAD

**Abstract author(s):** Zanier, Katharina (Department of Archaeology, Faculty of Arts, University of Ljubljana)

**Abstract format:** Oral

The paper presents the route, developed in the CLAUSTRA+ project, with special attention to different transportation methods tested in several pilot tours. The main goal of the project was to establish a cross-border destination of cultural and green tourism based on the archaeological remains of the Late Roman defence system *Claustra Alpium Iuliarum*. The defence system protected the passages to the heart of the Roman Empire and is the largest architectural feature that the Romans built on the territory of today's Slovenia. Archaeological remains of the system span in segments from Rijeka in Croatia to the Posočje region in Slovenia. *Claustra* represents an outstanding example of integration of architecture within the natural environment: the archaeological remains are mainly located in wooded areas that often overlap with protected natural and woodland areas, therefore its experience is closely connected to the experience of nature.

During the project we carried out several activities for the development of an "archaeological tourism product", preparing guidelines for its sustainable development and a general interpretation plan, as well as a promotion plan and a rich and diverse range of itineraries. We systematically worked on the product promotion and established appropriate multilingual tools such as a mobile app and printed guidebook for different target groups in order to improve the accessibility of the sites. We have also developed a rich program for visitors with an emphasis on living Roman history: we have carried out several thematic cycling, hiking and riding tours, tours for blind persons, diverse outdoor culinary and cultural events, including a pilot accommodation facility in the form of a Roman camp.

## MATRICA (SZÁZHALOMBATTA) WITHIN THE HOLISTIC APPROACH OF LIVING DANUBE LIMES PROJECT

**Abstract author(s):** Kovács, Gergo - Vukosavljević, Zorán - Kiss, Zsuzsanna (Budapest University of Technology and Economics)

**Abstract format:** Oral

The EU-funded Interreg project "Living Danube Limes" focuses on the historical and touristic values of the former Roman frontiers and routes as well as innovative concepts for the development of historic sites along the river through the international cooperation of 10 countries along the Danube with the Lead Partner Danube University Krems. The holistic approach of the project stands on four pillars that are archaeology and history, formation of museum clusters, protection and green tourism and reconstruction of a historical Roman *lusoria* vessel. During the project, each country with a connection to the Danube has identified a pilot site that will be the main focus point for the implementation of this holistic approach. Activities at the sites include archaeological geoprospection, VR reconstructions, sustainable tourism strategy development, facilitating cooperation between museums and visitor centres and various reenactment events. As a Hungarian project partner, the Department of History of Architecture and Monument Preservation of the Budapest University of Technology and Economics is actively involved in several aspects of the project, by education, research or organisation of events with the aim to involve potential Hungarian experts in the field of Roman architectural heritage research. The presentation focuses on the historical values and contemporary development potential of the Hungarian pilot site of the auxiliary *castellum* of *Matrica* through the results of the scientific research and the virtual reconstruction provided by international and multidisciplinary cooperation and the network of the connecting cruise according to the project's holistic approach.

## ARCHEOLOGICAL SURVEYING WITH UAV LIDAR

**Abstract author(s):** Látos, Tamás (Hungarian National Museum / Magyar Nemzeti Múzeum)

**Abstract format:** Poster

Nowadays LiDAR (Light Detection And Ranging) is one of the most exciting modern tool in archeological research. There are many of archeological sites covered with forests, vegetation (agricultural plants), soil, debris etc. Using LiDAR we can reveal the secrets of these places, furthermore we can explore new, previously unknown sites also.

LiDAR is one of the most important non-destructive method in archeology in addition and in complement with the geophysics surveys. A LiDAR survey with UAV is cheap, fast, can be covers large area. During the data processing we can remove the disturbing objects from the surface: trees, bushes, buildings, landmarks etc., and the final result is the bare ground surface. The visible topographical differences can show us the surface-shaping activities of people who previously lived on this places: ruins of cities, temples, castles, forms of burials etc.

We can use this results to plan an excavation or to replace it and analysis the sites without destruction. An another important possibility to use this results is the presentation for the public. This very impressive pictures and 3D models made from the LiDAR data can make the hidden archeological sites attractive for the public.

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Hausmair, Barbara (University of Innsbruck/Department of Archaeologies) - Theune, Claudia (University of Vienna/Department of Prehistory and Historical Archaeology) - Moshenska, Gabriel (University College London/Institute of Archaeology)

**Format:** Regular session

In recent years, the importance of ethics has been increasingly debated in many subfields of archaeology. In this session we aim to advance discussions that concern ethics in regard to the study of 20th- and 21st-century violence, injustices and repression. There have been innumerable episodes of conflict worldwide, ranging from wars to state-led terror and dictatorship. These conflicts have been characterised by physical, structural and symbolic violence against individuals, as well as acts of violence directed against the identity and livelihoods of groups. Their tactics have included the targeted destruction of material possessions, homes, entire settlements, agricultural land, and cultural heritage perceived as constitutive of particular groups' identities.

Studying the material dimensions of violence, repression and persecution opens up ways to trace the production of injustices and immoral actions in the recent past and present. However, the practice of such research also presents distinctive ethical challenges. For example, at the intersections of archaeological work and contested heritage and memory discourses, scholars may encounter resistance, rejection, or even violent opposition to their work. In many places worldwide the heritage of conflicts, their scholarship, representations and commemorations are themselves platforms for contemporary divisions and violent contestation. We welcome papers that either discuss interpretative approaches towards material remains of 20th- and 21st-century violence and/or engage with the ethical dimensions of archaeological practice, e.g. dissonant heritage, handling of human remains, contesting and contested narratives, and varying attitudes towards the material remains of recent conflict.

## ABSTRACTS

### 1 DEALING WITH THE LEGACIES OF CONFLICT AND VIOLENCE IN DREŽNICA, CROATIA.

**Abstract author(s):** Simões, Sara (UNIARQ - Center for Archaeology, University of Lisbon) - Stojević, Iva (Institute of East Asian Studies, École Normale Supérieure de Lyon) - Grgurinović, Ivona (Department of Ethnology and Cultural Anthropology, Faculty of Humanities and Social Sciences, University of Zagreb) - Parežanin, Lujo (Department of Comparative Literature, Faculty of Humanities and Social Sciences, University of Zagreb) - Gomes Coelho, Rui (Department of Archaeology, Durham University; UNIARQ - Centre for Archaeology, University of Lisbon) - Horvatinčić, Sanja (Institute of Art History, Zagreb) - Gligora, Valerija (Valdir - obrt za istraživanje i usluge, Zagreb)

**Abstract format:** Oral

Heritage from Below / Drežnica: Traces and Memories is an interdisciplinary heritage project focused on the region of Drežnica and its recent past. Located in central Croatia, this area was an important stage for the partisan struggle during the Second World War, but also a stage for conflicts during the dissolution of Yugoslavia, multi-ethnic encounters, and successive migrations over recent historical periods. These historical events shaped new social and political frameworks, which were materialized in the landscape, objects and personal dwellings. Those traces have been mobilized in conflictive ways, in new discourses and narratives about the past, experiences of violence, and resistance.

Within the context of this project, archaeology is a tool to mobilize the local community and its political allies in their effort to uncover and explore the past, reexamining historical events and old narratives, engaging in broader discussions on redress and social justice through present times. In a region like Drežnica's, where the legacies of recent conflicts continue to shape the present, our team is confronted by ethical challenges posed by community-based work. Our presence contributes to the construction of new narratives, new meanings, and the development of new landscapes of memory, which necessarily lead us to constantly question our positioning as researchers.

We aim to explore how Drežnica's community has been responding to different political, cultural and socio-economic events from the past 80 years through the analysis of public and private spaces, community boundaries, as well as personal objects. We will look at how they were used, re-used, and resignified in daily life. We will examine how archaeology has been affecting Drežnicans relationship with recent conflict, to discuss what we have been learning with the local community, encouraging reflection and organization against the obscure political forces that again emerge all over the continent.



## 2 DYNAMICS OF CONTESTED HERITAGE

**Abstract author(s):** Igljic, Sara - Kulenović, Igor - Vrkić, Šime - Kulenović, Neda (University of Zadar)

**Abstract format:** Oral

Throughout the past year, in Obrovac, a small town in northern Dalmatia, a field survey of an Italian military complex from the Second World War has been conducted. The goal was to document all the military infrastructure that was built during the Italian, and later German occupation. The complex consists of several fortified military positions along both sides of the river Zrmanja canyon. In Croatia, there is still no significant interest in the archaeological research of the material remains of modern conflicts. That being said, the time of the occupation has left a mark on the local communities. There is a reluctance to discuss their shared history and to even acknowledge it (visible in the destruction of several bunkers and falsely defining bunkers as viewpoints without mentioning their military purpose and history). There is a great need to completely erase a part of the history in accordance with the historical revisionism visible in Croatia and also, globally. As the surveyed military infrastructure presents material evidence of oppression and fascism, the community chose to represent the history and values that are to be remembered and implied the ones that are meant to be forgotten - the contested heritage. How do modern conflicts affect heritage and remembrance and is history truly written just by winners? What are the dynamics between unwanted parts of history and heritage? The relationship between the social and material will be examined in this local example.

## 3 THE DEFENSIVE SYSTEM OF PLOIEȘTI (ROMANIA) DURING THE SECOND WORLD WAR (1939-1945)

**Abstract author(s):** Banica, Costina - Jané, Oscar (Autonomous University of Barcelona)

**Abstract format:** Oral

Ploiești is a city located in the south of Romania and an important site during the Second World War, thanks to its strategic position and, above all, thanks to its abundant oil production, which aroused great interest in the area of the great European powers of the time.

Despite playing a key role during this war and having the largest defensive system after Berlin, Vienna and the Ruhr region, studies about Ploiești have been scarce compared with other European cities.

The main aim of this work is to gather and identify all the elements that formed the defensive system of this place and to analyse their importance during the period 1939-1945. This research is based on the oral memory of the citizens of the area, bibliographical and archival studies and, finally, an archaeological investigation of the territory and classification of the defensive structures of the city. Finally, the study also aims to analyze the current memory of the conflict and the impact it has on today's society.

## 4 MAKING CONFLICT ARCHAEOLOGY USEFUL: LINKAGES WITH CRITICAL MILITARY STUDIES

**Abstract author(s):** Carman, John - Carman, Patricia (University of Birmingham)

**Abstract format:** Oral

The emergent field of Critical Military Studies addresses and challenges the standard tropes of military discourse. It examines modern military practice and discourse from a critical perspective, to reveal the underlying discourses that provide a moral justification for the use of mass violence. In particular it turns attention away from a concern with the actions and responses of the military in situations of conflict, to the consequences for others of military activity. Its concerns – especially with issues of the categorisations of agents as combatants and non-combatants and 'human [rather than state] security', with the gendered construction of conflict, and with geographies of conflict – are shared by those in archaeology also concerned with issues of conflict. To date, however, efforts to directly connect Conflict Archaeology to Critical Military Studies are very rare.

This paper, drawing upon recently published work of the Bloody Meadows Project and focusing on 20th century conflicts and commemoration, will present an outline of those themes and topics where archaeology can usefully contribute to the development of Critical Military Studies. It will also outline how the concerns of Critical Military studies can inform and help develop the field of modern Conflict Archaeology.

## 5 WAR AT THE END OF THE WORLDS? CONFLICT HERITAGE, ETHICS AND THE PLURIVERSE IN ARCHAEOLOGY

**Abstract author(s):** Breithoff, Esther (Birkbeck, University of London)

**Abstract format:** Oral

Conflicts are inherently partisan, invoking not only ideological disjunctions but also ontological clashes. A truly ethical approach to the archaeology of conflict must thus take a pluriversal approach (Escobar 2012; Blaser and de la Cadena 2018) to engage with the multiple ontologies and worlding practices which stand at the centre of modern conflicts. This paper is an exploration of modern industrialised war, and its material and discursive legacies, as both

world-making and unmaking processes that acknowledge the ways in which these worldings are multiple, co-existent, contrasting and often conflicting. Using the material culture and landscapes of the Chaco War between Paraguay and Bolivia (1932-1935) as a case study, it argues for a multi-world perspective on conflict heritage as a way to reorient archaeology as a discipline that no longer allows for one dominant world to absorb all other potential worlds but that takes seriously “worlds and knowledges otherwise” (Blaser 2010, 17).

## 6 “LEFT, RIGHT, LEFT, RIGHT” POLITICAL INTERPRETATIONS OF HERITAGE OF FINNISH WARS AND READINGS IN MATERIAL CULTURE

**Abstract author(s):** Kauhanen, Riku (University of Turku)

**Abstract format:** Oral

On 20th Century Finland went through two bloody periods: The Civil War of 1918 and World War II. All these wars have been interpreted many times and in specific political discourses, which follow and produce political readings of Finnish history. This is also reflected on material culture, such as memorials and statues as well as certain aspects of public memory, that must be considered when working with archaeological research and heritage of these times.

After the Civil War, during the so-called Finland's First Republic (1919–1944) memory culture was dominated by the winning side, the Whites, who suppressed remembrance of the losing Red side. This was especially seen in the treatment of statues and memorials, which were erected on graves of fallen or executed Reds.

During the Second Republic (1944–1994) the leftist history saw upheaval. Interestingly the Finnish communist resistance during Continuation War (1941–1944) was strongly connected to new leftist interpretation of history among with memories of the Civil War. This change also was reflected on new and old memorials.

After the collapse of Soviet Union new interpretations of the wars have risen, but still with certain political aspects. Also, with the rising interest towards conflict archaeology the Civil War sites are examined, and in some cases, excavated. This research has been publicly debated, especially when mass graves of Reds are examined, or memorial services have been held. These interpretations are both local and nationwide and raise ethical questions of handling of heritage and memories surrounding these times.

This representation studies several cases from each period to show politically charged interpretations, with ethical questions about ownership of heritage and with it, “right” to make research and conclusions about history. Examples come from different aspects of material culture, such as memorials, museum objects and archaeological excavations.

## 7 ARCHAEOLOGY, HUMAN REMAINS AND CONTESTED NARRATIVES: INTERPRETING THE MATERIAL REMAINS OF THE LITHUANIAN PARTISAN WAR

**Abstract author(s):** Petrauskas, Gediminas (Klaipėda University, Institute of Baltic Region History and Archaeology)

**Abstract format:** Oral

The Lithuanian Partisan War (1944–1953) occupies a significant place in the history of 20th-century Lithuania. The relatives and comrades of freedom fighters killed during the ten years of anti-Soviet armed resistance sought an honourable burial of the partisan remains. However, the Soviet power structures, in order to intimidate the people, to suppress the resistance and support for the partisans, as well as to identify the killed partisans and to find their relatives, publicly displayed the desecrated remains of the dead in central town squares. Many of the remains of freedom fighters were buried in unmarked and disrespectful places, such as gravel pits, rubbish dumps, latrine pits, etc.

Since 1988, mass grave exhumations of killed partisans have been carried out by family members of partisan war victims. In 1992, the procedure and rules for the exhumation and transfer of partisan remains to cemeteries were adopted at the state level. Nevertheless, the excavation of partisan remains continued to be carried out in a haphazard manner, and the calls by state authorities and heritage specialists to follow the exhumation procedure were often controversial in society, as were seen as a hindrance to honouring the memory of the dead. Today, targeted searches and investigations of the burial sites of freedom fighters are being carried out in Lithuania, and the remains of the main leaders of resistance have been found and identified. However, decades of Soviet propaganda and information warfare have still tended to criminalise the partisan war and its participants at the level of personal histories, and archaeological discoveries of partisan remains in the public sphere are often the subject of tumultuous clashes between different narratives. This paper examines the phenomenon of the treatment, valuation and commemoration of the remains of Lithuanian partisans, analysing the relationship between conflict archaeology, oral history and memory.

## THE DNA IDENTIFICATION OF HUMAN REMAINS FROM WORLD WAR II: THE ETHICAL CHALLENGES OF RACIALISED IDENTITIES AND NATIONALIST NARRATIVES

**Abstract author(s):** Renshaw, Layla (Kingston University London) - Dziuban, Zuzanna (Institute of Culture Studies and Theatre History, Austrian Academy of Sciences)

**Abstract format:** Oral

DNA testing is being used with increasing frequency to identify war dead. Scientific advances enable the technique to be applied to older remains, bringing more historic conflicts into the scope of genetic testing. The identification of war dead can offer certainty and closure to relatives and survivors. On a societal level, the recovery and identification of war dead may inform new historical accounts and commemorative acts.

However, genetic testing is not a value-neutral tool. It is historically embedded in the detection of difference, the determination of group membership, and racialised identities. DNA testing may be used to establish the unique individual identity of a set of human remains, or it may be used to determine the likely ancestral population that the individual is descended from. These two different applications of genetic testing create disparities in the way categories of dead are conceptualised and constructed. This triggers further disparities in the kind of mourning and commemoration that follows identification. Genetic testing of war dead runs the risk of inscribing (or re-inscribing) ethnic and national identities upon the dead. Especially when they are commissioned by the state, the scientific analyses of the dead can be deployed to support nationalist representations of past conflicts.

This paper contends that genetic identification of war dead unsettles the prevailing modes of memory and commemoration in important ways that have not yet been adequately interrogated or theorized. It will have long-lasting political and ethical ramifications. This paper will focus on the DNA testing of World War II dead in Poland. It will discuss the recent analysis of skeletons recovered from Sobibór and the ethical problems with biologically delineating Jewish and non-Jewish Polish identity in this particular historical and commemorative context.

## 'HIDDEN HILLFORTS'. THE IMPORTANCE OF ARCHIVAL SOURCES FOR THE FUTURE STUDY OF FORTIFICATIONS [COMFORT]

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Ibsen, Timo (Centre for Baltic and Scandinavian Archaeology Schleswig) - Podėnas, Vytenis (Lithuanian Institute of History, Vilnius) - Schneeweiβ, Jens (Centre for Baltic and Scandinavian Archaeology Schleswig; ROOTS Cluster of Excellence, University of Kiel)

**Format:** Regular session

Since the inception of European archaeology hillforts, strongholds, enclosures, and other types of fortifications have been a persistent leitmotif of research. This enduring presence in archaeological research has left a paradoxical patchwork of limited research. This is in part due to a diversity of approaches to excavation inside and outside these monuments, as well as their size and their complex systems of ramparts, ditches, and walls. For this reason, a large portion of the original excavation reports and find materials remain unpublished in institutional archives. Rarely have the results of excavations been published in full and then only within frameworks of the contemporary prevailing theories. This gap in the catalogue of available literature has discouraged critical reassessment of foundational research.

The main obstacle to critical analysis is the inaccessibility of preliminary reports and grey literature spread across a broad number of archives and institutions. This is made more apparent by instances of renewed examination of archival sources challenging previous interpretations. Still, the bulk of archival resources need recuperation. Current research on fortification requires clear strategies to refine primary sources of old excavations for inclusion into modern archaeological science.

This session invites presenters to unshroud hillfort research that has been hidden or forgotten in various archives. Presentations will demonstrate not only practical aspects of incorporating archival sources and grey literature, but also how archival work and new investigations of previously studied sites can alter previously accepted interpretations and their broader implications on modern research. These two perspectives should demonstrate how early research impacts modern studies and whether archival sources, finds, and samples provide fresh contributions to current discussions on fortification. Papers focusing on national heritage institutes and archival repositories are particularly welcome in order to develop strategies to encourage the study of old excavations and to reassess old results.

## 1 A CENTURY OF DATING BACK AND FORTH. THE TORNOW-KLENICA AFFAIR IN THE CONTEXT OF GERMAN-POLISH ARCHAEOLOGY AND POLITICS

**Abstract author(s):** Reichenbach, Karin (Leibniz-Institute for the History and Culture of Eastern Europe - GWZO)

**Abstract format:** Oral

The paper seeks to follow the story of the changing chronology of Tornow-Klenica type strongholds and pottery throughout the 20th century. Based on the study of archival and published material it will trace the origins of the early-dating paradigm back to its roots in Silesian archaeology of the 1920s and 1930s and explore how and why it was taken up in Eastern German and Polish post-war archaeology until its eventual refutation in the light of dendrochronological data in the 1990s. It will discuss how the early dating of Tornow-Klenica type sites and finds was connected to ethnic interpretation which in itself was informed by respective German and Polish history politics. The strongholds thus served as key elements in the creation of grand narratives told from a national(ist) history perspective, which apparently could only be finally overcome after the end of the Cold War and by cutting deep sections into those monuments to obtain timbers for dendrochronology. The case of the dating history of Tornow-Klenica therefore raises the question of whether the study of archival documents as part of a critical approach to understanding and contextualising long-established research paradigms could offer a non-invasive corrective to challenging and overcoming them.

## 2 HOW VERIFICATION LEADS TO DISCOVERY – FOUR NEW EARLY IRON AGE HILLFORTS IN DYLEWO HILLS LANDSCAPE PARK (NORTH-EAST POLAND)

**Abstract author(s):** Solecki, Rafal - Welc, Fabian - Rabiega, Kamil (Cardinal Stefan Wyszyński University in Warsaw)

**Abstract format:** Oral

In 1908 Emil Hollack has published a map of East Prussia with marked location of prehistoric archaeological sites (Hollack 1908). One of these sites - a barrow cemetery - was located in the area of Dylewo Hills, near Peterswalde village. It was later, in 1930s, excavated by Carl Engel, who established its chronology to Early Iron Age (Engel 1935). In 1980s this site was verified by Wiesław Skrobot (Hoffmann 1999: 122), who has found two hitherto unknown hillforts in the vicinities of the cemetery (Skrobot 2015: 123, 142). Fabian Welc and Rafał Solecki conducted a further verification in 2010s, which resulted in discovery of another two hillforts. All four hillforts were excavated in 2018-2020 and their main phase of habitation can be dated to Early Iron Age and associated with the West Balt Barrow culture. In this way, a verification of already excavated barrow cemetery has allowed to discover a significant concentration of hillforts, which were probably a regional centre at that time.

Literature:

- Engel, C. (1935). Ein Hügelgrab mit Steinplattenkiste auf den Kernsdorfer Höhen (Ostpreussen). *Altpreussen* 1/1: 42–43.
- Hoffmann, M.J. (1999). Źródła do kultury i osadnictwa południowo-wschodniej strefy nadbałtyckiej w I tysiącleciu p.n.e. *Rozprawy i Materiały Ośrodka Badań Naukowych im. Wojciecha Kętrzyńskiego w Olsztynie* 177. Olsztyn: Towarzystwo Naukowe i Ośrodek Badań Naukowych im. Wojciecha Kętrzyńskiego.
- Hollack, E. (1908). Erläuterungen zur vorgeschichtlichen Übersichtskarte von Ostpreußen. Im Auftrage des ostpreußischen Provinzial Verbandes bearbeitet und herausgegeben. Glogau-Berlin: Kommissions Verlag von Carl Flemming.
- Skrobot, W. (2015). Antropologia przestrzeni, [in:] D. Gałzka, W. Skrobot and A. Szarzyńska (eds.), *Wzgórza Dylewskie. Geologia, krajobraz, antropologia przestrzeni*: 109–192. Olsztyn: Wydawnictwo Mantis.

## 3 WHEN THERE'S NOTHING ELSE: SPATIAL ANALYSIS OF ĶĪVUTKALNS HILLFORT INHABITATION THROUGH EXCAVATION JOURNALS

**Abstract author(s):** Visocka, Vanda (University of Latvia)

**Abstract format:** Oral

Ķivutkalns is one of the best known Bronze and Pre-Roman Iron (1100-1 BC) Age site in the eastern Baltic. Although it has been researched thoroughly, especially in questions regarding chronology and assemblages of the hillfort, there are little research related to spatial analysis of the site. This is due to the fact that only information traces of spatial distribution left are in the journals, made during the excavations. This will be the first attempt to analyse inhabitation and everyday life in the Ķivutkalns hillfort in order to determine the main tendencies of living and crafting during the Late Bronze and Pre-Roman Iron Age eastern Baltic.

In this paper excavation journals will be critically analysed, the information about possibilities and problematics regarding their analysis will also be presented. In this study the archaeological assemblages will be analysed and put into the context related to structures such as houses and hearths of the hillfort.

#### 4 HILL FORTS OR NOT? SITES WITH TOPONYMIC OR FOLKLORIC BUT MISSING ARCHAEOLOGICAL EVIDENCE

**Abstract author(s):** Valk, Heiki - Vindi, Andres (University of Tartu)

**Abstract format:** Oral

Hill forts can be defined as archaeological sites with cultural layers and/or with visible traces of fortifications. Many of these sites have been known as archaeological monuments for a long time, but toponyms on historical maps, as well as oral lore recorded in archives can serve as a basis for discovering new, formerly unknown strongholds.

In addition to „real“ hill forts there are, however, sites without definite archaeological features but with folkloric evidence referring to a former fortified place. There exist place names characteristic of hill forts, as well as legends of stronghold or „town“ sunken into the hill. Toponyms may also indirectly refer to the vicinity of an unknown hill fort (e.g. „hill fort lake“, „hill fort swamp“ etc.).

Due to the lack of archaeological evidence these sites without archaeological features have traditionally not been regarded as hill forts. However, toponyms may hold memories of very short-time or temporarily used strongholds or reflect cases in which weak cultural layers have been eroded to the slopes due to long-term ploughing. The presentation discusses the topic on the basis of source materials from Estonia.

#### 5 THE POTENTIAL AND CHALLENGES OF SPATIAL ANALYSIS BASED ON ARCHIVAL SOURCES: BRONZE AGE - ROMAN PERIOD HILLFORTS IN LITHUANIA

**Abstract author(s):** Podenas, Vytenis (Lithuanian Institute of History)

**Abstract format:** Oral

New investigation methods have allowed archaeologists to extract more information from less excavated areas as well as fill in the gaps on various lacking knowledge on past populations' behaviour, economy, spatial organization, defensive strategies, and everyday life. Even though, some questions might be addressed with the help of non-destructive methods, the tendency of lessening excavated areas inevitably provides new interpretational problems where large quantities of artefactual spatial data are required. In turn, a potential of bridging an emergent data gap could be addressed with old excavation reports that documented vast excavated areas in the hillforts. However, the documentation tendencies differed based on the timeline of the excavations, archaeologists' readiness, and a level of taken precautions to ensure report data association with the artefacts that after all were stored in the museums.

The Paper reviews available spatial information in the old excavation reports from XX century Lithuania that dealt with hillforts from the Bronze Age up to the Roman period. It also aims to discuss the development of documentation tendencies and answer the question: have the good examples provided the impetus for other researchers to improve their own reports or were they isolated cases? Lastly, the paper discusses thoroughly the case of Narkūnai hillfort that was excavated in 1976–1978. The primary spatial analysis objective was the identification of formation processes of the archaeological record, however, several significant observations from the secondary analysis of archival sources also emerged. Based on comparative analysis of report data and artefacts stored in the museum, a fragment of a I-II cent. AD paleorelief was reconstructed as well as quick abandonment of the Northern building during the Late Bronze Age was identified.

#### 6 APUOLĖ HILLFORT COMPLEX: POSSIBILITIES OF RE-EVALUATION OF RESEARCH DATA

**Abstract author(s):** Zabiela, Gintautas (Association of Lithuanian Archaeology)

**Abstract format:** Oral

According to the written sources, in 853, castle Apulia was attacked by the vikings. It was connected with the hillfort of Apuolė in 1887. Today, the entire Apuolė archeological complex (Western Lithuania) is known, consisting of at least six parts: the hillfort, cemetery, foot settlement, sanctuary, forecourt, and individual homesteads. The complex has been excavated two times by seven different researchers, and surveyed eight times. The focus was always on the hillfort. It was excavated in 1928–1932 and 2018–2019. A total of 1,855 m<sup>2</sup> has been excavated within the complex, including 1,609 m<sup>2</sup> of the hillfort. A significant part of the pre-war research material was collected and sorted in 1992 and published in 2009. In the past 30 years, drafts of plans and a film have been found in museums and archives. New excavations were carried out aiming to study the environment of the hillfort and to adapt the site for visitation. During this period, a separate discipline of archeology, known as archival archeology, emerged and developed its methods. All this enables us to re-evaluate our knowledge of Apuolė.

The ultimate goal of such assessment is a new level of understanding of the Apuolė complex without the use of destructive research methods (such as excavations). This should be done through an analysis of all known research material in the form of a separate study (preferably, a publication). The main principles of such work are a full publication of the available primary sources with appropriate comments, as well as a spatial - chronological analysis of all known material using the achievements of modern archeology. In the case of Apuolė, the objective of archival

archaeology would be to record all research material, which, unfortunately, could not be performed by the author of this paper.

## 7 HILLFORTS REVISITED: INTEGRATING LEGACY DATA INTO A MODERN ARCHAEOBOTANICAL RESEARCH

**Abstract author(s):** Minkevicius, Karolis (Vilnius University Department of Archaeology)

**Abstract format:** Oral

The beginning of the 20th c. witnessed a growing interest in Lithuanian hillfort studies. This included several key Iron Age sites, most notably – Apuolė and Senoji Iplitis. These excavations also uncovered some of the richest assemblages of charred plant remains which facilitated pioneering archaeobotanical studies in Lithuania. However, the start of the Second World War and the following geopolitical turmoil ceased the development of this field. The surviving collections and research data were not organized systematically, and the existing information was gradually forgotten. Eventually, this has resulted in a modern notion that archaeobotanical studies in Lithuania were almost non-existent up until the end of the 20th c. This has often caused either insufficient or excessive criticism of legacy excavations. In worst cases, the data was being ignored altogether.

However, a recent inspection of museum collections highlighted the need to re-evaluate such viewpoint. Many of the pre-WWII finds alongside the original excavation reports have survived in museum storages. Even though both the quality of excavation and the overall condition of museum collections are varied, the surviving field documentation presents an opportunity for re-examination and modern analysis of the legacy material. Also, the results of this study revealed the necessity to re-assess the state of botanical studies in Lithuanian archaeology. Many of the recent advancements in the field were a direct result of the research efforts made in 20s and 30s. Recognizing this enables a meaningful integration of the legacy data into a modern research framework.

## 8 THE HILLFORT OF CAPOTE (EXTREMADURA, SW SPAIN). A MISUNDERSTOOD FORTRESS AMONG THE CELTIBERIANS OF THE IRON AGE

**Abstract author(s):** Berrocal-Rangel, Luis (Department of Prehistory and Archaeology, Autonomous University of Madrid) - Ruano, Lucía (University Complutense of Madrid) - Paniego, Pablo (Consejo Superior de Investigaciones Científicas - Instituto de Arqueología de Mérida) - Sánchez de Oro, Pablo (Universidad Autónoma de Madrid)

**Abstract format:** Oral

In 1985, as a result of several surveys conducted by the Autonomous University of Madrid, one of the authors of this contribution identified an archaeological site at El Castrejón de Capote (Extremadura, SW Spain). Here, an important funerary slab, with a Tartessian inscription dated to the 6th century BC, was found. Archaeologists observed a series of buried structures, first interpreted as burial mounds but which, after a series of excavations between 1987 and 1996, were revealed to be the bastions and ramparts of a Late Iron Age settlement. As a result, the competent authorities bought the site and prepared it for visitors, but did not organise a proper programme of systematic excavations. Since then, the settlement has not been further dug.

Although between 1988 and 2003, archaeologists partially published the site, more than thirty houses and two hundred metres of walls, ditches, and defensive elements remain unpublished, buried again in the preliminary excavation reports. A single isolated exploration in 2007 revealed that Capote hillfort occupied a central place in the geographical structure of the region and that this place is well hidden in the landscape. Would this central position justify its location despite its scant natural defences, limited to the steep slopes of a shallow ravine? If not, how can the enormous defensive structures be explained? As this question could not be previously answered, our aim is to try to answer it by unearthing the grey literature produced as well as the excavation reports. From an updated theoretical and methodological perspective, we believe that applying new technologies to the large areas of the site excavated and to be excavated (GIS analysis coordinated with LiDAR data, analyses of raw materials and photogrammetric reconstructions) could finally reveal the hitherto incomprehensible function of a fortress located in a site of impossible defence.

## 9 REVEALING FORGOTTEN HILLFORTS - ARCHIVAL SOURCES OF EASTERN PRUSSIA'S GERMAN RESEARCH HISTORY ON PREHISTORIC FORTIFICATIONS

**Abstract author(s):** Ibsen, Timo (Zentrum für Baltische und Skandinavische Archäologie)

**Abstract format:** Oral

Hillfort research in former German Eastern Prussia, today divided into a Lithuanian, Polish and Russian part, goes back to the 1830s. Until 1945 mainly German archaeologists registered a total of approximately 500 monuments of this type. Nevertheless hillfort research right before the second world war was still at the very beginnings. Only a few hillforts experienced a more detailed investigation, with a varying quality and extent. But beside a few preliminary reports in archaeological journals of the time and newspaper articles these results remained mainly unknown to the wider

scientific community. The reports and documents related to the pre-war excavations were kept in the Prussia-Museum in Königsberg, but its collection and archive was lost for half a century during the post-war period. Only after 1990 big parts of the archive were rediscovered, re-sorted and can now systematically be filtered for hillfort related information.

This paper sheds light on the different archival sources related to hillfort research in former Eastern Prussia and gives examples, how rich the material in the archives sometimes is. As a best practice example, relevant archival material of excavations at the hillfort Kraxteppelin (today Jantarnij, Russia) will be presented to demonstrate, how original documentations can add to the understanding of modern hillfort research. Kraxteppelin was the only hillfort completely excavated in the German research period. Based on the archival sources it is possible to reconstruct the main phases of this hillfort, used between pre-Roman Iron Age and the medieval period. Furthermore adjacent settlements have been discovered by in the vicinity, making the hillfort Kraxteppelin one of the best investigated settlement chambers of the region. It was hidden in the archives so far, but can now be revealed.

## 10 BUDEČ STRONGHOLD: THE POTENTIAL OF ARCHIVAL SOURCES FOR THE FUTURE STUDY OF A “WELL-KNOWN” ARCHEOLOGICAL SITE

**Abstract author(s):** Tomanova, Pavla (Institute of Archaeology of the CAS)

**Abstract format:** Oral

Budeč is an early medieval stronghold (ca. 9th-12th cent.) located about 20 km northwest of Prague (Czech Republic). The site's name appeared in written sources as early as the 10th century. Therefore the site has always attracted the attention of historians and archeologists. The most extensive archeological excavations took place in the 70s' and 80s' and brought a vast mass of archeological sources. On the other hand, the excavation results have been published only in several sub-papers and two (more or less) science popularization monographs. In these publications, the site is interpreted as a temporary residence of the princely Přemyslid family and a significant administrative center of the nascent Přemyslid state. The site is considered one of the best investigated archeological sites in the Czech Republic.

However, a significant part of the archeological sources from the excavations at Budeč have remained unprocessed or deserve revisions. Therefore, a revision of selected archival sources became part of my PhD research. Besides critically reading the archival documentation, I have processed spatial data in GIS and applied modern geodetic surveys. The revision shifted the general interpretation of Budeč as, primarily, a Christianization center of the early medieval Přemyslid state.

In addition, the aforementioned revision has shown more gaps in the research of the site. At the same time, the chances of conducting modern excavations in situ are currently quite low. Thus, future research at Budeč is limited to further processing archival sources and applying non-destructive research methods. Both will be included in the proposal of a new research project I am working on at the moment.

This paper will present the results of my PhD research, as well as the proposal for the new research project.

## 11 EARLY AND HIGH MEDIEVAL FORTIFICATIONS IN THE HANNOVER AREA

**Abstract author(s):** Messal, Sebastian (Lower Saxony Heritage Agency)

**Abstract format:** Oral

Numerous early and high medieval castles are known from the area around Hannover. Some of these fortifications have been scientifically investigated to some extent, while little is known about other fortifications in scientific research. However, a closer look into the archives of the responsible heritage agency in Hannover reveals that there is often much more information available on these sites, ranging from surface surveys to unpublished excavation reports. The extent to which this knowledge improves the state of research on the fortifications in the Hannover area is difficult to say at present, as a reappraisal of the extensive source material is still pending. However, the lecture will present the potential of these hidden archival materials and discuss a future strategy for using this data. In addition, the project "Denkmalviewer Niedersachsen" (Lower Saxony Monument Viewer), an online viewer listing Lower Saxony's cultural monuments, including fortifications, will be briefly presented and discussed.

## 12 THE “LATVIJAS PILSKALNI” PROJECT AND E. BRASTIŅŠ LEGACY. ON THE WAY TO THE OPEN-ACCESS DATABASE OF THE BALTIC REGION HILLFORTS

**Abstract author(s):** Shiroukhov, Roman (Centre for Baltic and Scandinavian Archaeology - ZBSA) - Kalniņš, Gatis (Latvijas Pilskalni / Latvian Hillforts)

**Abstract format:** Oral

The paper covers a number open-access databases of the hillforts of the East Baltic region, including Estonia, Latvia, Lithuania, Kaliningrad region of Russia and Poland. A short overview of the pre-existing databases of hillforts of the region is given with special attention to the “Latvijas pilskalni” project, its structure, methods and philosophy.

"Latvijas pilskalni" was launched in August 2017 with the aim to provide free access to information on Iron Age hillforts in Latvia. The first step was to give online access to the content of four pre-war books on Latvian Hillforts by E. Brastiņš, barely known outside Latvia, as well as to create a hillfort map integrating Brastiņš' work with unpublished data from the Latvian state archives. These data were later supplemented by J. Urtans and recent relevant publications. In the course of the work, the locations of the hillforts were updated using the Latvian Geospatial Information Agency's (LGIA) Place Names Database. The next stage was to refine the coordinates using the digital terrain model layer in the map browser of the same Agency. In August 2019, the planlauf/Terrain software was purchased to create 3D models of the hillforts using LiDAR and orthophoto data freely available on the LGIA website. 3D models and videos of Latvian and Estonian hillforts were created and uploaded to Sketchfab.com and YouTube. The source codes of the models and other related information are freely available at <https://opendata.latvijas-pilskalni.lv>. As a result, in January 2020, the project received the Latvian Open Technology Association's Private Sector Award of the Year.

The Latvian hillforts project is a prime example of unifying different geospatial and archival sources on the way to the ambitious development of the broader European Hillforts open-access database.

355

## RE-VISITING THE GLOBAL/LOCAL CONTINUUM IN ARCHAEOLOGICAL HERITAGE PRACTICE: CONTRASTING HISTORIES, PERSPECTIVES, AND EXPERIENCES WITHIN AND BEYOND EUROPE

**Theme: 1. Archaeologists and Archaeology Here and Now**

**Organisers:** Lazzari, Marisa (Department of Archaeology, University of Exeter) - Lilley, Ian (Faculteit Archeologie, University of Leiden; School of Social Science, University of Queensland in Australia) - Orlandi Barbano, Francesco (Department of Archaeology, University of Exeter)

**Format:** Discussion session

Worldwide, communities at the frontier of global resource extraction experience issues affecting their cultural and natural reservoirs of knowledge, memory, and lifeways. Despite their highly variable experiences, they share a preoccupation with the eroding power of global flows of capital—particularly as it often presents itself as a road to development and a better future—and a pressing need for alternative pathways towards sustainable futures. New global and continent-wide programs (e.g. UNESCO SD goals; Horizon Europe 2021-24) promote myriad initiatives, foreground the need for multilateral collaboration, and stress European-based research's role both inside and beyond its borders. Global agendas mobilise cultural, educational, social, and political capital under the banner of sustainable development through multiple pathways, often converging on cultural heritage as a vortex of action. Yet what 'sustainability' means in relation to locally meaningful cultural landscapes should be explored rather than a priori assumed.

Transnational flows of capital, resources, and discourses require matching transnational research efforts that are also able to establish fruitful dialogues across disciplinary and geographical borders. Taking the global-local in heritage research and practice as a continuum rather than as a dichotomy, this session seeks to explore the distinct processes, practices, discourses and materialities that each of these realms involve, as well as their overlapping, intersecting, contradictory and/or mutually re-enforcing dynamics with dedicated and detailed attention.

The session invites papers with a critical stance towards archaeology's possibilities, responsibilities, and shortcomings when supporting communities' heritage practice to envision and develop inclusive futures. Topics may include (but are not limited to) the following: community/indigenous heritage and resource extraction; ex-mining regions facing waning investment while coping with the ecological aftermath of extraction; post-conflict regions seeking global tourism markets amidst cultural and ecological devastation legacies; mobile/transient/diasporic heritages. Papers with a global and/or European focus are welcomed.

### ABSTRACTS

1

#### TRANS ADRIATIC PIPELINE IN SOUTHERN ITALY: THE STORY OF A COMPLEX RELATIONSHIP BETWEEN HERITAGE, COMMUNITY AND LARGE-SCALE DEVELOPMENT

**Abstract author(s):** Iacono, Francesco - Faccio, Vittoria (Dipartimento di Storia Culture Civiltà, University of Bologna)

**Abstract format:** Oral

After several years of protests, oppositions and intense social conflict, in 2016 the Trans Adriatic Pipeline (TAP) joint venture company landed on the Adriatic coast of Apulia, in Southern Italy. The facility transports Azerbaijani gas to Europe, and the start of its construction marked a turning point for inhabitants of the small town of Melendugno, mostly devoted to agriculture and tourism. The top-down imposition of the pipeline, from both National and International actors, resembled an actual invasion to the eyes of the numerous members of the community. Locals were mainly concerned with the consequences the pipeline would have had on the landscape. Particularly olive trees, of great symbolic significance for Apulia, were protected, and campaigners did not hesitate to stand against excavators. Regardless of mitigation attempts, the fragile balance of the territory has been perceived as threatened by the presence of the infrastructure, as the portion of land crossed by TAP is representative of an extremely rich cultural



landscape, and the general area has been inhabited from early prehistoric times to present (an archaeological survey qualified the area as of high archaeological risk).

This paper will explore the presence of the pipeline in Salento from a range of different perspectives, with the purpose of assessing the complex relationship existent between heritage, community, and large-scale development. It will discuss the ethical stance of local archaeologists, addressing at the same time the overarching issue of environmental justice in a highly contested territory.

## 2 UNARCHIVED STORIES AND ALTERNATIVE PERCEPTIONS OF SULTANAHMET ARCHAEOLOGICAL PARK, A UNESCO WHS

**Abstract author(s):** Yalman, Nurcan (Nisantasi University Istanbul Dept of History) - Cana, Sinan (Nişantaşı University Dept of Tourist Guiding)

**Abstract format:** Oral

Sultanahmet Archaeology Park is a UNESCO World Heritage Site since 1985 and one of the most visited tourist destinations in Turkey. The primary importance of this area is that it was the administrative center of the capital of both the Byzantine and Ottoman Empires which has made it one of the focal points of socio-global attention. While this place never loses its central characteristics, it also preserves its feature of being a stage where political statements are reflected. Therefore, the place contains significant cultural stratification.

Over the last 35 years, it has increasingly become a tourist destination. Thus, the region has continued its evolution due to the tourism economy, its physical shape, availability of the facilities that have changed and developed, such as new hotels, hostels, restaurants, bars, and souvenir shops.

In this paper, we would like to present the preliminary results of our research which has focused on the local communities whose lives are associated with Sultanahmet Archeological Park. Our research aim is to explore, what other histories exist in the memory of the society living today that is overshadowed by those iconic and ostentatious historical buildings of the region such as Hagia Sophia, Blue Mosque, and Topkapı Palace. The diversity of individual and communal stories that have been overshadowed by those will be presented.

## 3 CHANGING POLITICAL PERCEPTIONS OF THE SULTANAHMET ARCHAEOLOGICAL PARK, A UNESCO WHS

**Abstract author(s):** Cana, Sinan - Yalman, Nurcan (Nişantaşı University)

**Abstract format:** Oral

While the Sultanahmet Square is a tourism hotspot of today, it served as a political foci for millenias. Due to this the square as it is known today was changed numerous times according to the political climate or the ruling regime, be it an empire or a political party. The heritage and the culture of the square changed accordingly, and the people followed suite. The square itself houses the ancient (now ruined) Roman Palace and the Topkapı Palace which where the ruling seats of the former empires, both Byzantine and the Ottoman Empires respectively

This research focuses on the changing political importance of the square and its cultural effects on the people living in and around Sultanahmet Archeological Site. Their shared stories and the written history will be analysed using interviews. Tumultuous changes in the political climate of the region opens up many questions relating to the history and heritage of the region.

---

## 358 CAN YOU SEE ME? PUTTING THE 'HUMAN' BACK INTO 'HUMAN-PLANT INTERACTIONS' [ARCHWILD]

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Martin Seijo, María (Universidad de Cantabria) - Mooney, Dawn Elise (University of Stavanger) - Berihuete Azorín, Marian (IPHES-Catalan Institute for Human Palaeoecology and Social Evolution) - Ciampagna, María Laura (CONICET-Universidad Nacional de la Plata)

**Format:** Regular session

Environmental archaeology has undergone significant development and consolidation in recent decades, integrating a growing variety of proxies. Our knowledge about past landscapes and plant exploitation has greatly expanded. It is time now to go further and reintegrate humans as research subjects in archaeological and archaeobotanical studies of human-environment or human-plant interactions. Archaeological discussions generally acknowledge the traces left by humans on the landscape, and their botanical knowledge, skills, and technological know-how – but the agency of individuals and communities is often poorly integrated in these narratives. Although we acknowledge the difficulties inherent in this approach when studying plant remains from the archaeological record, it is crucial at this point to reflect on the human dimension of people-plant interactions. In this sense, the main aim of this session is to present works that combine studies of plant exploitation with more human perspectives, in order to open a discussion

on the possibilities and limitations of this approach and explore the current state of the art. We welcome contributions on practical and theoretical approaches from archaeobotany, anthropology, ethnoarchaeology and experimental archaeology dealing with this topic.

## ABSTRACTS

### 1 PERCEPTIONS AND PRACTICES, AN OVERALL STUDY OF THE HUNTER-GATHERERS FROM PATAGONIA ARGENTINA AND PLANT INTERACTION

**Abstract author(s):** Ciampagna, María (CONICET-Facultad de Ciencias Naturales. Universidad Nacional de La Plata)

**Abstract format:** Oral

The main aim of this presentation is to elucidate the practices of gathering and postharvest processing wild plants that performed hunter-gatherers on the north coast of Santa Cruz, Patagonia, Argentina, in the late Holocene. An overall study of archeobotany remains, ethnohistorical sources, ethnobotanical interviews and experimental replications were proposed. The methodological analyses are specific for each field. The analyses of plant macro and microremains recovered from various archaeological sites, pot fragments and grinding tools were made following these protocols (Capparelli et al. 2015a, Ciampagna et al. 2021, Mercader et al. 2017, Piqué et al. 2021). Ethnohistorical sources from XVII to XIX centuries were performed behind a critical view. An ethnographic qualitative methodology with flexible design was adopted; and experimental studies were executed to reproduce the patterns which were inferred in the last sources. Due to the integrity of these results, categories like sensory perceptions and foodways are put in dialogue with field work, theory and reflexivity. This exercise would improve our analytical and theoretical tools to look for native categories and comprehend the "ways of inhabiting" of these hunter-gatherer societies.

### 2 FROM THE ARCHIPELAGO TO THE STEPPE IN CENTRAL-WEST PATAGONIA: PLANTS AND HUNTER-GATHERERS IN THE AISÉN REGION, CHILE

**Abstract author(s):** Belmar, Carolina (University of Chile) - Méndez, César - Nuevo-Delaunay, Amalia (CIEP) - Reyes, Omar (Univeristy of Magallanes; CIEP) - Farias, Ivonne - Gómez Díaz-Tendero, Macarena - Gutiérrez, Valentina (Fondecyt 11180388)

**Abstract format:** Oral

The study of the plant/human interactions in the steppe, forest, and channels of Central-West Patagonia (Aisén Region) provides an important perspective for achieving a better understanding of behaviors developed by the hunter-gatherer groups who inhabited these environments in the past. Introducing an archaeobotanical view contributes and enhances the discussions related to the use of plants since it considers their multiple properties, various usable parts, and seasonal cycles, all of which implies recognizing the profound knowledge of plants by their users. Hence, we can study various aspects of the hunter-gatherer way of life such as: a) characteristics of the procurement behaviors of plants, b) identifying seasonality of occupations, and c) recognizing the technology involved in obtaining and/or processing plants.

In this contribution, we present a synthesis of the archaeobotanical analyzes of macro and micro remains from sixteen archaeological sites distributed along six Andean valleys located in steppe and forest environments, and from eleven sites from the Chonos archipelago of the Pacific coast, all in the Aisén Region. These samples cover a time range from the Pleistocene-Holocene transition to the end of the Holocene. Addressing the environmental and temporal variability is fundamental in studying the trajectories of plant use by these groups. We integrate the study of plant macro and micro remains to obtain a comprehensive view of the use of plants. On the one hand, recognizing plants in their primary contexts -such as residues in lithic artifacts, in human dental calculus, or in sedimentary features (i.e., hearths)- links plants to the technology and activity areas within the sites. On the other hand, the scattered material is indicative of the discard behaviors within the inhabited contexts.

ANID FONDECYT 11180388, ANID FONDECYT 1180306, ANID FONDECYT 1210042, ANID FONDECYT 1210045, ANID Regional R20F0002.

### 3 WOOD FOR WEAPONS: CAN WE SEE CHILDREN IN SCALED ORGANIC HUNTING TOOLS?

**Abstract author(s):** Milks, Annemieke (University of Reading, Department of Archaeology) - Lew-Levy, Sheina (Max Planck Institute for Evolutionary Anthropology)

**Abstract format:** Oral

As the name suggests, the Stone Age archaeological record is dominated by stone, and to a lesser extent bone technologies. In contrast, wood is rare (but there!). The Palaeolithic in particular suffers from what April Nowell calls 'the tyranny of the tangible'. Organic evidence of Palaeolithic children comes in the form of personal ornaments such as shell beads, possible toys in the form of figurines, and functional tools and toys including weapons. This presentation will review the tentative evidence that hunter-gatherer children of the deep past, possibly as early as the Middle Pleis-

tocene, made and/or used scaled weapons that were manufactured either entirely from organics or with significant organic components, including wood. Although the question of whether children's toys and tools were made more often from wood than adult material culture is poorly understood, ethnographic evidence does support the suggestion that early learning of hunting technologies may have involved the use of expedient toy weapons and functional scaled-down wooden hunting tools. Weapons therefore provide a lens through which to 'see' human engagement with wood as a raw material in the deep past.

#### 4 **LATE MESOLITHIC BIRCH BARK LAYERS FROM OSTEEL, GERMANY - A PLACE TO 'SIT AND WATCH' OR TO 'STORE AND HIDE'?**

**Abstract author(s):** Mahstedt, Svea - Siegmüller, Annette - Wolters, Steffen (Lower Saxony Institute for Historical Coastal Research -NIhK)

**Abstract format:** Oral

A birch bark layer on the edge of a shallow sandy ridge that projects far into a vast wetland seems to belong to late Mesolithic traces of human activities. It was found close to the site of Osteel in the coastal zone of Northwestern Germany, which was known from a rescue excavation in the 1990ies and characterized by a pit structure that was radiocarbon dated to the 6th millennium calBC by charcoal remains. Covered by mid-Holocene bog peat and clay from a Medieval marine transgression the birch bark was protected from decomposition and agricultural disturbance. For the bark finds the radiocarbon dating led to an age from the early 5th millennium calBC. They seem to have been laid out on a sandy soil that was already influenced by a rising ground water level. In this presentation the birch bark finds are integrated into the reconstruction of the surrounding landscape and put into relation to other potential traces of human activities in the landscape as the mentioned pit structure and a layer of burnt shrubs. An interpretation as bark floor or as a storage for later use in a wet milieu is discussed.

#### 5 **SEEDS FROM DIFFERENT PERSPECTIVES: INTERPRETING PLANT REMAINS FOUND IN SPECIAL CONTEXT FROM LATE NEOLITHIC HUNGARY**

**Abstract author(s):** Mervel, Máté (Eötvös Loránd University, Institute of Archaeological Sciences, Budapest)

**Abstract format:** Oral

Szegvár-Tűzköves is located in the southern part of the Great Hungarian Plain, and it represents one of the most significant Late Neolithic archaeological sites of the country. Due to the clay anthropomorphic figurines found here, the site is also well known to the general public in Hungary. The aim of this paper is to present and interpret the results of the archaeobotanical analysis carried out on two macrobotanical samples from Szegvár-Tűzköves. These samples were collected from two intact vessels that were found on the floor of a burned down house. The vast majority of the carpological remains are cereal grains. Among cereals, the most dominant crop is naked wheat, followed by barley and emmer. A small amount of blackberry seeds was also identified. This assemblage of cereals is rather unusual in the Late Neolithic of the region, and the context of the samples also imply to consider that their deposition did not result from everyday actions. Therefore, the plant remains do not reflect solely on their production and consumption, but also on a special use of plants and the ideas that were associated with these cultural practices. This paper will interpret the results of the archaeobotanical analysis beyond the economic significance of plants and try to explore the possibilities of an interpretation that takes into consideration other cultural factors in order to determine why these specific, less prevalent species were selected to be exposed in such a peculiar context.

#### 6 **CORDAGE EXPERIMENTAL PRODUCTION. EARLY NEOLITHIC (5324-4977 CAL BC) RAW MATERIALS AND TECHNIQUES USED IN LA DRAGA (GIRONA, SPAIN)**

**Abstract author(s):** Herrero-Otal, María - Romero-Brugués, Susagna - Piqué Huerta, Raquel (Autonomous University of Barcelona) - Homs, Anna (Independent researcher) - Palomo, Antoni (Museu d'Arqueologia de Catalunya)

**Abstract format:** Oral

Cordage is related to daily life purposes and have played an important role in all societies. Due to the lack of preservation in the most of archaeological contexts, the knowledge of these technologies is limited. One of the main questions is how raw material determine the type and production processes. Moreover, raw materials properties may also have to do with the properties of the final ropes.

To test the raw materials used in the Early Neolithic, the cordage assemblage from La Draga (Girona, Spain; 5324-4977 cal BC) have been systematically studied to infer if the raw materials may influence in the variability of manufacturing processes and cords typology.

The Early Neolithic site of La Draga is a dwelling settlement located in the north-eastern part of the Iberian Peninsula. It has provided one of the oldest sets of vegetal fibres-based objects from southern Europe preserved in waterlogged conditions, which have been systematically studied. A wide variety of manufacturing techniques were identified, and monocots and dicots families were determined as raw materials in fibre-based productions. The plant availability

probably was an important factor for taxa selection but the use of specific families with particular mechanical and physical properties may bear on the technique used in production.

In this work, we present the results of an experimental reproduction of the cords recovered in La Draga, considering both their manufacturing processes as well as the raw material used and their properties.

## 7 ASSESSING THE ROLE OF WOODEN VESSELS, BASKETRY, AND POTTERY AT THE EARLY NEOLITHIC SITE OF LA DRAGA (BANYOLES, SPAIN)

**Abstract author(s):** Bertin, Ingrid (Departament de Prehistòria - Universitat Autònoma de Barcelona; CEPAM - Université Côte d'Azur; ESR ChemArch Network) - Romero-Brugués, Susagna - Tzerpou, Evdoxia - Morera, Núria - Piqué, Raquel (Departament de Prehistòria - Universitat Autònoma de Barcelona)

**Abstract format:** Oral

The receptacles made of wood or plant fibres are rarely preserved in the archaeological context. As a result, the work involved in their production and their functions remains invisible with respect to other receptacles commonly better represented, as it is the case of pottery. The early Neolithic site of La Draga (5300-4900 cal BC), located at the shore of the Lake Banyoles (Spain) has provided several receptacles made of wood and plant fibres besides a significant amount of ceramic remains. The goal of this presentation is to provide an overview of the receptacles of La Draga site in order to assess the importance of organic receptacles in a context where pottery technology is well known and employed for several functions. The importance of the different types of vessels and receptacles in the context of this farming society is assessed through the analysis of the number of remains, their sizes and shapes, as well as with their spatial distribution. Moreover, the process of production of the different types of vessels is analysed in order to highlight the technologies involved and the organization of work. The good preservation of the organic receptacles allows focusing on their comparison in order to generate hypothesis of their function.

## 8 FINDING HUMAN AGENCY IN THE 0.5MM ARCHAEOBOTANICAL FRACTION

**Abstract author(s):** von Baeyer, Madelynn (Max Planck Institute for the Science of Human History)

**Abstract format:** Oral

Beginning in 2022, the Çadır Höyük Excavations in central Anatolia will incorporate an ethnographic component to the archaeological excavations. After almost 30 years of research at Çadır Höyük, this expansion of research is notable. This methodological broadening can be traced to a number of factors, not the least of which is my dissertation research on the Late Chalcolithic archaeobotanical record at Çadır Höyük. My research was able to identify a specific shift in animal provisioning that I believe is linked to climate change risk management strategies during the second half of the 4th millennium BCE (ca. 3600–2900 BCE). The ability of archaeobotanical research to highlight how humans in the past mediated climate change led to the adoption of a new research goal: to integrate past and present agricultural data to identify successful solutions for mediating climate change in central Anatolia that current farmers can follow.

My oral presentation will discuss the elements of my dissertation research that allowed me to emphasize human behaviors and how that small emphasis led to this shift in the overall approach to research at Çadır Höyük. I will also discuss outside influences that support this methodological shift and perceived difficulties in applying this approach to other research projects.

## 9 HANDS, TOOLS, AND SKILLS: INTERPRETING ARCHAEOLOGICAL PLANT-BASED CRAFTS FROM THE PERSPECTIVE OF ARTISANS

**Abstract author(s):** Martin Seijo, Maria (Universidad de Cantabria)

**Abstract format:** Oral

Plants provided essential raw materials for crafting, such as wood, bark, fibres, vines, saps, and resins amongst others. This presentation summarises recent research on archaeological plant-based crafts from northern Iberia recovered from contexts dated between Bronze to Iron Age by reclaiming crafters experience as a framework for interpreting this evidence. Hands, tools, skills, raw materials, and plants meet and interact in plant crafting. Ethnobotanical and ethnographic research has attested that crafting plant materials requires long and repetitive processes which involve from practices of tending and managing plants to obtain adequate raw materials, to shaping, and crafting wood and fibres. The analysis of plant-based material culture preserved by charring, mineral replacement and waterlogging by combining archaeobotany and morpho-technological analysis, and the compilation of ethnobotanical and ethnographic evidence has provided new insights in the botanical knowledge, technological know-how and specific skills of ancient artisans, and about the complex entanglements that were established between woodlands, scrublands, orchards, plants, and humans.

10

## HUMAN-ENVIRONMENTAL INTERACTIONS IN THE MIDDLE SURA RIVER REGION (RUSSIA) IN THE EARLY IRON AGE AND THE EARLY MIDDLE AGES

**Abstract author(s):** Salova, Julia (-) - Vyazov, Leonid (-) - Ponomarenko, Elena (University of Ottawa) - Ershova, Ekaterina (-) - Utiagulova, Rimma (-) - Myasnikov, Nikolai (-)

**Abstract format:** Oral

Multidisciplinary studies in the Middle Sura region aimed to analyze land-use dynamics in a floodplain area at the former confluence of the Sura and the Malaya Sarka rivers. The stratigraphic analysis of the alluvial sediments and buried soils revealed a series of climatic cycles dated to the first millennium BCE and the first millennium CE, when the floodplain was periodically available for various types of economic development, as revealed by the macrofossil and pollen analyses. The earliest buried soil is dated to the Early Iron Age (~700 BCE - 200 CE) and associated with the pine and oak forests used as forest pastures. There are no markers of permanent occupation of the floodplains during this period; the population developed high floodplain terraces and adjacent riverbanks. On the contrary, after ~200 CE the floodplains, covered by broadleaf forest, became the most favorable area for settlement. The territory was partially cleared for slash-and-burn agriculture, as evidenced by the soil stratigraphy and mud-coated charcoal. That resulted in a gradual deforestation; areas of grasslands appeared here not later than 300 CE. The local population cultivated cereals (barley, wheat, and millet) and practiced fishing. After 450 CE floods drastically intensified following the increase in runoff. The sites post-dating that time relocated onto high river terraces and the pine and oak forest recovered in the floodplain. The new stage of low flooding dates to the Medieval time (after 750 CE), the soils of this period are of a grassland type and have traces of subsequent tillage in permanent plow fields. The traced dynamics of the water fluctuations in the Sura floodplain are asynchronous with the data from the other studied regions of the Russian Plain, which raises the question of a relationship between the availability of floodplains for economic development and migration processes.

11

## HUMAN AGENCY FOR WOOD FUELING THROUGH THE ANDALUSIAN WRITTEN SOURCES AND ARCHAEOBIOLOGY

**Abstract author(s):** Celma Martínez, Mireia - Hernández Robles, Alicia - Eiroa Rodríguez, Jorge A. (University of Murcia)

**Abstract format:** Oral

There is a need to revise gendered human agency implied in the wood fueling cycle –acquisition, transformation, transport, and trade, as the basis for the socio-economic analysis in the Andalusian chronological phases. The public dimension of this economic activity most affects transport and trade and was regulated in the hisba treaties – Yahyà ibn 'Umar, Muhammad Ibn al-Munasif, Ibn 'Abd al-Ra'ūf, al-Saqāṭī al-Mālaqī, and Ibn 'Abdūn.

There was a particular prohibition of carrying fuelwood on narrow roads. Trading this raw material was only permitted in the habilitated areas like wide squares, the riverside, and outside the city walls, and banned the wood wandering trade in the streets and the zocos in the cities. All these are constants regulations that were unchanged despite geopolitical changes. We have not found direct information on acquisition territories, coal and firewood production particularities, nor which gender was associated with the different fuelwood and charcoal production stages, distribution, and trade in the written sources.

We hypothesize the essential part of the fuelwood's cycle production, distribution, and trade was an invisible activity for the citizens or undervalued. The real important thing was the raw material and its continuous supply to the cities but not the human agency that develops the activity and makes it happen. Considering the demanding work conditions and minimal reference in the sources of this activity, it could be involved as a part of the immersed household economy because fueling is only the means to achieve actual artisanal and maintenance purposes.

The supply of charcoal and firewood to the cities would require a long chain of work and implied hundreds of people in each territory. However, much of this organization have must be interpreted exclusively from archeobiological sources. Here we present an input-output proposal from the gendered human agency interpretation.

12

## WOOD UTILISATION STRATEGIES IN THE NORTH ATLANTIC (870-1500 AD)

**Abstract author(s):** Guðmundsdóttir, Lísabet (Institute of Archaeology Iceland; University of Iceland)

**Abstract format:** Oral

Wood was a vital raw material for the Norse in the North Atlantic. However the availability of this material varied due to geographical position and different environmental conditions. While large parts of Western Norway were forested and could sustain all timber need of the Norwegians. The inhabitants of Iceland and Greenland had to substitute the native wood resource by import and driftwood. Recent studies indicate that driftwood was the main substitute. Acquiring this basic raw material, however was problematic due to unpredictable quantities and long distances journeys needed secure it. Hence acquiring timber as and when needed was not always an option. The more widely available Norwegian wood resources were, on the other hand, often found locally and thus a commodity more

readily available at predictable quantities and of higher species diversity. Iceland and Greenland shared a material culture very similar to that of Norway even though wood procurement strategies were profoundly different.

In this talk I will compare contemporary wood assemblages from Norse Greenland, Iceland and Western Norway (870-1500AD). I will discuss if qualities and the shape of the raw material effected how it was shaped and utilised. Furthermore, I will address how these societies seem to have dealt with varying degrees of predictability connected to their wood sourcing and wood utilisation strategies.

### 13 **CHOOSE YOUR OWN ADVENTURE: USING MICROBOTANICAL ASSEMBLAGES TO INTERPRET HUMAN-PLANT RELATIONSHIPS AND CHOICES IN PICTLAND**

**Abstract author(s): Prado, Shalen (McMaster University)**

**Abstract format: Oral**

Archaeobotanical data allows us to examine how past human communities, and individuals within these communities moved through and experienced their world. Often this data is used for reconstructing past landscapes to interpret climate, environmental cycles, and resource availability. While such investigations and reconstructions are valuable, aspects of being a human within these environments are often sidelined. Indeed, it is challenging to apply archaeobotanical data to discussions centred on human agency; however, such applications are far from impossible as evidenced through several recent studies (e.g., Delhon et al. 2020; Krath Helweg 2020). In this paper, I discuss the application of phytoliths, starch grains, and other microscopic biological residues to interpret human choices and human-plant relationships. Using data from my doctoral research I address human movement, seasonality and decision making through microbotanical and microalgal residues recovered from early medieval archaeological sites in north eastern Scotland. I will discuss how microbotanical residues (e.g., phytoliths) contribute to our understanding of movement, seasonality, architectural choices and animal care from several prominent archaeological sites (e.g., Burghead, Mither Tap). I argue that human-plant relationships at the regional (inter-site) and community (intra-site) scales can be teased out using these microscopic plant proxies and can reflect the choices and experiences of past human communities. Overall, this paper will present the opportunities afforded by microbotanical data to reflect the human aspects of human-plant interactions beyond the purposes of resource exploitation, with an emphasis on northern communities. Lastly, I examine the taphonomic and diagnostic limitations of using microbotanical residues to assess human-plant relationships.

### 14 **ENVIRONMENTAL RESOURCES MANAGEMENT AND COMMONS: CRITICAL CONSIDERATIONS ON THE FIRST RESULTS OF ARCHAEOBOTANICAL INVESTIGATIONS AT PORT DE ROUET (LLO, FRANCE)**

**Abstract author(s): Santeramo, Riccardo - Menozzi, Bruna (Università degli Studi di Genova) - Rendu, Christine (FRAMESPA Université Toulouse Jean Jaurès) - Moneta, Valentina - Molinari, Chiara - Stagno, Anna - Bizzarri, Giulia (Università degli Studi di Genova)**

**Abstract format: Oral**

The paper aims to critically discuss the first results of the archaeobotanical study of the site of Llo (Cerdagne, French Pyrenees), which include excavations, landscape archaeological investigation as well as anthracological and palynological analyses. Investigations were carried out in the framework of a research devoted to the reconstruction of environmental resources management practices as tools to understand ownership, possession, jurisdiction and their changes through time. Research benefited of previous rescue archaeological investigations in the same area (now occupied by a thermo-solar power plant), which allowed to deepen the understanding of changes in practices in the long term. While landscape archaeology allowed to reconstruct the changes in space organisation, and in particular the presence of lynchets and possible temporary cultivation sites inside an historical wooded meadow pasture. Palynological investigation in two soil sequences showed a correlation between the arboreal vegetation dynamics and the changes in the percentages of the micro charcoals, possibly indicating changes in landscape management, especially in terms of woodland clearance strategies. The study of the charcoals retrieved during the excavations in three hearts and three pit fills also allowed to gain some initial insights into the past management of the local resources, especially with regards to the selection and use of wood. Moreover, the observation of some taphonomic and dendrological features (tangential resin-duct rows) reveals the possibility to identify practices related to the use of controlled fires, that could be related to cycle of the activation and management of environmental resources.

The final aim of the paper is to discuss the meaning of the environmental archaeological evidence, not only in term of environmental resources management, but also in their meaning of social occupation of the space.

## MILLENNIAL TREES AND DECIDUOUS HUMANS. DIFFERENT ECO-GEOGRAPHIES BUT SAME STORIES: A COMPARISON BETWEEN ARBOREAL BIOCULTURAL HERITAGE IN SICILY AND MOZAMBIQUE

**Abstract author(s):** Ferrara, Vincenza (Department of Archaeology and Ancient History, Uppsala University; Department of Human Geography, Stockholm University) - Gota, Pascoal (Department of Archaeology and Ancient History, Uppsala University)

**Abstract format:** Oral

Humans and plant communities have been entangled for millennia. Accumulated knowledge, practices and experiences related to the ecology of plants have allowed us to adapt to local environments, and to re-adapt such body of knowledge to new physical contexts, customary norms and different land use practices.

A quite unique case of these entanglements is the biocultural heritage emerging from the relationship between long-living millennial trees and deciduous humans. A relationship entirely based on the extreme resilience capacity of these plants and the human intentional ecological management within a temporal perspective projected over the long term.

Bringing together results from ongoing work on different eco-geographies united by same dynamics, in this paper we tell the stories of living ancient trees and local communities, with a special focus on olive agroforestry systems on the island of Sicily and culturally protected forests in Mozambique.

Within the overall framework of historical ecology, we adopt a transdisciplinary approach that combines ecological memory from oral histories and eco-geography reconstructions in selected case study areas, with the overall scope to better understand key features of arboreal biocultural heritage and the processes behind its endless formation. The results obtained allow us to look at human-trees entanglements with new eyes, while arguing on the function of residents and communities as designers and stewards of local biodiversity, as well as on their central role in building more integrated approaches to biocultural heritage conservation.

### A. PLANTS IN BURIALS: THE ROMAN IRON AGE ĪLES MEŽS BARROW CEMETERY (SOUTHERN LATVIA)

**Abstract author(s):** Guscika, Elina - Stivrins, Normunds (University of Latvia, Institute of Latvian History)

**Abstract format:** Poster

Palaeobotanical evidence in the context of burials in the Eastern Baltic region is an understudied topic, raising question about the use of plants in burial practices. The Roman Iron Age barrow cemetery of Īles mežs provides some insight into this question.

Īles mežs cemetery in southern Latvia, with 27 barrows, was discovered in 1938. Archaeological excavation was carried out in 1940 by Pēteris Stepiņš and in 2014 by Elina Guščika and Andrejs Vasks. In total, eight barrows have been excavated, which were of various size (5–8 m diameter, 0.3–1 m height). The barrows contained one or two inhumations within a stone circle created on the subsoil. According to the type of burial and artefact typology as well as radiocarbon (AMS) dating, the excavated barrows are from the first part of the Roman Iron Age (1st–3rd century AD).

During the recent excavations, two partially undisturbed burials were discovered in one of the barrows. Sediment samples were taken from different layers of the barrow and from undisturbed areas close to the burials for palaeobotanical analyses (pollen and non-pollen palynomorph analysis by Normunds Stivrīņš). This revealed a wide range of human-related pollen (*Secale cereale* [rye], *Triticum* [wheat], *Rumex acetosa* [herb sorrel], *Cannabis sativa* [hemp] and *Filipendula* [meadowsweet]) specifically under the skull remains of burial 1. The recorded pollen composition tentatively suggests the use of specific plants in Roman Iron Age burial practices in the Eastern Baltic region.

The presentation and abstract were prepared within the frame of the Fundamental and Applied Research Project funded by the Latvian Council of Science No. lzp-2021/1-0163 "Burial practices in the landscape: present-day Latvia in the Iron Age (AD 1–1200)".

## BORDERLANDS, INTERACTION ZONES, AND BOUNDED SPACES IN THE PREHISTORIC EASTERN MEDITERRANEAN: INTERDISCIPLINARY STUDIES IN THE RECONSTRUCTION OF CONNECTIVITY

**Theme:** 2. [Re]integration

**Organisers:** Menelaou, Sergios (Archaeological Research Unit, University of Cyprus) - Oğuzhanoğlu, Umay (Department of Archaeology, Pamukkale University) - Kouka, Ourania (Archaeological Research Unit, University of Cyprus)

**Format:** Regular session

In recent years the global challenges in mobility dynamics and permeability of modern nation state borders, particularly obvious in the eastern Mediterranean, have revived archaeological discussions on the reconstruction of connectivity, mobility patterns, and the definition of material culture transformations along marginal zones, borderzones, or simply bounded spaces. However, these terms are often used interchangeably and under biased interpretations to denote complex phenomena and socio-cultural or political circumstances that go beyond simply the natural and

physical conditions of geographical limits. In particular, there is a gap in archaeological knowledge between developing regional and interregional patterns in the examination of large-scale circulation of artefacts and the identification of such 'in-between' areas, where phenomena of hybridisation and creativity take place in the expression of ethnic and cultural identity. Such transformations are especially complex and require multi-level, interdisciplinary approaches in islandscapes and coastscapes, where technological and ideological/conceptual innovations are explained under the influence of core-periphery models.

This session aims to bring together contributions from various geographical contexts in the eastern Mediterranean, presenting multiscalar and theoretically informed projects, with a special emphasis in the Aegean basin, to tackle:

- the definition of cultural borders;
- patterns of bilateral interaction and integration of 'foreign' materials;
- the transmission and transfer of goods and ideas and identity negotiation;
- the past mobility of people during the later prehistory.

We particularly invite papers developing theoretical frameworks with specific case studies, addressing the impact of modern geopolitical borders and biases in our definitions of archaeological frontiers particularly in regions with long-term or ongoing conflicts, and the fluidity of such concepts and application of bottom-up micro-scale approaches in understanding shifting traditions and relevant effects in shaping interaction borderzones.

## ABSTRACTS

### 1 RETHINKING PREHISTORIC BORDERS, CHALLENGING MODERN NARRATIVES: ISLANDNESS, SENSE OF PLACE, AND CONNECTIVITY IN THE EAST AEGEAN INTERFACE

**Abstract author(s):** Menelaou, Sergios (University of Cyprus)

**Abstract format:** Oral

The geo-cultural region of the eastern Aegean, including the off-shore Greek islands and the western Anatolian (Turkish) coastline, is of crucial significance for the investigation of theoretical issues related to connectivity, the transmission of knowledge, mobility of people, and how these are expressed in the material culture. The East Aegean 'archipelago', with islands lying in strategic locations and being central to seaborne communication, has been characterised as a borderland, frontier, or in recent literature as contact zone between the central Aegean and inland western Anatolia. Various terms are often used interchangeably in such in-between areas with socio-politically and geographically complex historical trajectories, which often bear negative connotations. However, archaeological borders are neither simply natural conditions nor geographical zones of structured spaces. Instead, they should be perceived in archaeological narratives as dynamic, where identity negotiation, technological transformations, and cultural influences are constantly redefined.

This paper explores how the micro-region(s) of the East Aegean islands, with emphasis on Lemnos, Lesbos, Chios, and Samos, formed and transformed separate maritime small worlds with their opposite Anatolian perai, using pottery as proxy to reconstructing connectivity patterns during the Early Bronze Age. Building on previous and current analysis, this endeavour takes into consideration how shifts in archaeological narratives are also affected by biases in modern political borders and changes in intellectual trends. It is argued that the islands had multiple spatial, cultural, and temporal dimensions in the context of economic activities or social negotiation and held a strong visual meaning as part of the cognitive horizon for the opposite mainland. The East Aegean islands are, then, examined as gateway hubs of interaction, encompassing various meanings established through social memory and knowledge of existing terrestrial and maritime routes, where the sea acts as a unifying medium.

### 2 RINGS OF THE SAME CHAIN? RECONSTRUCTING CULTURAL IDENTITIES IN THE MARITIME LANDSCAPES OF THE EAST AEGEAN ISLANDS AND WESTERN ANATOLIA

**Abstract author(s):** Kouka, Ourania (University of Cyprus)

**Abstract format:** Oral

The East Aegean islands and the littoral of Western Anatolia represent a geographical borderzone between Europe and Asia. The proximity of the East Aegean islands with the Western Anatolian coast resulted their colonization during the 6th millennium BCE by human groups deriving from the Anatolian peninsula. Archaeological fieldwork since the late 19th c. on Western Anatolia and since the early 20th century on big and small islands of the East Aegean resulted a more intensive habitation in the Chalcolithic and the Early Bronze Age, that turned this area to one of the most interesting maritime landscapes of the Prehistoric Aegean. Despite the bilinguality in the nomenclature of chronological terminology, modern approaches to old evidence and recent scientific analysis of archaeological and palaeoenvironmental materials immensely enrich discussions on cultural aspects of the Aegean and the Western Anatolian Prehistory, such as insularity, materiality, identity, diversity, mobility, trade, connectivity, technology (e.g. ceramic, metal, textile), social practices, ranking, early urbanism, etc. This paper aims to discuss the aforementioned aspects based primarily on the evidence from extensively excavated and published sites on big and smaller East Aegean



islands and at the coast of Western Anatolia for reconstructing cultural identities, pinpointing diversities, and tracing dynamics and patterns of regional and interregional interaction in this Aegean landscape.

### 3 **A NODE BETWEEN THE MEDITERRANEAN AND THE AEGEAN: SOUTHWEST ANATOLIA IN EARLY AND MIDDLE BRONZE AGES**

**Abstract author(s):** Oguzhanoglu, Umay (Pamukkale University)

**Abstract format:** Oral

The Southwest Anatolian coast has usually attracted the interest of researchers focusing on the Cycladic and Minoan Bronze Age and their impact over the Aegean, especially due to the former's influences in the 3rd millennium and the latter's influences in the following phase. The majority of these researches have emphasized the circulation patterns and transmission of Cycladic and subsequently Minoan-influenced artifacts, technologies, and ideas to Anatolia or vice versa. In archaeological projections of the World Systems Theory to the Bronze Age, Sherratt and Sherratt (1998) stated that a new Near Eastern consumption pattern reached the West, especially following the Mediterranean coast of Anatolia. The elite's desire to access luxurious resources was a major motive of this process. Accordingly, Southwest Anatolia, which forms the westernmost part of the north Mediterranean route, is expected to have received an eastern influence before, or at least at the same time with, the Cycladic and Minoan. However, the discovery of the Early Cycladic cemetery in Iasos or the whole Minoan Bronze Age set (pottery from Crete, local wares in Minoan style, loom weights, Linear A inscriptions, frescoes, etc.) in Miletos turned the attention of researchers to the western connections. The ethnicity of the rulers, the political and social management, the craftsmanship, and the role of craftsmen in Southwest Anatolia have been discussed over the same "imported" Cycladic and Minoan package. But what were the immanent characteristics and dynamics of the Bronze Age communities of Southwest Anatolia? What were their motives for involvement in the long- and short-distance networks? This presentation aims to evaluate the pre-Late Bronze Age dynamics of Southwest Anatolia from a micro-scale perspective, followed by a discussion of the region's role not only in the Aegean but also in the entire Mediterranean, taking into account the latest archaeological research.

### 4 **AEGEAN-ANATOLIAN CULTURAL FUSION: DYNAMIC PATTERNS OF CONNECTIVITY, TECHNOLOGY TRANSFER AND APPROPRIATION AT ÇEŞME – BAĞLARARASI DURING THE MBA/ LBA TRANSITION**

**Abstract author(s):** Sahoglu, Vasif (Ankara University) - Kiriati, Evangelia (British School at Athens) - Goodmann-Tchernov, Beverly (University of Haifa) - Çayır, Ümit (Sivas Cumhuriyet University) - Gündoğan, Ümit (Batman University) - Velters, Melissa (University of Salzburg) - Choleva, Maria (British School at Athens) - Maltas, Tom (University of Oxford) - İncirli, Mustafa (Ankara University)

**Abstract format:** Oral

Çeşme – Bağlararası, an ancient coastal settlement located at the westernmost tip of Urla Peninsula (Izmir, Turkey) within view of Chios Island, was excavated between the years 2002-2005 and 2009-2019 by the Izmir Region Excavations and Research Project (IRERP-Ankara University). Here, we present results from this interdisciplinary research that aims to shed light on the site's transformation during the first half of the second millennium BC from a local settlement into a regional borderline hub connecting the Aegean and Anatolia. The combined results of a series of material culture studies from the site have begun to reveal important changes between levels CB 2 and CB 1 (contemporary with MMIII and LMIA, respectively). These changes include new cultural practices and technologies associated with pottery, but also textile manufacture and crop cultivation. The transfer of new technologies, as well as imported types of material culture, mark the appearance of new traditions and new life styles that echo strong connections with both Cretan fashions and Anatolian traditions. These transformations seem to reflect intensified human mobility, crossing and negotiation of borders and identities. Recent investigations revealed that end of activity at this international hub coincided with the arrival of a series of devastating tsunamis generated by the eruption of Thera. The new evidence will be discussed both in the context of the site's history but also in relation to its changing role in regional networks and connections with neighbouring and distant areas.

### 5 **WESTERN ANATOLIA DURING THE LATE BRONZE AGE: A CULTURAL LANDSCAPE ON THE SEARCH FOR IDENTITY**

**Abstract author(s):** Pieniazek, Magda (Universität Tübingen, Institut UFG)

**Abstract format:** Oral

Western Anatolia during the Late Bronze Age was a borderland landscape, balanced between central Anatolia and the Aegean, but also exposed to influences coming from the eastern Mediterranean by sea. This surely partly resulted from its geographic location but was also related to the political situation – western Anatolian polities developed between two powers: the Hittite empire in the east and Mycenaean states in the west. Until recently, an understanding

of western Anatolia was hindered by the state of research, but thanks to recent excavations and publications, the situation has begun to change.

However, the crucial question is: how did local people deal with this borderland situation? Hittite conquest, as known from written sources, as well as undeniable influences from the Aegean are one side of the story, but homegrown traditions and local creativity, resulting in regional diversity, is another side.

One of the most characteristic features of Late Bronze Age culture in western Anatolia is the entanglement of indigenous traditions and foreign impacts, visible in architecture, burial rituals, pottery production, glyptic, weaponry or even in the religious sphere of life. Simultaneously, we observe at various levels a dedication to local achievements and styles. Was this combination of indigenous trends and foreign influences, as known from such Late Bronze Age western Anatolian sites as Troy, Panaztepe, Liman Tepe or Miletus, simply typical intercultural coastal mixture, or was it rather an outcome of the specific geopolitical situation between Anatolia, the eastern Mediterranean and Aegean in the second half of the 2nd Mill. BC? How and why was it different from the situation in the same area during the Early and Middle Bronze Age? And finally – what can we consequently say about western Anatolian identity, or rather identities, during the Late Bronze Age?

## **6 COASTAL AND INLAND WESTERN ANATOLIA DURING THE LATE BRONZE AGE: BORDERED OR CONNECTED?**

**Abstract author(s):** Köknar, Nuray Nisan (University of Cyprus-Mediterranean Archaeology)

**Abstract format:** Oral

This paper presents a preliminary discussion on geographical, economic, and political dynamics which shaped the Western Anatolian cultural borders in the coastal and inland regions. The coastal region of Western Anatolia, due to its island-like geographical character, strong bonds with and relations through the Aegean Sea, exemplifies a hybrid culture. The mountainous coastal area isolated the region from certain dangers and risks. However, its safe natural harbours made it attractive for outsiders not only for a safe break in the sea but access to Anatolian resources as well. In the Late Helladic III, the exchange of exotic goods started showing increased variance and the density of imported and imitated mundane Mycenaean style artifacts in coastal settlements and cemeteries noticeably rise. As suggested by Hittite documents, this period corresponds to a time characterized by conflict and formalization between the Hittites and people in Western Anatolia. Although coastal sites have had better accessibility to maritime networks, inland sites developed around valleys and rivers that provided them access towards the coast. Therefore, inland sites of the region became both a border and buffer zone between Western and Central Anatolia. These conditions also affected the political and militaristic conflicts in the region mentioned in Hittite documents. Understanding, exploring, and contextualizing these dynamics are crucial in efforts of mapping such borders in the region of interest.

## **7 GRAVE NEW WORLD – COMPETITION, STATUS NEGOTIATION AND CONTROL IN THE LATE BRONZE AGE EAST AEGEAN-WEST ANATOLIAN BURIAL PRACTICES**

**Abstract author(s):** Frankovic, Filip (Institute for Prehistory, Protohistory and Near Eastern Archaeology, Heidelberg)

**Abstract format:** Oral

The 14th and 13th century BCE (LH IIIA-LH IIIB periods) East Aegean-West Anatolian region has previously been perceived as a contact zone between Central Anatolia and the West Aegean. The substantial presence of Mycenaean-type material culture in these two centuries has commonly been interpreted as a sign of colonization, presence of immigrants, political influence, hybrid culture or conscious absorption of the West Aegean socio-cultural structure by the local populations. Funerary data sets were often used to support such interpretative narratives. However, most of such interpretations focused on "Mycenaean" cemeteries and grave types, while neglecting the "local" (or "non-Mycenaean") ones, which resulted in an incomplete understanding of burial practices in the region.

Contrary to the popular narratives about the strong "Mycenaean" influence on burial practices in West Anatolia that dominate the Aegean scholarship, most of the region developed a strong indigenous tradition of burial practices. Essentially, since the beginning of the 2nd millennium BCE the entire area was dominated by the so-called mixed-type cemeteries. A novelty of the 14th and 13th century BCE at the largest coastal cemeteries is the introduction of architecturally elaborate stone-built chamber tombs, which can be connected to a higher level of social stratification in the period of the transformation of the West Anatolian political units into pre-state or early state polities. This paper presents several smaller case studies which show how burial practices were employed as means of competitive status negotiation among different social groups in the East Aegean-West Anatolian region. Moreover, the paper examines how burial practices were employed by the elite as a strategy of control, used to prevent the questioning of their status by other social groups.

**Abstract author(s):** Denel, Elif (American Research Institute in Turkey)

**Abstract format:** Oral

The emergence of Syro-Anatolian principalities, or city-states, with diversified economies had set the stage for intense Assyrian interest through the growth of culturally, socially, politically and economically diverse systems of the Empire in the first millennium BCE. The management of these systems paved the way for new routes of communication while reinforcing pre-existing ones across contact zones, or rather, particular nodes of contact in the geographically controlled regions and beyond, but within a framework of imperial ideology that needed constant maintaining and reinforcement. It is within this historical context that unique objects originally from the Near East, namely from the Syro-Anatolian and Assyrian realms, that were dedicated at such religious centers in the Aegean as the Heraion at Samos or the Sanctuary of Apollo Daphnephoros at Eretria in Euboea, reflect an impact of a wider overarching and an extended period of development. These objects seem originally produced for elite consumption, though their essential transportation into the Aegean realm, most probably about two hundred years later, cannot be attributed entirely to elite acts of dedication. As such, these objects clearly reflect that their function and value evolved through time and across routes of communication. Clearly loaded with social value and associated ideology, how did the function and value of such objects changed as they were moved across the Syro-Anatolian realm, through the Assyrian Empire, across Anatolia and the Mediterranean, finally reaching the Aegean world? This paper will examine the actors and systems that relied on the social value of specific kinds of objects for establishing status and ideology in a dynamic and culturally vibrant period of the first millennium BCE.

**Abstract author(s):** Boyd, Michael (University of Cambridge, McDonald Institute for Archaeological Research; Science and Technology in Archaeology and Culture Research Center, The Cyprus Institute) - Renfrew, Colin (McDonald Institute for Archaeological Research, University of Cambridge) - Legaki, Irini (Ephorate of Antiquities of Cyclades) - Margaritis, Evi (Science and Technology in Archaeology and Culture Research Center, The Cyprus Institute) - Gavalas, Giorgos (Ephorate of Antiquities of Cyclades) - Moutafi, Ioanna (Malcolm H. Wiener Laboratory for Archaeological Science, American School of Classical Studies at Athens) - Georgakopoulou, Myrto (Science and Technology in Archaeology and Culture Research Center, The Cyprus Institute) - Gkouma, Myrsini (Science and Technology in Archaeology and Culture Research Center, The Cyprus Institute; Malcolm H. Wiener Laboratory for Archaeological Science, American School of Classical Studies at Athens; Faculty of History and Archaeology, National and Kapodistrian University of Athens) - Krijnen, Ayla (Vrije Universiteit Amsterdam, Department of Art & Culture, History, and Antiquity) - Floquet, Marie (Centre Camille Jullian, Aix-Marseille Université)

**Abstract format:** Oral

The third millennium in Europe is marked by expanding horizons, the increasing importance of information, and by new identities forged in connectivity. In the Aegean, these changes are manifest in a series of creative social experiments that ultimately lead toward the large-scale, complex societies of the second millennium.

The island of Keros is located south of Naxos in the central Cyclades. Previously a backwater, on the side lanes of connectivity, suddenly around 2750 BCE it became a central haven. Waves of visitors brought with them choice material destined for deposition in the now well-documented cult area at Kavos. But over a 500-year period of often intense activity visitors were also attracted to the adjacent islet of Dhaskalio. Here a monumental and planned architectural complex housed skilled metalworkers and the imported material and agricultural produce of other islands. Understanding the role of Dhaskalio, and its place in island networks, has been the goal of the Keros-Naxos Seaways Project since 2015.

This paper outlines our initial thinking on what drove the early stages of proto-urbanisation at Dhaskalio. The parameters that enabled the creation, manifestation, and negotiation of identity were connectivity and information transmission; creativity in material production and in the physical reimagination of space; the direction and process of communal acts of labour; and the organisation at a distance of landscape and agricultural resource manipulation and exploitation. The added parameters of time and space allow us to envisage the drawing in of people and materials to the site, and their subsequent onward journeys: the people transformed by their experience, and the materials transformed in the workshops of the site.

The creative cultural nexus of Keros is the prism through which we can begin to understand how identity creation in the mid-third millennium became rooted in place, in space, and in community action.

## BEYOND TECHNOLOGICAL TRANSFER AND LOCAL IDENTITY: ARCHITECTURAL, PROTO-URBAN, AND SOCIAL INNOVATION AT THE EARLY BRONZE AGE SETTLEMENT OF DHASKALIO (CYCLADES).

**Abstract author(s):** Floquet, Marie (Centre Camille Jullian; Aix-Marseille Université) - Boyd, Michael (McDonald Institute for Archaeological Research; University of Cambridge) - Renfrew, Colin (McDonald Institute for Archaeological Research; University of Cambridge) - Herbst, James (American School of Classical Studies at Athens)

**Abstract format:** Oral

Recent excavations undertaken at the site of Dhaskalio have revealed an impressive proto-urban centre in the middle of the Aegean characterized by the development of directed urban planning and advanced architectural engineering. These characteristics, while drawing to an extent upon widely evidenced architectural knowledge, embody an innovation and creativity evident in scale and organisation as well as in specific features.

This paper seeks to examine the contribution of both background knowledge and local innovation to the construction of Dhaskalio and thereby understand aspects of the social organisation manifest there. Although some of these architectural and proto-urban features may indeed be recognised elsewhere in the Aegean, the architecture of Dhaskalio shows more than a selection of features found elsewhere and demonstrates in particular the maturation of an endogenous inventiveness.

The built environment of Dhaskalio embodies a creative hybridity of existing knowledge and local innovation on a scale hitherto unseen. The architecture of the settlement solves complex engineering problems, and involves a complex supply chain of materials - including the transportation of tons of marble from Naxos -, labour and sustenance. In completely transforming Dhaskalio its builders were also transforming the boundaries of what was possible for island societies, their lives and identities.

This paper aims, by untangling local ingenuity and technological transfer in the innovative process visible through the Dhaskalio architecture, to contribute to the redefining of connectivity, local identity, and cultural borders in the Early Bronze Age Aegean.

## CERAMIC EVIDENCE FOR AN INTERCONNECTED WORLD: THE KASTRI ASSEMBLAGE FROM THE NEW EXCAVATIONS AT DHASKALIO

**Abstract author(s):** Dimitriou, Vasiliki (Department of Antiquities, University of Rome I) - Krijnen, Ayla (Vrije Universiteit Amsterdam, Department of Art and Culture, History and Antiquity) - Boyd, Michael (McDonald Institute for Archaeological Research, University of Cambridge; Science and Technology in Archaeology and Culture Research Center, The Cyprus Institute) - Renfrew, Colin (McDonald Institute for Archaeological Research, University of Cambridge)

**Abstract format:** Oral

The Kastri assemblage provides evidence for one of the earliest substantial interregional contacts between Asia Minor and the Aegean. This distinct set of ceramic vessels, originating on the coast of Asia Minor, makes its first appearance at a limited number of sites in the Aegean during EBA II Late. The quantity and shape repertoire of Kastri pottery varies at each of these sites, thereby highlighting how local communities chose to participate differently in the adoption of new, foreign consumption practices. As such, the appearance of Kastri pottery emphasises the significance of interregional interactions and the transformations of cultural traditions during the emergence of proto-urban life in the Aegean.

The recent, large-scale excavations on Dhaskalio (2016-18), located off the coast of Keros in the central Cyclades, offer exceptional research potential to shed new light on this ceramic phenomenon. Large quantities of Kastri pottery were found in the EC II Late and EC III levels at a site where, unusually, almost all materials were imported. Interestingly, the Kastri pottery at Dhaskalio includes both canonical Kastri vessels and hybrids, with Kastri shapes noted in different surface treatments and fabrics. This challenges our traditional ideas about the role of material culture circulation in long-distance interaction networks and evokes questions about the way that new cultural customs were adopted within Cycladic communities.

This paper will present the preliminary results of the analysis of the Kastri pottery from Dhaskalio, whereby focus is turned to the functional, technological and contextual characteristics of the assemblage. This study will thereby evaluate the role of Kastri pottery in the shaping and forming of emergent social identities in the highly mobile and strongly interconnected community of Dhaskalio.

## 12 A NORTHERN POWERHOUSE: CERAMIC EVIDENCE FOR TECHNOLOGICAL AND SOCIAL TRANSFORMATION IN EARLY BRONZE AGE ATTICA, GREECE

**Abstract author(s):** Tsai, Che-Hsien (Department of Archaeology, University of Sheffield) - Kaza-Papageorgiou, Konstantina (Hellenic Ministry of Culture) - Hein, Anno (Institute of Nanoscience and Nanotechnology, N.C.S.R. "Demokritos", Athens) - Madrid i Fernández, Marisol (Cultura Material i Arqueometria UB - ARQUB, GRACPE, Departament d'Història i Arqueologia, Universitat de Barcelona) - Day, Peter (Department of Archaeology, University of Sheffield; Institute of Nanoscience and Nanotechnology, N.C.S.R. "Demokritos", Athens)

**Abstract format:** Oral

In 1972, Renfrew singled out the Early Bronze II period in the Aegean as a watershed in technological innovation and craft specialisation, accompanied by regional inter-connectivity he dubbed "The International Spirit". This picture of social and economic transformation centred on the Cyclades and nearby pre-Palatial Crete, treating Attica as rather peripheral.

Much of the last fifty years has been devoted to demonstrating that such key developments happened earlier than EB II. Metallurgy, a driving force of technical innovation, was clearly important from the Final Neolithic, while some ceramic exchange through the islands is now accepted to be widespread at least from the EB I period. It has been common to argue that specialisation in ceramic production goes back to the seventh millennium BCE.

Analyses of EB I and II pottery deposits (early third millennium BCE) from the site of Kontopigado, Attica, are presented here. With extensive evidence for metallurgy, as well as obsidian working, Kontopigado was a pottery production centre in EB II and most probably in EB I. The ceramics of the two phases show stark contrasts, those of EB I dominated by red slipped vessels, while EB II is characterised by thin walled pottery which skeuomorphs metal drinking and pouring vessels, with white/grey and yellow slips imitating precious metals.

Petrography, SEM and XRD testify to a new selection of non-calcareous clays and change from open firing to the use of kilns with close control of firing temperature and atmosphere. Transformations in large scale, standardised production at Kontopigado are presented, as well as tracing the exchange of its products across the Aegean to Crete. The implications of these findings re-focus our attention to EB II as a time of radical change in the Aegean in terms of production and inter-regional consumption, with Attica as a power-house of craft innovation.

## 13 AT THE CROSS-ROAD BETWEEN MINOANS AND MYCENAEANS: THE RCT TABLETS FROM KNOSSOS AS A MODEL OF CULTURAL INTERACTION

**Abstract author(s):** Pierini, Rachele (University of Copenhagen)

**Abstract format:** Oral

Minoans and Mycenaeans inhabited the island of Crete during the Bronze Age. Specifically, there is evidence for both societies inhabiting Knossos in 1400 BCE. The palace of Knossos has yielded Linear A and Linear B tablets, the written sources from this era. Linear A (1800-1400 BCE) encodes the yet to be deciphered Minoan language, whereas Linear B (1400-1200 BCE) is the only deciphered script of the epoch and encodes the earliest written evidence of the Greek language (Mycenaean). Within the Linear B corpus, the Knossos tablets from the Room of the Chariot Tablets (RCT) present truly unique characteristics due to their chronology (1400 BCE versus 1200 BCE of most of the Linear B tablets), palaeographical features (the closest similarities with Linear A tablets from a palaeographic, epigraphic, artefactual, textual perspective), elements of the script and the language (e.g. the use of logograms and composite signs, words that do not appear any longer on tablets from later deposits, variant spellings, archaisms).

This paper focuses on the Knossos Linear B tablets from the RCT as a model of linguistic interaction to define transculturation between Minoan and Mycenaean, and between Mycenaean and later Greek societies by analysing goods and those artefactual and linguistic elements that are unique to RCT tablet and no longer appear on tablets from later deposits. By doing so, it also addresses the question of what a cultural border is and what is 'foreign' in the earliest stages of the Mycenaean culture, whether the Minoan or the Indo-European elements.

## 14 THE CHALLENGES OF USING DIGITAL TECHNOLOGIES FOR UNDERSTANDING ANCIENT NETWORKS IN THE LYBIAN SEA: THE PERAIA PROJECT EXPERIENCE

**Abstract author(s):** Laguna-Palma, David (Department of Prehistory and Archaeology, University of Granada)

**Abstract format:** Oral

The PERAIA project emerges within a research framework that aims to reconceptualize Eastern Mediterranean connectivity. PERAIA aims at representing and analyse the social, economic, and cultural impact of the historical transport networks between territories in the context of the ancient Libyan Sea, from the Late Bronze to the Early Iron Age (c. 1500 – 700 BC).

This international project envisions land (landscape) and maritime (seascape) human interactions, not as fixed physical networks, but instead, as dynamical, social, and dependent on the ecological context. Thus, the project represents these networks as a bidirectional process, where the networks influence and at the same time are influenced

by these factors. For this reason, our methodological approach combines the use of satellite imagery, GIS spatial analysis, and social network analysis (SNA).

In this paper, I will seek to reflect on some of the theoretical caveats brought by this approach. More specifically, the challenges of correctly identifying what and how to map material remains that can serve as proxies for tracing ancient social networks and the importance of assessing critically how to deploy SNA. These digital challenges, I argue, should be confronted with other landscape data, such as understanding the mental-phenomenological approach of cultural movement in harsh environments – and, conversely, the environmental effects on the development of these societies. With this, I aim to show the importance of a critical assessment of digital technologies, which both help and problematise our understanding of the landscape.

## **A. THE HANDMADE BURNISHED WARE PHENOMENON AND ITS CRETAN CONNECTION: A CERAMIC TECHNOLOGICAL APPROACH AT LATE MYCENAEAN CHANIA**

**Abstract author(s):** Fouriki, Stavroula (University of Sheffield)

**Abstract format:** Poster

Handmade Burnished Ware (HBW), referred to a distinct ceramic category that is also known as 'Barbarian Ware', appeared in a number of coastal sites of the eastern Mediterranean, just before, during and after the collapse of the palatial organisation (c. 13th to 12th century BC). Its appearance has been interpreted in various ways and has ultimately been linked to the demise of the Mycenaean centres, as a result of the diffusion of people from the north. Nevertheless, recent research has revealed that HBW is a complex phenomenon that does not manifest itself in the same way at the different sites. Its presence is rather related to deeper cultural interconnections and to what is known as metallurgical koine or "Urnfield bronzes".

This paper focuses on the HBW of Chania in west Crete, which constitutes the earliest example of this pottery class in the Aegean region and it shows stylistic affinities with the Italian Impasto Ware. Based on the chaîne opératoire approach, it combines data from the macroscopic examination and petrographic analysis of pottery classes of a typical Chaniote tradition and HBW, with the aim to understand the underlying technological connections. The results show that HBW is locally made in Chania but distinct stages of the manufacturing process, from raw material selection and forming techniques to surface treatment and decoration, differ from the more typical shape repertoire. The local production of this southern Italian pottery ware indicates a rather complex phenomenon of technological transmission that required a direct contact achieved through mobility of potters, and not simply by copying highly visible traits, such as type and decoration.

## **B. STRUCTURES OF LIFE AND DEATH THROUGH SPATIAL PLANNING AND BURIAL PRACTICES IN VOULA, ATTICA (GREECE)**

**Abstract author(s):** Christakopoulou, Olga - Giamalidi, Maria (Hellenic Ministry of Culture and Sports)

**Abstract format:** Poster

In an era of violent yet peaceful population movements, Voula of Attica is a characteristic case study of a Society in Transition, as it is impacted by the deep transformations occurring in contemporary Aegean societies. Archaeological research has brought to light an important ancient cemetery dated to the Late Geometric/Classical period.

The population groups that settled in the area acted as bearers of so-called social memory as they seem to have played an important role in the social life of the region diachronically, with the ultimate aim of preserving and demonstrating a unified identity that was necessary to legitimize their occupation.

Irrespective of the origin of the population groups, the cemetery demonstrates homogeneity in terms of burial practices compared to adjacent cemeteries. This fact is indicative of the common acceptance of basic operating structures in the wider Attica region. Even though there is evidence of diversity in social stratification, the use of common types of graves and the treatment of the dead, as a whole, demonstrate a society with democratic structures that accepts diversity over time.

How can architectural remains in the form of simple walls and burial enclosures emphasize family bonds and values, even after death? How can they be interpreted as the inviolable boundaries of social stratification evidence?

How can the spatial placement of cemeteries, which are inherently dynamic landscapes, bear witness to the integration of different population groups in an organised society?

How can burial practices give evidence to the functioning of social and political activities of population groups that settled and functioned in that specific place?

The cemetery confirms that death has been a crucial ideological tool throughout time. All the conflicting policies once ignited were suppressed, thus creating an ideological tool of negotiation, which was seemingly invisible yet practically tangible.

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Heilmann, Daniela (LMU Munich) - Gori, Maja (Consiglio nazionale delle ricerche) - Penezić, Kristina (Biosense institute, University of Novi Sad)

**Format:** Regular session

The two main shifts that European (and world) archaeology has experienced and that have challenged traditional paradigms of interpretation – the emergence of processual versus traditional archaeology starting from late 1960s, and the emergence of post-processual archaeology from the early 1980s – have not had much impact on research in Balkan Late Prehistory. That put much of Balkan archaeology firmly in the traditionalist camp and traditional explanations of archaeological patterns accordingly endured. This is reflected in the persistence of the cultural-historical paradigm in the study of material culture, with a strong focus on typological sequences and relative chronologies to explain ethnogenies. If we consider, for example, widespread models explaining changes in material culture, they are mostly understood as a result of migration. This paradigm has never really been challenged and thus migrations continue to be regarded as destructive events, materialized by a new set of material culture (i.e. pottery) brought by migrants that replaces the one belonging to an autochthonous population. The Yugoslav wars and the economic downfall that followed the collapse of communist regimes in the Balkans in the 1990s have further impoverished the debate on these issues. Recently, the so-called 3rd scientific revolution (Kristiansen 2014) has introduced a large array of new methods and techniques to Balkan Prehistory that are being increasingly applied and becoming a new standard in the discipline. That approach alone is nevertheless insufficient to fill the void left by the standstill of theoretical debate.

This session aims to fill this gap by inviting scholars working on Balkan Late Prehistory (Neolithic to Iron Age) to challenge with novel theoretical approaches and methods the entrenched paradigms that are still widespread in archaeological interpretations, and to use Balkan archaeology with its rich source material as a laboratory for new models, paradigms, and approaches.

## ABSTRACTS

### 1 THE FUTURE OF THE PAST: BALKAN ARCHAEOLOGY AS A LABORATORY

**Abstract author(s):** Heilmann, Daniela (LMU Munich) - Gori, Maja (Consiglio nazionale delle ricerche) - Penezić, Kristina (Biosense institute, University of Novi Sad)

**Abstract format:** Oral

European archaeology experienced major turns in the 1960s and 1980s, and more recently in 2014 with what has been defined by K. Kristiansen the 3rd Scientific Revolution. However, these theoretical and methodological turns had little impact on Balkan archaeology. In contrast, Balkan archaeology has often been criticized for being rather conservative and for being not particularly active in changing perspectives and paradigms, even in the cases in which new scientific methods are applied. Cultural-historical paradigms as well as the centrality of typo-chronological studies of material cultures are still representing the backbone of archaeological interpretation of past entities and identities.

With its extremely rich material culture, prehistoric archaeology of the Balkans offers a fertile ground for the development and refinement of new interpretative paradigms, methods and research questions. New scientific approaches (e. g. aDNA, archaeozoology and proteomics, isotope analysis) combined with statistical techniques have shown that there is a broad spectrum of possibilities to reconstruct and interpret prehistoric living conditions and environments. In this paper that will work as introduction to the session, we will address past and present developments in the Late Prehistory of the Balkans. By presenting selected case studies, we will try to understand which paradigms should be challenged or even discharged, and with which methods and approaches the discipline may work as laboratory for new ideas and forms of archaeological knowledge.

### 2 PLUS ÇA CHANGE? BALKAN ARCHAEOLOGY IN SEARCH OF IDENTITY

**Abstract author(s):** Babic, Staša (Dept. of Archaeology, Faculty of Philosophy)

**Abstract format:** Oral

Over the last couple of decades, there have been numerous attempts to remedy the perceived delay in the development of archaeology in the region of the Balkans, in the form of conferences, workshops or edited volumes. The frequency seems to testify that the progress is yet to be achieved. There are two common denominators to these efforts: the archaeological record from the region is rich and highly relevant from the wider European and/or Mediterranean perspective; yet, the discipline itself does not meet the requirements of the general theoretical and

methodological standards of research, being permanently petrified in the state of the outdated culture-historical paradigm. This assessment presupposes that the archaeological knowledge has been advancing along a unified trajectory and that at a certain point in time the entire research community operates under the same, universally accepted paradigm. However, this has never been the case, and especially at the present moment, when archaeologists engage in exploration of many equally challenging possible paths. It may therefore be more productive to consider the ways in which the Balkan archaeology can contribute to the rich multivocality of the discipline, with our distinctive experiences of the past and present, rather than to partake in the everlasting quest of catching up with the idealized mainstream of the discipline.

### 3 **TYOLOGY VS. TECHNOLOGY: THEORETICAL AND METHODOLOGICAL FRAMEWORKS FOR STUDYING TOOLS IN SERBIAN PREHISTORIC ARCHAEOLOGY**

**Abstract author(s): Vitezovic, Selena (Institute of Archaeology, Belgrade)**

**Abstract format: Oral**

Throughout the 20th century, Serbian prehistoric archaeology was preoccupied with problems related to the relative and absolute chronology, culture contacts and influences, studied predominantly through the analyses of pottery styles. Everyday tools, produced from lithic and osseous raw materials, were largely left aside, furthermore, lithic and osseous assemblages were often selectively collected during excavations. Bone industry was more affected because of the lack of systematic zooarchaeological analyses – broken tools, tools without conspicuous morphology and traces of use, manufacture debris, were often not recognised during field work and not collected. Even when collected and analysed, lithic and osseous assemblages were only briefly described in excavation reports, and simply classified into arbitrary morphological types. Within past two or three decades, the situation changed gradually, and an approach based on technology, widely adopted in other European archaeological traditions, began to be applied in Serbian prehistoric archaeology. The lithic artefacts were the first to gain more attention, and functional, technological criteria and raw materials were included in analyses, while the bone industry followed at somewhat slower pace. The technological approach is used more in the Neolithic archaeology, while assemblages from metal ages are still not sufficiently included in systematic researches. In this paper will be provided an overview of the history of research of tools from different materials, and approach based on the study of technological aspects will be discussed. The author in particular advocates the technological approach based on the works by French authors (including A. Leroi-Gourhan, P. Lemonnier – concepts of chaîne opératoire, technological systems, multiple technologies), but also with more recent theoretical frameworks included.

### 4 **IMPRESSA SHEEP: UNRAVELING OF EXPLOITATION OF CAPRINES DURING THE EARLY NEOLITHIC IN DALMATIA THROUGH PEPTIDE FINGERPRINTING**

**Abstract author(s): Sierra, Alejandro (AASPE «Archéozoologie, Archéobotanique: Sociétés, Pratiques, Environnements» UMR 7209 CNRS MNHN) - Radovic, Sinisa (Croatian Academy of Sciences and Arts, Institute for Quaternary Palaeontology and Geology) - Presslee, Samantha (BioArCh, Dept of Archaeology, Environment Building, University of York; Department of Chemistry, University of York)**

**Abstract format: Oral**

Balkans is the area where the two streams neolithisation of Europe (Mediterranean and Continental) is first observed. Dalmatia is important because marks the beginning of the expansion of farming along the Mediterranean coast, linked to Impressa pottery. This trend has been characterised by the domination of caprines (especially sheep). The problem we encounter when trying to reconstruct husbandry strategies in caprines is to separate sheep and goats, which are morphologically similar but have different productive capacities and are therefore often managed and exploited in different ways. This work is part of the Impressa sheep project which will attempt to characterise the model of production and management strategy of the caprines herd from an approach based on multiple analysis of teeth (archaeozoology, Stable Isotopes Analysis, microwear and ZooMS). Mortality profiles of sheep and goats from the Tinj and Crno Vrilo sites, both of which belong to the Impressa Ware and date to the first half of the 6th millennium BC, are presented. Mortality profiles have been carried out by separating sheep and goats using the ZooMS method, which allows distinguishing species by their peptide fingerprint. In this way we can know what was the importance of each of the species and if there were different exploitation strategies between the two species. This new approach, which combines archaeozoology and palaeoproteomics, will allow us to reformulate the animal husbandry models of the early Neolithic period in the Adriatic by separating two species that have always been analysed together.



## 5 THE EARLY NEOLITHIC SETTLEMENT IN NORTHERN BANAT – THE SITES BUCOVA PUSTA IV AND MOVILA LUI DECIOV

**Abstract author(s):** Krauss, Raiko (Institut für Ur- und Frühgeschichte und Archäologie, es Mittelalters) - Ciobotaru, Dan (Museum of the Banat, Timisoara)

**Abstract format:** Oral

Since 2010 we have been researching various Early Neolithic settlements in the far west of Romania. The two sites to be presented here show typical elements of the Early Neolithic in the Balkan region, such as permanent dwellings, pottery production and the use of domestic animals and cultivated plants. However, the use of numerous aquatic resources by the inhabitants of these settlements is also remarkable, which seems unusual for a Neolithic population. By evaluating the stone tool inventories of the settlements, it is possible to show wide-ranging networks that refer on the one hand to the southern areas of origin of the Neolithic and on the other hand to the more northerly areas that were still completely Mesolithic populated at this time. The evaluation of the settlements in northern Banat confronts us with a hitherto little-known characteristic of the Neolithic in south-eastern Europe, in which possibly older local elements play a greater role. Landscape reconstruction is also important for understanding these settlement sites. Nowadays, this natural area presents itself as a steppe-like landscape. First interpretations of our results allow to reconstruct a pronounced micro relief and the landscape was apparently more heavily forested. A special feature of the region is the absence of stones in the wider surroundings of the settlements. This aspect is of fundamental importance for our understanding of the Neolithic in general, since the use of flint or other lithic resources is a decisive factor in this period. Our lecture will present this project and the first results of the archaeological and scientific evaluation.

## 6 EVALUATING THE IMPACT OF CHRONOMETRIC UNCERTAINTY IN DETECTING CHALCOLITHIC DISPERSALS IN EASTERN BALKANS AND LOWER DANUBE BASIN

**Abstract author(s):** Popescu, Gabriel - Covătaru, Cristina - Lazăr, Cătălin (Research Institute of the University of Bucharest)

**Abstract format:** Oral

Advances in computation modelling and the continuous increase of the radiocarbon available databases, have led to the development of macro-scale models relative to the timing, tempo, and mode of both demographic and/or demographic-cultural dispersals in prehistory. While previous studies have established the major, general framework of the early Neolithic dispersals (their timing and tempo) into Balkans and Eastern Europe overall, many important aspects of the process, at a smaller regional scale and those related to the Chalcolithic dispersals, are waiting for explicit answers. This is mostly due until the last decade to the low number of radiocarbon dates. The increasing number of radiocarbon datasets and the expanding access to computational tools, make the use of aggregated radiocarbon series highly appealing and with great potential, as shown by recent studies on this domain.

Our goal in this paper is to address the very important issue of the Chalcolithic dispersals in the Eastern Balkans and Lower Danube basin by 1) formally taking into account the extent of chronometric uncertainty in radiocarbon data, 2) assessing the statistically significant evidence of the dataset for a dispersal process, and eventually 3) the timing and the speed of the putative Chalcolithic cultural dispersals in the area.

This succession of research steps is very important, as shown recently with new developed analytical tools, because it addresses the fundamental qualities of archaeological datasets, as well as enabling to explore the limits of statistical inference from chronology dates series.

To achieve this, we build on newly available analytical tools used elsewhere to explore similar dispersal related research questions, and on new high resolution radiocarbon datasets combined with good quality legacy dates, from Chalcolithic contexts in the targeted region.

Acknowledgements: Research to produce this presentation was funded from the research grant number 351 PED/2020, project code: PN-III-P2-2.1-PED-2019-4171, sponsored by UEFISCDI, Romania.

## 7 MULTI-ISOTOPIC ( $\Delta^{13}C$ , $\Delta^{15}N$ ) APPROACH TO THE LIFE IN THE CHALCOLITHIC SITE OF GUMELNIȚA (ROMANIA)

**Abstract author(s):** García-Vázquez, Ana (ArchaeoSciences Division, Research Institute of the University of Bucharest - ICUB, University of Bucharest) - Balasescu, Adrian - Vasile, Gabriel - Golea, Mihaela ("Vasile Pârvan" Institute of Archaeology, Romanian Academy, Bucharest) - Radu, Valentin (ArchaeoSciences Division, Research Institute of the University of Bucharest - ICUB, University of Bucharest; National Museum of Romanian History, Bucharest) - Lazar, Catalin (ArchaeoSciences Division, Research Institute of the University of Bucharest - ICUB, University of Bucharest)

**Abstract format:** Oral

The Gumelnița site (also known as "Măgura Gumelnița" or "Măgura Calomfirescu") is probably the biggest tell settlement north of the Danube, and it belonged to the Kodjadermen-Gumelnita-Karanovo VI civilization that occupied the Balkan area in the second half of 5th millennium BC. Is located in the northern area of the Balkan region, in the

southeast of Romania, on the left bank of the Danube River floodplain, immediately south of the confluence area of the Argeş River.

The site consists of a tell-settlement and an adjacent cemetery area where 10 skeletons were excavated in the 60s and 14 tombs were found in the archaeological campaigns from 2017 to 2019. Dating of both human skeletons from the cemetery area and fauna from the tell itself has yielded dates ranging from  $4448 \pm 10$  to  $4360 \pm 42$  Cal BC.

Stable isotopes had provided a qualitative leap in knowledge of the societies of the past and allows us to estimate the assimilated diet and change the previously established paradigms based solely on archaeological remains.

For this work, the stable isotopes of a total of 16 humans, from 2017-2019 campaigns, of different ages have been studied. In order to characterize the diet of Gumelnița inhabitants, the stable isotopes ( $\delta^{13}C$ ,  $\delta^{15}N$ ) of domestic (cattle, sheep, goats, pigs and dogs) and wild (urochs, horse, roe deer, red deer, wild boar, beaver and hare) mammals, fish (carp and catfish), reptiles (European pond turtle), molluscs and plants (crops and wild) have also been analysed.

The results for this population are very homogeneous, and with a lower  $\delta^{15}N$  than the previous hunter gatherers. Thus, this supports that the economy of this society was based mainly on agriculture and cattle husbandry, although sheep, goats and pigs, and that hunting and fishing was a minor activity for this people.

## 8 AN UNUSUAL ENEOLITHIC TRIPLE BURIAL FROM LOVAS, EASTERN CROATIA: ARCHAEOLOGICAL AND BIOARCHAEOLOGICAL ASPECTS

**Abstract author(s):** Novak, Mario (Centre for Applied Bioanthropology, Institute for Anthropological Research) - Franković, Filip (Institute of Prehistory, Protohistory and Near-Eastern Archaeology) - Đukić, Ana (Archaeological Museum in Zagreb)

**Abstract format:** Oral

Recent archaeological excavations at Lovas-Kovači in Eastern Croatia produced archaeological remains dated to various stages of Eneolithic, as well as Middle and the early phase of the Late Bronze Age (Belegiš I and Belegiš II cultures). One of the most significant discoveries is a triple burial dated to the Late Eneolithic (Kostolac culture), which was found within the settlement context. This paper presents contextual analysis of the grave, as well as results of bioarchaeological examination conducted on the retrieved skeletal remains. Both the arrangement and biological characteristics of the interred individuals suggest an unusual character of the grave. A middle-aged woman was buried in the middle, lying face-down; on the left side, lying on her back, was a younger woman; and finally, on the right side, in an almost identical position to the leftmost individual, was a younger male. All three skeletons show evidence of subadult physiological stress while the middle individual also has a massive antemortem, badly healed injury of the left forearm. Carbon and nitrogen isotopic data indicate that all three individuals had largely a C3 plant dominated diet. Considering the fact that this type of burial is quite rare, we tried to find similar parallels in contemporary cultures from Central/South-Eastern Europe, and to provide a viable explanation/hypothesis on what this burial might represent. We believe that through the employment of new methodological approaches (e. g. isotope and DNA analyses) on the funerary data sets we can re-question earlier interpretative models, largely developed within the theoretical framework of the cultural-historical archaeology and extensively employed in Balkan archaeology until today. Only by focusing on data sets from the bottom up, and not from the top down as commonly done, can we hope to deconstruct the simplified interpretative models which uncritically use migration and cultural diffusion to explain cultural change.

## 9 "WHAT DO YOU MEAN BY MIGRATION?" POSSIBLE ANSWERS AND WORKABLE MODELS FOR THE 3RD MILLENNIUM BC IN THE WESTERN BALKANS

**Abstract author(s):** Gori, Maja (National Research Council of Italy)

**Abstract format:** Oral

Theories on human migration in prehistoric archaeology are old as the discipline itself. However, despite the popularity that migration enjoyed lately within the discipline – thanks to both advancement in genomic research and the so-called "refugee crisis" – a striking gap is revealed between archaeological research on migration and that of other human sciences. This talk will start by discussing some of the most relevant approaches to migration in Sociology, Human Geography and Migration Studies and evaluate if and how different models elaborated for present migration can be profitably used in Balkan archaeology. Two case-study from the 3rd millennium BC in the Western Balkans will be discussed. The first is the so-called Cetina phenomenon, a widespread connectivity pattern involving Western Balkans and the Central Mediterranean. The second case study is the so-called "Armenochori complex", a definition for a particular set of pottery types that was in use in the southern Balkans. What was originally regarded as a purely local Macedonian ceramic assemblage proved to be instead indicative for close connection among distant regions as far as Thessaly in the south and the Carpathian Basin in the north. In the conclusions, possible models for migration in these two areas will be discussed and compared with recent aDNA based models proposed for the European Bell Beaker phenomenon, aiming at providing a better and more nuanced understanding of 3rd millennium mobility.

## 10 THE RUSH FOR WHITE GOLD: BRIQUETAGE FROM THE VELEBIT LITTORAL AND BRONZE AGE SALT PRODUCTION ON THE EASTERN ADRIATIC COAST

**Abstract author(s):** Domines Peter, Pio (Department of Archaeology, University of Zadar)

**Abstract format:** Oral

The recent archaeological progress in the study of late prehistoric periods of the Velebit Littoral, a region beneath the largest Croatian mountain range stretched along the eastern Adriatic coast, revealed significant traces of prehistoric salt production with briquetage. Regarding the specific concentration, considerable density, and large quantity of documented objects in the form of characteristic ceramic three-horned spindly items, together with the enormous amount of highly fragmented pottery sherds of thin-walled recipients, several registered sites can be directly identified as salt production areas where saltwater brine evaporation process occurred. The turning point of the adoption of new knowledge took place in the Late Bronze age when specially chosen locations in the maritime landscape fulfilled prerequisites of organization of such kind of economic activity. Characteristics of Velebit's briquetage assemblage, comparative studies, chronology issues, production sites patterns, technological requirements, consumption practices, implications on the social structure of local communities and organization of livestock-based economies are questions which are discussed in order to understand the overall content of the package which „salt revolution“ brought on the regional context in challenging times of great changes and increased circulation of objects and ideas.

## 11 DAUNIAN GEOMETRIC POTTERY IN EASTERN ADRIATIC NETWORKS: CONTEXTUAL APPROACHES TO DIFFUSION, APPROPRIATION, AND EMULATION OF PRESTIGE GOODS

**Abstract author(s):** Bernardo-Ciddio, Leah (University of Michigan)

**Abstract format:** Oral

Elaborate matt-painted pottery from Daunia (northern Apulia, Italy) has been found across Iron Age cemeteries in the Dolenjska and Notranjska in Slovenia, on Croatia's Istrian peninsula, and in Dalmatian coastal settlements. Local impasto emulations of Daunian shapes have also been recovered. Although these objects have been frequently discussed, there has been no exploration of the social and political structures or interactive behaviours they reflect, nor what they suggest about the significance of foreign prestige goods and of the networks that drove their circulation.

My study pushes back on the cultural historical, structuralist, and positivist approaches and that have alternatively characterised the discussion of Daunian pottery. The development of universal laws and interpretations for understanding this material has obfuscated the social and cultural variability it reflects.

I undertake a systematic study to discern whether local elites in the Eastern Adriatic used these pots just as Daunians did, attributed similar meanings, or communicated affinity with Daunia or the wider Adriatic through their use. I draw from theoretical approaches in globalization studies and mortuary archaeology, arguing that the exploration of local practice in the context of global connectivity is essential to understanding the development of new meanings attached to supposedly “foreign” objects.

I apply statistical techniques to contemporary funerary assemblages from burials on either side of the Adriatic. The results clarify relationships between specific objects, allowing for the reconstruction of typical funerary rituals. I first identify typical patterns of co-presence between object types in Daunia. Attention is paid to co-presence of other objects emblematic of extended Adriatic networks. The Eastern Adriatic analyses establish the function of Daunian pottery within a local assemblage to determine whether it filled a role played previously or elsewhere by local objects and shapes and whether there is indication of corresponding changes in funerary practice.

## 12 RECONCILING ARCHAEOLOGICAL THEORY WITH DATA: THE CASE OF IRON AGE/ARCHAIC MACEDONIA

**Abstract author(s):** Giamakis, Christos (University of Sheffield)

**Abstract format:** Oral

Balkan archaeology unfortunately remains deeply rooted in nationalistic agendas adopting cultural-historical approaches despite the latest developments in theoretical archaeology. Insights gained by processualism, post-processualism and more recently post-humanism have yet to be adopted by Balkan archaeologists when approaching the study of the archaeological material. The aim of this paper is to reconcile these major theoretical trends with the archaeological material found in the geographical region of Greek Macedonia in order to shed important new light on themes such as human agency and the formation of collective identities. More specifically, these themes will be explored through the presentation of material from a selection of Iron Age/Archaic (700-480 BC) cemeteries across the region. Grave goods, tomb types, burial rites and the topography of the cemeteries will all be studied as part of the same ontology, influencing and influenced by agency and collective identities. Past approaches have treated this region as a politically unified one, a phenomenon passively reflected on the material discovered there. By challenging such cultural-historical approaches and by drawing upon particularly post-processual theory and the more

recent 'ontological turn' in archaeology, the present paper will emphasise the agency of the local communities in actively employing material culture in order to strengthen the potency of certain kinds of identities at the expense of others. Consequently, it will be argued that instead of an overreliance on a dominant umbrella term when describing the populations inhabiting these regions, more emphasis should be given at the active role of both people and material culture at a local level. The time has come for Balkan archaeology with its largely underexplored archaeological riches to act as laboratory for new models and paradigms which could propel it to the centre stage of world archaeology. The present paper is hopefully a step towards this direction.

### 13 **ASSEMBLING THE PUZZLE - THE HORIZON OF OSTENTATIOUS BURIALS IN THE IRON AGE BALKANS**

**Abstract author(s):** Heilmann, Daniela (LMU Munich)

**Abstract format:** Oral

A central issue in research on the Balkan Iron Age/Archaic Period is the question of the immediate appearance of ostentatious graves in the 2nd half of the 6th century BCE. While models explaining the occurrence of so-called "princely tombs" in the Central and Southern Balkans differ in their contents, they are linked by the concept of cultural and socio-political "change". This change, referring to the transformation in the significance of the burial as a monument for individual and collective display of status, power, and identity, was initially seen in a supra-regional context. The idea of a supra-regional and linked phenomenon of the appearance of ostentatious graves is still clashing with the concept of sharply delineated Iron Age cultural groups and resulted – also due to nationalistic discourses – in the "fragmentation" of a "princely grave horizon", which is discussed nowadays mainly on a regional level. One crucial element in the discourse of the lavishly furnished graves of the 6th and 5th BCE is the conception of powerful centres controlling or integrating a specific territory, suggesting a hierarchical organization of communities concerned. The aim of the paper is to challenge this fragmented and territorial view of the Iron Age Balkans by experimenting with ritual and practice theories, highlighting patterns of social structures beyond the phenotypical analysis of the material culture.

---

### 365 **LIFE AND DEATH BEHIND THE WALL: A MULTIDISCIPLINARY APPROACH TO MONASTICISM IN PAST**

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Sarkic, Natasa (Aita Bioarchaeology) - Janeš, Andrej (Croatian Conservation Institute, Department for Archaeology)

**Format:** Regular session

For centuries monasteries had a very important role in society. Not only were they the centre of spirituality, but also the centre of education, and they often provided shelter and food for beggars, medical care for the sick and home for orphans and the elderly poor. Nuns and monks, at least in theory, lived in communities under vows of poverty, chastity and obedience, dedicating their time to prayer, contemplation, intellectual and physical work.

However, the information that we have at hand is mainly based on written sources, such as historical data, monastic books and rules of monastic orders. But history can often be subject to manipulation and provides only general facts.

Using a multidisciplinary approach, we can shed a light on various aspects of monastic life and its evolution through centuries. While archaeological studies can answer questions regarding architecture, economy, facilities and religious landscapes, archaeozoology and archaeobotany can inform us about production and consumption of food and drinks, bioarchaeology can tell about health and diet, traumas, degenerative diseases, dental health, occupational stress, infectious diseases etc. We can also observe possible differences between monastic orders, between male and female communities as well as possible violations of monastic rules. With new approaches, we can follow the development of these large complexes through space and time, their adaptation to new social and environmental changes through a long period of time, from the late antique period till the 19th century.

We invite papers addressing topics of European monasticism in a broad sense. Contribution can be focused on monastic populations (both monks and nuns) or specific cases and can present results from different perspectives: bioarchaeology (analysis of human remains, archaeobotany, archeozoology...), biomolecular analysis, landscape archaeology etc. We particularly welcome papers that provide examples of cross-disciplinary research, regardless of geographic region or time period.

**1 IDENTIFICATION OF PIARIST COFFINS FROM ARCHAEOLOGICAL RESEARCH IN THE CRYPTS OF THE CHURCH IN SZCZUCZYN (PODLASKIE VOIVODESHIP, POLAND)**

**Abstract author(s):** Michalik, Jakub (Institute of Archaeology, Nicolaus Copernicus University in Torun) - Openkowski, Rafał (Institute of History and Archival Sciences, Nicolaus Copernicus University in Torun)

**Abstract format:** Oral

The Order of Regular Clerics of the Poor Mother of God of Pious Schools played the most important role in the history of the monastery and church complex in Szczuczyn. The Piarist monastery was built in the years 1697–1700, and then the construction of a brick church of Name of the Blessed Lady Mary, lasted until 1711. The order operated there until its dissolution by the Prussian authorities at the beginning of the 19th century. Archaeological research in the crypts of the church of The Name of the Blessed Lady Mary in Szczuczyn has been run since 2011. The work carried out so far in the crypts under the church presbytery and in the western nave was aimed at organizing and inventorying the burials in the crypts. As the research progressed, a huge amount of information was gathered regarding the burials of lay people and clergy. In the crypts in Szczuczyn, local elites, clergy and people of merit for the church were buried. Observations made during archaeological research indicate that even wooden coffins, apart from the clothes of the deceased and complex devotional articles, could provide information about the social condition of the person buried in it. The coffins of the monks differed to a large extent from the coffins of lay people, primarily in the simplicity of execution, shape, painting, and the type of wood used. Thanks to the information posted on the coffins of the deceased, it was possible, thanks to the interdisciplinary work of archaeologists and archivists, to identify 25 coffins belonging to clergy. The difference between a coffin intended for a lay person and a clergyman allows for the observation of unwritten rules regarding the burying of Piarists in Szczuczyn.

**2 AN APPROACH THROUGH BEHAVIORAL ARCHAEOLOGY OF FORMER FRANCISCAN CONVENT OF THE LA PURISIMA CONCEPCION DE SIERRA DE PINOS, ZACATECAS**

**Abstract author(s):** Laue, Francisco (Instituto Nacional de Antropología e Historia)

**Abstract format:** Oral

The object of study was focused on carrying out a reconstruction of the behaviors of the different societies that inhabited the Ex-Convent of the La Purísima Concepción of the Sierra de Pinos for three centuries.

When we speak of behavior and conduct we will be referring to any performance of the phenomenon in its participation with the various forms of subject-object, object-subject, subject-subject and object-object interaction (Schiffer, 1991). Such relationships, for their correct understanding, must be framed in a certain method; the methodology proposed by behavioral archeology starts from the creation of a conceptual map based on analytical units to record the processes formation and make inferences of social behaviors through the information derived from the material artifacts.

The hypothesis is based on the assumption of the existence of various systems of behavior that occurred in different occupations, where we think that certain areas were involved in a domestic behavior such as the transfer of resources for food preparation, due to the presence of "mixed" materials. Under the idea that any past or contemporary society needs to discard materials for different reasons, it is possible to think that those could have passed by a maintenance process; In the particular case of the spaces of the Ex-Convent, each one plays a fundamental role, such as the implementation of an adequate deposit for the disposal of waste.

**3 TRACING TEWKESBURY: A MULTIDISCIPLINARY APPROACH TO EXPLORING THE MONASTIC PRECINCT OF A POWERFUL BENEDICTINE MONASTERY IN THE WEST OF ENGLAND**

**Abstract author(s):** March, Eleanor (University of Exeter)

**Abstract format:** Oral

Tewkesbury Abbey (Gloucestershire) was one of the foremost Benedictine institutions in the west of England, if not the whole of the country, during the medieval period. Its patrons constituted some of the most powerful and influential contemporary families and in 1535 it was one of only twenty-four monasteries with an annual income of over £1000 listed in the Valor Ecclesiasticus. Nevertheless, despite its significance, the historical and archaeological study of the abbey has been relatively neglected, especially compared to some of the major Benedictine sites in the southeast of England.

Notably, the study of Tewkesbury's monastic precinct has been particularly neglected. While the monastic church survives almost in its entirety, having been purchased by the townspeople following the Dissolution in 1540, the cloister and wider precinct was virtually completely destroyed. Although a heavily stylised plan for the cloister and southside of the monastery has been proposed, this is predominantly based upon the survey of the monastic buildings made

at the time of the Dissolution and very limited archaeological investigations, the most significant of which remains unpublished.

This paper presents the results from a holistic study of Tewkesbury's monastic precinct. It draws upon a wide range of evidence: from historic maps and documents in order to map the boundaries of the monastic precinct and its relationship with the town; to LiDAR, geophysical survey, and unpublished archaeological excavation data to trace the physical development of the precinct and the activities taking place there. It showcases the potential that a truly multidisciplinary study has for exploring life in and around a monastic precinct even in light of apparently few sources.

#### 4 **MORE THAN JUST A MAN'S WORLD: A PRELIMINARY ANTHROPOLOGICAL ANALYSIS OF THE OSTEOLOGICAL MATERIAL FROM THE MONASTERY HILANDAR (ATHOS, GREECE)**

**Abstract author(s):** Sarkić, Natasa (Aita Bioarchaeology) - Vranić, Mirko (University of Belgrade, Department of Archaeology) - González-Garrido, Laura (Department of Physical Anthropology of the University of León)

**Abstract format:** Oral

The Orthodox monastery of Hilandar, dating from the 12th century, is one of the most important centres of Serbian culture and spirituality. It is located in the northern part of Mount Athos on the Halkidiki peninsula, in northern Greece. This area, with a total surface of 335 square, through its history always had a special jurisdiction and presents the largest area in the world from which women and female animals are banned. Today, over 2,000 monks live an ascetic life in Athos, isolated from the rest of the world. This region is known for its strictness and closeness; therefore, investigations were limited only to rescue archaeology.

According to the customs that prevail on Hilandar, three years after burial, the skeleton is exhumed and washed in wine. The postcranial skeleton is then deposited in the ossuary, and the skull is placed on a shelf. In some cases, the monk's name and year of death are written on the skull. There are currently about 2,000 skulls in this ossuary. This extremely valuable osteological material represents a fantastic opportunity to expand our knowledge of life in the most important Serbian monastery.

In 2019, preliminary anthropological analyzes of 40 skulls from the Hilandar monastery were performed. Although small in size, these analyzes are of great importance for the study of Orthodox monasticism, and at the same time, as the first systematic research of skeletal remains from Athos, represent a huge step towards understanding this complex and isolated community.

#### 5 **PRELIMINARY RESULTS OF ARCHAEOLOGICAL EXCAVATIONS AND ANTHROPOLOGICAL ANALYSIS FROM THE RAŠAŠKA - RAČEŠA SITE (CROATIA), 13TH-16TH CENTURY**

**Abstract author(s):** Sarkić, Natasa (Aita Bioarchaeology) - Matković Vrban, Marina - Mihaljevi, Marija (Nova Gradiška city museum) - Čavka, Mislav (University Hospital Centre Zagreb; Faculty of Medicine, University of Zagreb)

**Abstract format:** Oral

Historical sources first mention the Račeša estate in 1210, when King Andrew II donated it to the Templars in Požega County.

The site was discovered in 2011 as part of a reconnaissance of the surrounding area. There were no visible above-ground remains of construction on the site. Research has revealed the remains of a fortification complex built of carved blocks of sandstone, architectural details and profiling confirm that this is a fortification from the first half of the 13th century when the Templars are mentioned as the owners of Račeša.

The fortification consisted of an oval central core measuring 54x38 m, oriented west-east, surrounded by a defensive trench approximately 13 - 14 m wide and 2.5 - 3 m deep. Two rectangular rooms next to each other were discovered. The walls of the rooms were built of quality sandstone blocks.

Archaeological excavations, up to now, have fully explored two rooms, as well as the area around the outer walls of those rooms. In addition to the architectural remains of the fortification, numerous findings were collected, as well as 128 individual graves and an immense quantity of dislocated bones, which can be dated to the period between the 13th and 16th centuries.

Preliminary results of anthropological analysis have brought many interesting discoveries, among which the case of successful trepanation of an adult individual and perimortem injuries on the child's skull, a possible consequence of interpersonal violence, certainly stands out.

## 6 MONKS OR WARRIORS? BURIALS IN THE BENEDICTINE MONASTERY OF ST. MARGARET IN BIJELA

**Abstract author(s):** Janeš, Andrej (Croatian Conservation Institute)

**Abstract format:** Oral

The Benedictine monastery of St. Margaret in Bijela was one of the most important monastic centres of medieval Slavonia. The monastic community was probably founded during the 13th century as a priory, that was elevated to the rank of monastery during the 14th century and later also to the rank of abbey. Being the centre of a large estate, but also a focal point in regional ecclesiastical hierarchy, being the only Benedictine abbey in the territory of the Zagreb diocese. During its existence the monastery changed rulers, from abbots, over bishops to laic and military administrators till it was taken by the Ottomans in 1543. During all this periods the monastic church was used for burials of individuals. The excavations yielded 42 preserved burials and a few dozen skeletons from disturbed graves. Most of them belong to male individuals, which is in line with the male monastic community. Finds of females and children indicate the use of the church for nonmonastic individuals. In chronological terms, burials are dated between the 14th and the end of the 17th centuries. This data shows that the Christian burial place still was important even during Ottoman rule. Bioarchaeological research showed a large percentage of perimortal traumas on at least a third of the excavated skeletons. This paper will show the perseverance of a sacred site for Christians during the Ottoman period and the unusual profile of the buried inside of a monastery.

## 7 ON THE MONKS TABLE – THE CISTERCIAN FOOD AND EATING CULTURE IN MEDIEVAL DENMARK

**Abstract author(s):** Mollerup, Lene (Museum Skanderborg)

**Abstract format:** Oral

The Cistercians arose as a spiritual reform of the European monasticism around 1100 AD. A group of French monks wanted to change the monastic life and return to the Rule of Saint Benedict. The Cistercians were known for their severity and harshness in all matters of Monastic life, including their daily consumption of food.

The monks were supposed to refrain from gluttony. Food was considered as fuel for the body and not to be consumed with pleasure. Meat from four-legged animals was prohibited; since meat was regarded as too stimulate the carnal desire, so abstinence from meat-eating was an important tool to curb the sexual drive.

This study describes the Cistercians in Denmark and their relationship towards food based on an interdisciplinary approach using historical, archaeological, archaeobotanical and bioarchaeological sources. The aim is to identify the diet of the Danish Cistercians and to investigate if it is possible to detect changes in the Cistercian food intake through time.

## 8 THE LANDSCAPE IMPACT OF CISTERCIAN GRANGES - THE CASE OF PLSY ABBEY

**Abstract author(s):** Ferenczi, Laszlo - Janovský, Martin (Charles University, Prague) - Horák, Jan (Czech University of Life Sciences, Prague) - Malina, Ondřej (National Heritage Institute, Loket) - Klír, Tomáš (Charles University, Prague)

**Abstract format:** Oral

There is a common assumption that medieval Cistercian monastic communities played a significant role in transforming their environments by clearing woodlands, reclaiming wetlands, constructing grange farms, fishponds, etc., and colonizing previously uncultivated lands. They were renowned for their superior agricultural farming techniques and for cultivating an interest in pastoral economy, obtaining several grants (of pasture rights) in order to sustain their considerable livestock. While this image of the order is based mostly on well documented – and unique – examples from Western Europe, in other regions, which were peripheral to the Cistercian expansion, their environmental impact remains uncharted. Our presentation draws on the example of Plsy Abbey (Central Bohemia), where previous research already offered an interpretation different from the above-described model: most of the abbey farms seem to have been established with minimal investments, having relocated the already existing rural communities and using their lands instead of clearing new areas for cultivation. We have used state-of-the-art methodologies (LiDAR, XRF spectrometry) to investigate the landscape features around the abbey farms, assessing soil geochemistry, and finding out more about the possible agricultural/industrial uses and how the historic landscape was transformed by the monks.

## 9 NOURISHING BODY AND SOUL: A MULTI-TISSUE AND ISOTOPE STUDY ON THE DEVELOPMENT OF MONASTIC DIET IN A MEDIEVAL ROYAL BURGH

**Abstract author(s):** Czére, Orsolya (University of Aberdeen) - Cameron, Alison (Cameron Archaeology Ltd) - Sayle, Kerry (Scottish Universities Environmental Research Centre) - Britton, Kate (University of Aberdeen)

**Abstract format:** Oral

Stable isotope analytical techniques are ideal to uncover dietary and mobility patterns within and between populations rooted not only in status, sex but also religiosity. Recent methodological improvements based on the analysis

of incrementally growing tissues can allow the production of higher resolution longitudinal dietary ( $d_{13}C$ ,  $d_{15}N$ ) and mobility ( $d_{34}S$ ) data. Studies of incremental dentinal collagen, for example, enable access to more nuanced early-life isotopic information associated with specific individuals. In combination with bulk sampling approaches (e.g. bone collagen) the analysis of dentinal increments allows isotopic biographies of individuals to be constructed. Accessing these long-term dietary profiles in combination with known historical information and osteological interpretations can help assess isotopic patterns in association with the wider socio-economic development of past monastic and lay individuals.

As a royal burgh city, Aberdeen was not only one among a limited number of urban centres in Scotland with exclusive rights to engage in overseas trade, but also represented a melting pot of monastic and secular populations. This study discusses the dietary and mobility patterns of multiple religious orders (Carmelite, Dominican, and Franciscan) alongside the local laity. To assess both early and late-life patterns, in addition to bulk bone collagen data, incremental dentinal samples (from M2 and M3 teeth) were also analysed from two individuals presumed to have belonged to the Franciscan order and from remains (both male and female) unearthed from a contemporary high-status burial ground. As part of this study, long-term dietary profiles were utilised to gain insight into the influence of social and religious variability on these distinct groups in a developing medieval urban centre in north-east Scotland, and evidence of dietary changes likely associated with personal adherences to novel diets in later childhood as a result of joining religious orders was found.

#### **A. PANEM NOSTRUM QUOTIDIANUM. DENTAL ANTHROPOLOGY OF A CONVENT IN MEDINA SIDONIA (SPAIN). FIRST DATA**

**Abstract author(s):** Castro Moreno, Gonzalo (FAPAB Research Center) - Rosa Machado, Francisco Douglas (Independent Researcher)

**Abstract format:** Poster

First data on the dental anthropology of a 17th century convent in the Spanish town of Medina Sidonia, where it has been possible to analyze a whole series of dental remains from the burial crypt of the demolished Franciscanos Descalzos convent, destroyed in the 19th century and excavated during the year 2007. The preserved lower jaws as well as the remains of teeth preserved in the upper jaws have been taken as samples, all of them from secondary burials, so that with both the macroscopic and microscopic analysis of the dental pieces we have been able to see the eating habits of the inhabitants of the convent as well as its reflection on their dental health, with their own pathologies that in many cases have led to the partial or total loss of teeth, as has been observed in the existence of lower jaws with the absence of said pieces.

#### **B. FROMBORK CATHEDRAL - LIFE AND DEATH VISIBLE IN THE ARCHITECTURE**

**Abstract author(s):** Zdeb, Katarzyna (Institute of Archaeology Cardinal Stefan Wyszyński University in Warsaw) - Adamić, Jacek (GPR24.com.pl)

**Abstract format:** Poster

The cathedral basilica of the Blessed Virgin Mary and St. Andrew in Frombork was erected as a three-nave hall with an elongated and rectangularly closed chancel. This Gothic church was built between 1329 and 1388 on the site of a former wooden church on a fortified hill. There are two chapels by the right nave - one of them is the chapel of St. George, known as the Polish one, and the second - the Savior's Chapel (Szembek's Chapel) with a plate decorated with iron handles. In the naves and in the presbytery, there are numerous tombstones of Warmia bishops, as well as an epitaph.

Part of the presbytery was associated with the funeral rites of monks and the later clergy. There are many tombstones there. Among them, there is also one with metal fittings - it is a shaft of an old elevator. The elevator was used to transport the coffins to the crypt. In addition to the crypt under the presbytery, there was also a crypt under the floor of the nave.

The architectural reconstruction and the new interior arrangement made the location of the crypts non-obvious. A GPR was used to research the location of the crypts and to find their distribution. The research was carried out in order to locate the burial places, as well as to identify the funeral cycle of Frombork monks and clergy.



**Theme: 2. [Re]integration**

**Organisers:** Still, Beverley (Department of Archaeology, University of Durham) - Spillane, Ben (Department of Archaeology, University College Cork) - Louwen, Arjan (Faculty of Archaeology, Leiden University)

**Format:** Regular session

The analysis of mortuary practices and their cultural context remains one of the most effective methods of tracking societal transitions. For this session we will be exploring the subject of continuity or change in burial modes during the Late Bronze - Early Iron Age in Atlantic Europe. Identifying specific change in funerary customs of this period has traditionally been difficult and varies widely between the Continent, Britain and Ireland. The end of the Bronze Age was not marked by a sudden incursion of culturally distinctive, iron-using groups. It was a prolonged, fluid process of gradual change which saw the intermingling of pre-existing traditions with new material culture. Chronologically defining these nuanced developments with the use of radiocarbon dating was limited due to the Hallstatt Plateau (800-400 BC). However, with the wide-scale adoption of Bayesian Chronological Modelling, it is now possible to overcome this limitation and provide absolute chronologies for individual cemeteries and wider burial traditions. In addition, advances in osteoarchaeology, isotope analysis and ancient DNA allow for a multifaceted approach to the analysis of human remains. The application of these methodologies assists in identifying subtle changes in funerary customs such as burial modes, demography, treatment of the body, mobility, kinship and the spatio-temporal origins of these developments. The subtle and regionally specific developments identified can be juxtaposed with the more pragmatic 'big data' approach, to track broader patterns across the entire period. By integrating these multiple approaches, a robust narrative of the cultural developments in funerary practices during this transition in Atlantic Europe can be achieved.

We will accept papers from researchers that incorporate the novel approaches mentioned above with a focus on site-based and interregional mortuary practices and the degree to which they represent spatio-temporal change during the Late Bronze to early Iron Age in Atlantic Europe.

## ABSTRACTS

### 1 FROM ASSESSMENT TO EXCESS: THE SHEER ABUNDANCE OF URNFIELD DATA IN THE LOWER-RHINE-BASIN

**Abstract author(s):** Louwen, Arjan (Leiden University)

**Abstract format:** Oral

The Lower-Rhine-Basin is literally dotted with Late Bronze Age and Early Iron Age cremation grave cemeteries. In the Netherlands alone more than 700 sites have been discovered that produced graves dating to the period between 1100 and 500 BC and their numbers are still growing rapidly. When one comes to think of the fact that cemeteries like these could easily host hundreds of individual graves and that the true extent of these funerary landscapes only recently started to reveal itself thanks to large scale commercial excavations, it is safe to state that what we are dealing with is probably the most abundant funerary legacy from prehistory in this corner of Europe.

The potential of these 'big data' has until recently only slightly been touched upon. A recent study of some 3.000 graves and over 200 radiocarbon dates collected from 75 cemeteries in the Netherlands not only challenges our current views on the genesis, lifespan and extent of these cemeteries but also raises questions about the representativity of the data at hand: Do our excavations in some way approach the original number of graves once present in Late Bronze Age and Early Iron age cemeteries or are we still dealing with only a fraction of the original situation?

This paper will present a brief state of affairs of urnfield research in the Netherlands and will suggest several directions the urnfield research could be heading when the potential of these big datasets is really put to use.

### 2 WHAT A TIME TO BE ALIVE. INTERDISCIPLINARY RESEARCH OF AN EXCEPTIONAL URNFIELD IN TILBURG – UDENHOUTSEWEG, THE NETHERLANDS.

**Abstract author(s):** Brattinga, Joris (Archeologisch Onderzoek Leiden bv - Archol) - Veselka, Barbara (Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel.; Maritime Cultures Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel) - Boudin, Mathieu - van Strydonck, Mark (Royal Institute for Cultural Heritage Brussels - KIK/IRPA) - De Mulder, Guy (Department of Archaeology, Ghent University) - van den Eynde, Guido (Town archaeologist, Municipality of Tilburg)

**Abstract format:** Oral

In the fall of 2020, large parts of an extensive Late Bronze Age and Early Iron Age urnfield were excavated in the municipality of Tilburg, The Netherlands. Compared to similar sites in the Meuse-Demer-Scheldt region, this site is remark-

ably well preserved. A total of 42 tumuli and long barrows and no less than 232 cremation graves were discovered, most of them still fairly complete.

Fortunately, it was possible to anticipate the good preservation of the site during the early stages of the project. An extensive and interdisciplinary research strategy could be determined, increasing the quality of the excavation and preservation of the cremation deposits, the funerary features and the grave goods. Moreover, geophysical research has been carried out prior to the excavation.

In collaboration with an international team of specialists a comprehensive sampling plan was set up beforehand allowing specific bioarchaeological and archaeobotanical research questions to be answered. This includes lipid analyses of the many vessels collected from the graves for information on their use and strontium isotope analyses of the cremated human remains to obtain information on in-life mobility. To firmly contextualize all this data, an extensive number of cremation graves (ca. 60%) is being radiocarbon dated, providing interesting insights in the development of this cemetery through time.

This paper will present the multidisciplinary research strategy and excavation methodology of this remarkable site.

### **3 AMS 14C DATING OF LATE BRONZE AND EARLY IRON AGE CREMATED BONES FROM BARROWS IN WESTERN LITHUANIA: RESULTS AND INTERPRETATION**

**Abstract author(s): Muradian, Lijana (Vilnius University)**

**Abstract format: Oral**

In the Bronze and Early Iron Age, various changes in the East Baltic Region occurred in the pattern of settlements, economical strategies, and funerary practices. During this period, the first customs of the cremation of the deceased appeared and spread, and the practice of creating barrow mounds widely spread in some parts of the East Baltic Region. Burial mounds in western Lithuania were the main type of burial monument through the Late Bronze and Early Iron Ages, even when transitioning from cremation to inhumation. Changes in mortuary practices during this period could be related to social and/or ideological transformations. The emergence of the cremation custom led to a decrease in the amount of grave goods, and most cremated burials in Lithuania do not contain any grave goods. For this reason, it is difficult to determine the beginning and span of the cremation custom based only on the typological method. The AMS 14C method was applied to date cremated bones of Late Bronze and Early Iron Age barrows in western Lithuania. The obtained data was used to determine the duration of the cremation custom practiced. The cremation custom of the deceased in this microregion was practiced from 860–565 cal BC to 383–151 cal BC. Furthermore, stone arrangements associated with cremation burials differ in barrow mounds, and some of the deceased were separated and buried not in barrows with other members of the community, but outside external stone circles. The obtained AMS 14C data was also used to compare differently arranged cremation graves. This data suggests that collective burials in barrows, burials outside the external stone circle of the barrow, and barrows containing only one deceased, could have co-existed. This could be related to a number of reasons, including: the social status of the deceased, ideological aspects, etc.

### **4 A TAPHONOMIC APPROACH OF CREMATED REMAINS: RECONSIDERING THE BODY THROUGH CASE STUDIES IN BRONZE AGE SCOTLAND**

**Abstract author(s): Chaumont Sturtevant, Elisabeth (University of Aberdeen)**

**Abstract format: Oral**

Cremation burial practice is a central mortuary practice during the Bronze Age. A constant issue in the analysis of cremated human remains is the difficulty to visualize the body of the dead, a contrast to inhumations.

For the purpose of my ongoing Ph.D. research, human remains emanating from Bronze Age cremation burial sites in Scotland are examined. Applying osteological methods, this research is more specifically interested in reviewing what cremated bone can tell us about mortuary practices during the Bronze Age in Scotland.

For this session, we would like to discuss the survival and occurrence frequency of bone fragments by presenting anatomical reconstructions from Scottish case studies. Such examples include Leuchars Brae Skene, a Late Bronze Age cremation burial. These case studies will include information on our current understanding of cremated bone taphonomical survival. Better visualization of the cremated bone allows us to review our expectation of body representation and better recognize natural fragmentation patterns. Reviewing such patterns across different types of sites in Scotland can help better recognize different mortuary practices in the handling of the bones.

In conclusion, this study aims to consolidate our information on Scottish cremated skeletons and review how gaining a better understanding of cremated bone survival can help us better understand past mortuary practices.

## 5 FUNERARY PRACTICES ON THE EDGE OF SCOTLAND: THE ANALYSIS OF THE DISARTICULATED HUMAN BONE ASSEMBLAGES FROM THE COVESEA CAVES

**Abstract author(s):** Primeau, Charlotte (University of York) - Booth, Tom (Ancient Genomics Laboratory, The Francis Crick Institute) - Büster, Lindsey (University of York; Canterbury Christ Church University) - Armit, Ian (University of York)

**Abstract format:** Oral

The Covesea Caves are a series of funerary caves on the south shore of the Moray Firth in Scotland. There are at least five caves of archaeological significance, although not all have been extensively excavated. The Sculptor's Cave is the largest and best-known. The name derives from the Pictish symbols adorning its entrance walls. Immediately west of the Sculptor's Cave are two additional caves: Covesea Cave 1 and Covesea Cave 2. These three caves appear to have been used intermittently for funerary rituals from the Neolithic to Roman Iron Age with human bones being retrieved from several excavation campaigns. The human material that remains today was examined using macroscopic, microscopic and histological methods. The results showed that the bones displayed evidence of a variety of surface modifications such as cut marks, trampling, fire and surface exposure. Additionally, there was evidence of decapitation, mummification and no or very little bioerosion, indicating enhanced preservation of the bodies interred in the caves. Results from the multidisciplinary analysis of the human remains support the interpretation that excarnation was at least one mortuary treatment offered to the dead brought to the Covesea Caves in this enigmatic funerary coastal environment.

## 6 WORLDS APART: LOCAL LANDSCAPES AND COSMOPOLITAN CENTRES FOR DEALING WITH THE DEAD IN LATER PREHISTORIC BRITAIN

**Abstract author(s):** Büster, Lindsey (Canterbury Christ Church University; University of York) - Bleasdale, Madeleine - Fischer, Claire-Elise - Primeau, Charlotte - Armit, Ian (University of York)

**Abstract format:** Oral

The dead of later prehistoric Britain are notoriously elusive. New methodological and analytical techniques are, however, offering rare glimpses into relationships between the living and the dead at a number of important sites where mortuary treatment and preservational conditions have rendered the dead visible. The Sculptor's Cave in north-east Scotland, which saw protracted funerary use for around 1500 years, was part of a coastal mortuary landscape used by local communities for millennia. Meanwhile, ancient DNA and isotope data has revealed a very different picture for another landscape on the edge: Cliffs End Farm on the Isle of Thanet, in the far south-east of England. Here, a cosmopolitan population (some newly arrived, some local) reused an ancient mortuary landscape to communicate complex and multi-faceted identities in a highly ritualised and structured setting. This paper will use these two important sites to demonstrate the value of multi-proxy approaches in exploring the fundamental role that the dead played in place-making among the living.

## 7 INVISIBLE AND MISUNDERSTOOD: IDENTIFYING THE DEAD IN LATE BRONZE AND EARLY IRON AGE BRITAIN

**Abstract author(s):** Still, Beverley (Durham University)

**Abstract format:** Oral

The dead of the Bronze to Iron Age transition in Britain are disproportionately invisible compared to many other periods of prehistory. The application of methodologies based on new scientific techniques have enabled some understanding of burial rites practised at this time. Central to the identification of human remains, is the use of radiocarbon dating and it is through the construction of firm chronologies, that we can begin to build a database of the elusive dead.

Funerary practices in this transition period are currently understood through the more sensationalist sites. The mummified remains of Cladh Hallan, skulls from the River Thames, death pits of Cliffs End Farm. What of the rest of the population? Mortuary remains were highly variable during this time, but one burial rite stands alone, that of cremation. Demonstrating continuity, a tradition centred on the ancestors, interments in or close to earlier monuments used intermittently through space and time.

This paper will examine the practice of cremation and using a big data approach I will assess the evidence from Britain.

## 8 SETTING THE SCENE: HOW A STUDY BURIAL AND SOCIETY IN EARLY BRONZE IRELAND CONTEXTUALISES DEVELOPMENTS IN THE LATER BRONZE AGE

**Abstract author(s):** McSparron, Cormac (Queen's University Belfast)

**Abstract format:** Oral

This paper will present an analysis of the chronology of the Irish single burial tradition from its Chalcolithic origins (circa 2200BC) through to the Middle Bronze Age (circa 1500BC). It will examine the chronology of the development of the

single burial tradition and the accrual of its constituent elements. The paper will highlight the existence of a parsimonious variation of the single burial tradition, the "potless-burial", which seems to emerge in the 21st century BC and continues throughout the remainder of era, in parallel to more complex variants of the tradition. It will be proposed that this very simple set of burials may provide a link to, or possibly an origin point for, the simplified burial traditions of the later Bronze Age and beyond. The paper will finish with an examination of social context and ideology which may help explain evolution in the single burial tradition in Ireland from the Chalcolithic to Middle Bronze Age and provide a backdrop for discussion of the societal changes that were to come, suggesting that the parsimonious funerary practices typical of Late Bronze Age Ireland may.

## 9 LATER BRONZE AGE URN BURIAL AND CULTURAL CHANGE AT THE END OF THE BRONZE AGE.

**Abstract author(s):** Becker, Katharina - Spillane, Ben (Department of Archaeology, University College Cork)

**Abstract format:** Oral

Excavations of the past three decades in Ireland have produced plentiful evidence for later, i.e Middle and Late Bronze Age burial sites. Our survey of excavation records, largely in form of grey literature excavation reports, has produced a substantive corpus of later prehistoric burials of a wide range of forms. In this paper we will set out its fundamental characteristics and, in particular, consider cremations contained by or covered by coarse ware urns to examine their articulation, association and possible social significance as part of the broader range of burial forms. A large number of these urned coarse ware burials were dated as part of the post-excavation programmes of the respective excavation schemes. Applying principles of Bayesian sample selection retrospectively to the assessment of these dates, models for the chronological extent of the phenomenon will be evaluated. This will allow a discussion of the burial evidence in relation to issues of cultural change at key points between ca. 1600 and 600 cal. BC, especially focused on the transition between the Bronze Age and the earliest Iron Age.

## A. THEY LAY BEYOND THE BORDERS: THE STUDY CASE OF 4TH-17TH CENTURY BURIAL MOUND RATULĀNI IN THE TERRITORY OF LATVIA

**Abstract author(s):** Erkske, Aija (Institute of Latvian History at the University of Latvia)

**Abstract format:** Poster

Ratulāni cemetery, which is located in the southern part of Latvia, was excavated in 1978-1979 by archaeologist Elvīra Šnore. The cemetery was intensively used during Iron Age (4th-12th c.) by local tribe Selonians and reused during the Early Modern period (15th-17th c.). It is argued that initially there were two burial mounds, one of them destroyed, leaving one 1 m high and 20 m diagonally large burial mound where 76 burials were located, both Iron Age and later burials. An unexpected discovery was found at the North West side of the mound – four Late Iron Age flat burials which were not buried within a limited burial place – communal barrow. Monuments with both – barrows and non-barrow burials are a rare phenomenon in Latvian archaeology, therefore we don't have enough data to conclude correctly whether this was a dual burial tradition during this period and territory or these burials were some exception and buried outside the border intentionally. This research will discuss possibilities why some of the community members were buried "outside the border", does burial type and adornments differ from those in the barrow, and what are the differences in mortuary landscape and organization between burials within restricted place inside barrow borders and outside?

This research is carried out within a project of Latvian Council of Science No. lzp-2021/1-0163 "Burial practices in the landscape: present-day Latvia in the Iron Age (AD 1-1200)".

---

## 367 AGENT-BASED MODELLING OF SOCIO-ECOLOGICAL SYSTEMS IN ARCHAEOLOGY. TOWARDS A NEW RESEARCH COMMUNITY

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Daems, Dries (Middle East Technical University) - Verhagen, Philip (Vrije Universiteit Amsterdam) - Romanowska, Iza (Aarhus Institute of Advanced Studies)

**Format:** Regular session

Agent-based modelling (ABM) has developed into an important methodological tool in archaeological research. ABM allows us to simulate the dynamics of complex systems, hypothesize individual and collective action, and investigate socio-ecological processes at various scales. It represents a veritable paradigm shift, not just for the study of the human past but also for the social sciences in general. Formal modelling tools such as ABM have several advantages over more informal approaches to study complex dynamics in past human and environmental systems. They 1) enforce conceptual clarity, 2) define mechanisms of change, 3) help infer dynamics in the past from the static archaeological record, and 4) allow for rigorous hypothesis testing. Applications in archaeology have been growing in number in recent years, but ABM is still on its path towards full maturation as a conceptual and methodological

tool for studying the past. To continue making this maturation possible, we need to encourage wider dissemination among researchers and the establishment of standardized practices.

This session will be a follow-up to last year's session introducing the Network for Agent-based modelling of Socio-ecological Systems in Archaeology (NASSA) and its associated models library as an important first step towards building a new research community. In this regard, we wish to organize this session within the scope of a new EAA community named "Computational Modelling of Socio-ecological Systems (COMS)", which will be proposed to the EAA organization later this year.

Contributions can consist of, but must not be limited to:

- 1) Individual case studies highlighting a specific issue, method or solution in ABM
- 2) Proposals for the NASSA models library, including demos of ABM modules
- 3) Examples of integration of ABM with other (archaeological) methods
- 4) Standards and best practices in ABM, as well as directions for the current and future development

## ABSTRACTS

### 1 TWO ABM APPROACHES TO THE SPREAD OF THE NEOLITHIC IN THE WESTERN MEDITERRANEAN

**Abstract author(s):** Fort, Joaquim (Universitat de Girona)

**Abstract format:** Oral

The spread of Neolithic along the northern shore of the western Mediterranean was extremely rapid [1] compared to inland [2-4]. Using a new, updated database, we have estimated a rate of 7.1-8.7 km/yr for this coastal expansion. We have built two ABM approaches to simulate demic-cultural waves of advance along a coast. The first approach is isotropic and involves jumps forward and backward along the coast. The second one is strongly anisotropic in the sense that it considers only forward jumps. Comparing the results of ABM simulations for both approaches with the observed rate (7.1-8.7 km/yr), we find that the length of coastal jumps was between 227 and 351 km per generation. These ABM approaches also make it possible to conclude that the importance of cultural diffusion in this Neolithic spread was less than 21%, so demic diffusion was responsible for at least 79% of the observed spread rate. We argue that these results suggest that the spread took place using boats, and also a limited interaction between the incoming farmers and the autochthonous hunter-gatherers.

[1] Isern N, Zilhao J, Fort J, Ammerman A J. Modeling the role of voyaging in the coastal spread of the early Neolithic in the West Mediterranean. PNAS 114, 897-902 (2017).

[2] Pinhasi R, Fort J, Ammerman A.J. Tracing the origin and spread of agriculture in Europe. PLoS Biology 3, e410, 2220-2228 (2005).

[3] Fort J. Synthesis between demic and cultural diffusion in the Neolithic transition in Europe. PNAS 109, 18669-18673 (2012).

[4] Fort J. The spread of agriculture: quantitative laws in prehistory? In Simulating Transitions to Agriculture in Prehistory, ed. S Pardo-Gordó and S M Bergin (Springer, Berlin, 2022).

### 2 POLISABM: MODELLING URBAN SYSTEMS AND SOCIAL COMPLEXITY IN THE EASTERN MEDITERRANEAN

**Abstract author(s):** Daems, Dries (Middle East Technical University)

**Abstract format:** Oral

Urbanism has traditionally been one of the most extensively studied topics in Mediterranean archaeology, resulting in an abundance of both empirical observations and theories on the origins and development of ancient cities. Unfortunately, such theoretical models have rarely been expressed formally, nor have they often been directly validated against the available empirical data. This paper aims to present a formal model of urbanism and social complexity formation, built on the core tenets of fission-fusion dynamics, settlement scaling and central place formation. The model posits a series of steps in the process of polis formation, starting from face-to-face communities constrained by cross-cultural attractor states and selection pressures such as cognitive limits to information processing and territorial restrictions imposed by walking distances from the settlement. Population growth constrained by these thresholds will induce scalar stress resulting in community fission. To overcome these thresholds and facilitate polity growth, communities develop additional mechanisms of social organization and hierarchies, initiating a trajectory of community fusion and polis formation. The main output of the model will be community sizes recorded through rank-size plots. I will then compare these simulated data with the available empirical data from the Iron Age to Hellenistic period (1000-100 BCE) in various regions of the eastern Mediterranean. Through this work, I aim to contribute to the further integration of theory building, computational modelling and data analysis in the study of Mediterranean urbanism.

### 3 **MODELLING HUNTING BEHAVIOR IN ARID LANDSCAPES USING EMPIRICAL DATA ON SAN HUNTER-GATHERER MOVEMENTS AND DECISION-MAKING**

**Abstract author(s):** Cobo Sánchez, Lucía - Paliou, Eleftheria - Lenssen-Erz, Tilman (University of Cologne)

**Abstract format:** Oral

Hunting in prehistoric times is a well-studied subject in archeological research, yet many aspects of early human foraging and subsistence are not reflected in the archeological record and are therefore hard to address using traditional methods. Agent-based models simulating foraging behaviour represent a very useful approach with which researchers can explore the dynamic aspects of hunting, such as the relationship between foraging decisions and ecological changes, and gain insight into emerging behavioural patterns from relatively simple rules of interaction among hunters, their prey and the environment. Such computational models of hunter-gatherer behaviour could be further enhanced when they are informed with empirical data. To this aim, we collaborated with Ju/'hoansi and Hai//kom San hunters to document their movement and decision-making processes during hunting with traditional means (i.e. on foot without firearms, optical aids or hunting dogs) in an arid landscape in western Central Namibia (Doro Inawas region) that is famous for its richness in prehistoric rock art sites. The recorded and analysed qualitative and quantitative data includes geospatial information on the trajectories, caloric expenditure, and walking speed of the indigenous tracking experts, as well as information about decisions made during hunting based on their knowledge of the environment and animal behaviour. This paper explores how the data resulting from this collaboration could be used in developing models that simulate hunting in arid environments taking into consideration human-animal and human-environment interactions, and which can be used to predict hunting success under varying environmental conditions. The present study aims to contribute to the growing body of foraging and past hunter-gatherer behaviour agent-based models and support theoretical model-building efforts in archaeology.

### 4 **DELINEATING SITE CATCHMENTS WITH AGENT-BASED MODELLING**

**Abstract author(s):** Romanowska, Iza (Aarhus University)

**Abstract format:** Oral

Establishing the catchment area of a settlement is a common task in archaeology. Whether this refers to an area of activity around a small hunting camp or the hinterland of a whole city, it is critical to establish a radius of the settlement's activity and the area used for resource exploitation. Depending on the modes of transport (whether on foot, with pack animals, etc), the topography of the terrain and other factors, this distance can vary from a few hundred meters to tens of kilometres.

GIS-based methods have been successfully deployed to model the catchment areas in different contexts. Usually, this involves estimating the cost-distance, based on the topography and drawing an envelope around the settlement that delineates the area that can be reached in a given time. The advantages of the GIS approach include standardised algorithms, clean analytical solutions, ease of use and short development time. In some cases, the question of how far would people venture from their homes is more complicated though. Such factors as individual mobility, infrastructure such as the presence of roads or availability of water in dry environments define what is the true catchment of a site. A new more dynamic and flexible method could overcome some of the limitations of GIS algorithms. Here, we test the utility of a bottom-up simulation - agent-based modelling (ABM). It offers a higher degree of freedom in defining what are the most significant factors determining mobility in a given case and provides the means of assessing site catchment in a probabilistic manner. This, however, comes at a cost in terms of time necessary for the development and less systematic results. The objective of this study is to compare the two techniques and evaluate under what conditions application of the more work-intensive ABM approach is worthwhile.

### 5 **DEVELOPING BEST PRACTICES FOR AN OPEN LIBRARY OF ARCHAEOLOGICAL ABM MODULES: LESSONS LEARNED FROM OTHER INITIATIVES**

**Abstract author(s):** Angourakis, Andreas (Institute for Archaeological Studies, Ruhr University Bochum; McDonald Institute for Archaeological Research, University of Cambridge) - Riede, Felix (School of Culture and Society, Aarhus University) - Romanowska, Iza (Aarhus Institute of Advanced Studies, Aarhus University) - Verhagen, Philip (Vrije Universiteit Amsterdam) - Saqalli, Mehdi (GEODE, Université Toulouse II - Jean Jaurès) - Taelman, Devi (Department of History, Archaeology, Arts, Philosophy and Ethics, Vrije Universiteit Brussel) - Vlach, Marek (Institute of Archaeology of the Czech Academy of Sciences) - Sikk, Kaarel (Masaryk University) - Galán Ordax, José Manuel (Universidad de Burgos) - Brughmans, Tom (School of Culture and Society, Aarhus University)

**Abstract format:** Oral

The main objective of the Network for Agent-based modelling of Socio-ecological Systems in Archaeology (NASSA) is to create and manage an open library of agent-based modelling (ABM) modules (not entire models) to be used by our community and beyond. The library will hold contributions from a diverse community of archaeological modellers as well as non-archaeologists in the form of reusable code modules that can be recycled and repurposed in new models. This open repository will improve communication, reproducibility and reusability helping to streamline model

development and facilitate skilled and specialist knowledge acquisition for learners. The added value of the repository will be generated by the explicit use of transparent standards, strong metadata and active feedback from users. Although singular in its specific domain, this is neither the first nor the only initiative that attempts to openly collate and curate collective knowledge. This paper will focus on identifying a non-exhaustive list of "good" practices and illustrate them with real-world examples taken from our experience with other similar initiatives (CoMSES Computational Model Library, R and Python packages, specialised modelling systems or libraries, large projects in archaeology with strong ABM components, and open databases). We bring to attention the lessons learned in other disciplines that address socio-ecological systems, such as earth sciences, ecology, sociology and economics, but also reflect on what are the constraints and needs of modelling for archaeological questions with archaeological data. Is archaeology a special case, and if so, what are the prerequisites of the field for making this a successful endeavour? Against the canvas of experiences collected, we raise awareness about both the design and maintenance of the library itself, as well as the preparation and submission of modules by the broader community.

## **6 SUBSISTENCE, SURPLUS AND TRADE ALONG THE LOWER GERMANIC LIMES: MODELLING RURAL-URBAN SOCIO-ECONOMIC INTERACTIONS**

**Abstract author(s):** Verhagen, Philip (Vrije Universiteit Amsterdam) - Romanowska, Iza (Aarhus Institute of Advanced Studies, Aarhus University)

**Abstract format:** Oral

Over the past 10 years, several research projects have focused on modelling the rural subsistence economy of the Dutch part of the Lower Germanic limes in order to answer the question whether the local population could provide the Roman military with surplus food. For this, various modelling techniques have been used, including GIS-based carrying capacity models, agent-based models and cellular automata approaches. All these models have pointed to the possibility, if not the plausibility, of surplus agrarian production in the region.

In these models the investigation of socio-economic relations between the rural population and the urban centres has not played a significant role, even when a strong economic dependency between the two can be assumed, given the widespread occurrence of imported goods in the countryside and the spatial configuration of the rural settlement patterns. The specific mechanics of economic interaction thus remain poorly understood, leading to divergent hypotheses on the reasons for economic and demographic growth and decline.

In this paper we will present a first exploratory model that can be used to simulate rural-urban socio-economic interactions in the Lower Germanic limes. It departs from, on the one hand, understanding and modelling the processes of production and trade for some of the core goods involved, in particular agrarian produce, pottery and building materials. It then focuses on the decision-making processes of producers, traders and consumers: what were the socio-economic goals of these groups, what positions did they occupy, and to what extent could they adapt their economic behaviour to changing circumstances? In the end, this should allow us to identify to what extent dependencies and inequalities arose from internal economic dynamics, or were governed by larger political, social and environmental developments. The model will be applied to the town and surrounding countryside of Forum Hadriani (modern Voorburg).

## **7 MODELLING CHIEFDOM SOCIETIES OF THE MIDDLE DANUBE DURING THE ROMAN PERIOD**

**Abstract author(s):** Vlach, Marek - Komoróczy, Balázs (Institute of Archaeology of the Academy of Sciences of the Czech Republic Brno)

**Abstract format:** Oral

A large part of the long-term archaeological research of the Roman Period chiefdom societies within the Middle Danube region has been traditionally anchored in the cultural-historical paradigm. Despite the relatively low level of complexity of the scoped societal context, several structural phenomena in its development have been documented throughout the period. The presently ongoing research project (Czech Science Foundation) aims to build a comprehensive dataset of available archaeological and other relevant information, which would provide a basis for the derivation of relevant proxy indicators of various development trajectories. Eventually, it is the main objective to test the existing theoretical models and assumptions about the scoped societies via computational techniques, amongst others, agent-based modelling. The presentation aims to outline some of the presently developed models, which are designed to provide further insights into some of the featuring topics such as spatio-temporal aspects of the settlement structure and its demographic properties, complexity and hierarchy of a political organization, or formation processes of the burial grounds.

**Theme: 1. Archaeologists and Archaeology Here and Now**

**Organisers: Deckers, Pieterjan (Vrije Universiteit Brussel) - Oksanen, Eljas (University of Helsinki) - Rohiola, Ville (Finnish Heritage Agency - Museovirasto)**

**Format: Round table**

In this roundtable, organized by members of the European Public Finds Recording Network, we aim to explore appropriate responses to avocational metal-detecting in different European countries. We focus on Eastern Europe in particular, and discuss ways by which shared challenges may be met on a transnational basis.

Avocational detecting remains a contested topic amongst heritage professionals (e.g. Deckers et al. 2018, Hardy 2017). Approaches differ greatly across jurisdictions, ranging from highly restrictive to liberal or even supportive. As such, the issue forms a microcosm of broader debates about public participation in scientific knowledge creation. Given the variety in local conditions and approaches, a key question in this debate is to what extent the principles and practices of a cooperative approach, as adopted in several countries in northern and western Europe (Dobát et al. 2020), can serve as inspiration elsewhere, notably in eastern Europe.

A specific concern is the impact of increasing digitisation and connectivity amongst detectorist communities as well as in the availability of finds data. We bring together a panel of researchers from mainly Eastern European countries, including the host country Hungary, to discuss these issues. Following short opening statements from the panelists, the debate will be structured along three themes regarding avocational detecting in Europe:

- Methodology: deploying digital tools for recording and managing of public finds data.
- Ethics and practical aspects: citizen archaeology, heritage protection, use of data in research, engaging with detectorist communities online.
- Promoting international collaboration, in terms of finds recording, sharing data, practices and technology, and scientific analysis.

Confirmed panelists are Tuuli Kurisoo (Tallinn University), Jan Mařík (Institute of Archeology of the CAS, Prague), Sergiu Musteata ("Ion Creanga" State University), Tibor Ákos Rácz (Ferenczy Museum) and Anna Wessman (University of Bergen).

David Wigg-Wolff (Goethe- Universität Frankfurt) will moderate the debate.

**Theme: 4. Polis, Empire, League and Beyond – Living in Interconnected Societies**

**Organisers: Schmidts, Thomas (Römisch-Germanisches Zentralmuseum) - Dobрева, Diana (Università di Verona) - Schimmer, Florian (Römisch-Germanisches Zentralmuseum)**

**Format: Regular session**

The period between the late 4th and the early 6th centuries AD is marked by a fundamental change of the Roman World, in particular the gradual decline of Roman rule in the West resulting in the end of the Western Roman empire in 476 AD. The considerable political transformations affected the late Roman economy to a greater or lesser extent, although developments varied from region to region. Phenomena such as regionalisation or the collapse of economic structures on the one hand contrast with the persistence of certain long-distance trade networks or the formation of new networks on the other.

Archaeological research on the trade networks of the later Roman Empire is dominated by Mediterranean pottery fine wares and amphorae, which have great potential for knowledge. But long-distance commerce beyond these Mediterranean trade networks is still to be understood in detail. It should be asked to what extent other groups of finds might be suitable as proxies of trade relations. The presence of valuable goods such as silk in the Roman provinces in the north shows that exchange with the Mediterranean may have worked, even though there may be no evidence of contemporary Mediterranean pottery.

The aim of the session is to bring together the results of studies on pottery, glass, coins, building material etc. or archaeometry and spatial network analysis, to assess the patterns and developments of regional and supra-regional economic structures in the various regions of the Late Antique West to its full extent. Furthermore, the rise and fall of commercial hubs and economic landscapes has to be considered. Beyond the aspect of trade, the availability of resources, especially precious metals, and the role of coin circulation are potential topics to be discussed at the session.



## 1 URBAN ECONOMIC NETWORKS IN A PERIOD OF CHANGE: ISSUES OF ARCHEOLOGICAL REPRESENTATIVENESS

**Abstract author(s):** Furlan, Guido (Aarhus University, Centre for Urban Network Evolutions - UrbNet)

**Abstract format:** Oral

Approaching ancient trade beyond the impressionistic view provided by simple presence/absence models requires reliable quantitative data. This is the only way to appreciate the importance of a given route compared to another, to assess the existence of periods of economic expansion or depression, and to address the issue of the integration of different markets.

The need for reliable quantitative data collides with the intrinsic sampling nature of archaeological field practice. For each group of finds recovered in a single trench or excavation area, one should ask to what extent it represents the whole set of materials which could be recovered in the site.

On an urban scale, several factors are biases against the representativeness of the samples of collected artefacts: the main ones are issues of visibility (of single artefacts as well as of whole areas), archaeological agendas (more or less randomly driven by development projects or by the mainstream academic interests), and the uneven distribution of deposits (produced by different formation processes).

Some of the factors coming into play can be modelled, particularly for periods of relative urban stability. Nonetheless, times of substantial change in urban life (4th–6th c. AD) also affect the patterns of distribution of artefacts, therefore generating even more complicated panoramas.

Deciphering the main factors shaping the representativeness of urban assemblages is a basic, yet fundamental step to effectively evaluate late antique trade from a quantitative point of view. Eventually, this can contribute to frame our future excavation agendas to provide the most suitable assemblages for dealing with inter-urban trade.

## 2 THE ROLE OF THE CHURCH IN LATE ANTIQUE WINE TRADE

**Abstract author(s):** Komar, Paulina (Cardinal Stefan Wyszyński University in Warsaw)

**Abstract format:** Oral

The starting point of this presentation is an increase in Palestinian wines imported to Italy during Late Antiquity, which can be observed by analysing numbers of amphoras discovered in Rome and the main centres of the Adriatic region. This increase cannot be explained only by the disappearance of western amphoras from the archaeological record caused by a growing role of barrels in the Western Mediterranean trade.

Considering that the increase in importations regards wines from the Holy Land it might have been associated with the development of the Church and the interference of the representatives from this institution in wine production in Palestine and trade in the Mediterranean. Although clerics were not allowed to act as negotiators, the ban did not cover commercial activities undertaken for the benefit of either the poor or the Church. There is plenty of archaeological, epigraphic and literary evidence to suggest that the clergy took part in commercial exchange, and, moreover, that their position was privileged compared to ordinary traders, given that they incurred no costs when conducting long-distance commerce. This evidence will be presented and analysed in order to answer the question whether the Church was an important player in wine commerce during Late Antiquity.

## 3 RAT REMAINS AS A PROXY FOR LATE ANTIQUE AND EARLY MEDIEVAL TRADE

**Abstract author(s):** Orton, David - Everett, Sarah (University of York) - Holmes, Mathilda (Consultant zooarchaeologist; University of Leicester) - García García, Marcos (Universidad de Alicante) - Salvadori, Frank (independent researcher)

**Abstract format:** Oral

This paper assesses the potential of commensal rats as a proxy for trade networks in Roman and medieval Europe. Originally from southern Asia, the black rat (*Rattus rattus*) reached the Mediterranean by the late 1st millennium BCE, before spreading into temperate Europe with the Roman Empire. Rats' presence in various well-connected Roman settlement types — including villas and forts as well as urban settlements — and near-absence beyond the limes suggests that populations this far beyond native habitats were dependent on the combination of bulk trade/provisioning (notably of grain and other perishables) and major settlement nodes that characterised the Roman economic/settlement system. As such, rats represent a potentially powerful indicator for the breakdown of elements of that system. A post-Roman decline in archaeological rat finds has indeed been noted (e.g. McCormick 2003) but its extent and timing are unclear, and it may be an artefact of research bias or result from 6th C climate and plague rather than economic change.

Via systematic review of over 500 rat records from western Europe, we show that rat finds disappear from the 5th C CE in England but persist until the 7th C in Italy, corresponding with expectations based on declining trade rather than environmental factors. Iberian data are limited, but rat finds become rare in the 6th C and common again in the Islamic period from the 8th C. We demonstrate that for England, at least, this post-Roman decline cannot be attributed to research bias, while recent aDNA results (Yu et al. 2022) support the idea of significant discontinuity in rat populations. Finally, we briefly consider the implications of these results for the mechanisms of the First Plague Pandemic, and close by assessing the potential of future zooarchaeological and archaeogenetic research to increase the temporal and spatial resolution of this picture.

#### 4 **ECONOMY AND TRADE IN 5TH CENTURY TRIPOLITANIA**

**Abstract author(s): Schimmer, Florian (Römisch-Germanisches Zentralmuseum Mainz)**

**Abstract format: Oral**

The North African provinces of the Roman Empire represented one of the most important areas for the production and export of ceramics and agricultural goods in Late Antiquity. The conquest of North Africa by the Vandals from 429 A.D. onwards led to a fundamental change of the political framework conditions. These developments had also an impact on both economy and trade, although these effects were not as drastic as had long been assumed.

The presentation will focus on the province of Tripolitana, which did not come under Vandal rule until 455 A.D. In recent decades, archaeological research at various sites in this region, including civil settlements and military sites, as well as a number of material studies have provided new results and insights. These allow a more differentiated assessment of trade and economic structures in Tripolitania during the late antique period. The aim of the presentation is to give an overview of a few central aspects.

#### 5 **SHIPPING IONIAN WINE TO THE NORTH: THE DISTRIBUTION OF SICILIAN AND CALABRIAN FLAT-BOTTOMED AMPHORAE IN THE ADRIATIC**

**Abstract author(s): Riccato, Anna (Università degli Studi di Padova) - Dobрева, Diana (Università di Verona)**

**Abstract format: Oral**

In the last decades, a growing interest has developed in a particular group of flat-bottomed wine amphorae, produced in ancient Sicily and Bruttium over a period spanning between the 1st and 6th centuries AD. In the Adriatic area, such containers remained unidentified for a long time, but recent research led to the discovery of an increasing number of specimens in many Late Antique contexts. Although less intense than other traffics of the same period, the Ionian wine trade is thus emerging as a significant element in the economy of Late Roman Adriatic centres.

The purpose of the present contribution is to address this issue through the study of published and unpublished data, which can allow to identify the most widespread types and map their distribution along both Adriatic coasts and in their immediate hinterland. In addition, an attempt will be made to recognise the manufacturing centres of the containers and thus trace with greater detail the preferential trade routes which brought South Italic wine to the North. The final aim is to understand the reasons for this success during Late Antiquity, analysing the collected data in the broader economic and socio-political framework.

#### 6 **NEW AMPHORA DATA FROM THE UPPER ADRIATIC. TORCELLO AND GRADO BETWEEN THE 4TH AND 7TH CENTURIES: TWO ECONOMIC OBSERVATORIES COMPARED**

**Abstract author(s): Cipolato, Andrea (Ca' Foscari University - Venice)**

**Abstract format: Oral**

The contribution aims at presenting part of the results of a wider project concerning the study of the commercial evolution between the Roman age and the early Middle Ages in the coastal territories of the Upper Adriatic Sea, through the analysis of transport containers. Despite the fact that this area played a crucial role in ancient times in terms of trade and traffic, the studies carried out on amphorae are still partial, thus limiting an organic analysis of the economic framework. The aim here is to compare amphorae trends from two newly formed late antique centres: Torcello, in the northern lagoon of Venice, and Grado, in the area in front of the city of Aquileia. The archaeological tradition describes these sites as large emporiums, able to become part of the dynamics of the global market immediately. They soon became real hinges connecting the sea and the inland markets, managing the reception and redistribution of goods. But what is the overview described by the study of amphorae? What degree of detail is possible in describing the complexity of these phenomena? How did the relationships between local and international economies develop? Through a systematic approach that includes the study of amphorae from reliable stratigraphies between the 4th and 7th centuries A.D. of the sites of Torcello and Grado, supplemented by quantifications of fragments and computer/statistical analyses, the aim is to provide a commercial reference framework that is as exhaustive as possible and truly comparable with that of other sectors. Similarities and differences between the two sites will be highlighted, relating to the tendency to favour specific commercial relations with markets and productive

regions, as well as to the methods and timing of the evolution of the flow of goods in a fundamental historical moment for ancient economic and social dynamics.

## 7 MARKET SPACE IN LATE ANTIQUE AQUILEIA

**Abstract author(s):** Basso, Patrizia (University of Verona)

**Abstract format:** Oral

From 2018 to present the University of Verona, in collaboration with the Fondazione Aquileia and Soprintendenza archeologia beni culturali e paesaggio per il Friuli Venezia Giulia, carried out an archaeological excavation on the former Pasqualis property in Aquileia. The area has been already excavated in the '50s of the last century when two of the town's parallel curtain walls that run along the river and market buildings located south from the basilica were uncovered.

As much as the work is still in progress, some important results already came to light. It is about some structure that seem to be part of a monumental market building that most probably was used to sell different types of goods. Its strategic position next to the river from one side and close to the basilica from another could be of great importance to better understand the development of Aquileia during Late Antiquity.

The town has a marked commercial character due to its geographical position: it is open not only the Orient and the Mediterranean area via the Adriatic but also to the Balkan and continental Europe.

## 8 TRACING NETWORKS IN THE ADRIATIC DURING LATE ANTIQUITY

**Abstract author(s):** Dobрева, Diana (University of Verona)

**Abstract format:** Oral

Studies concerning the Late Antique economy, traditionally entrusted to historical investigations, have enjoyed new perspectives thanks to archaeological research, especially based on material culture. The pottery assemblages' analysis proved to be an excellent lens through which to observe the impact that institutional, political and economic transformations had on northern Adriatic and the inner land territory. Between the second half of the 5th and the first half of the 6th century AD a fairly homogeneous situation is recorded: Aquileia and the regional territory still show a certain trade continuity, albeit in a context of general regression compared to the previous phase dated between the 4th and the first half of 5th century AD. Aquileia has not yet lost its role in the redistribution of goods and foodstuffs within the surrounding area, despite the passage of the Huns in 452 AD, which probably left traces of destruction in some parts of the city but certainly did not determine the end of its political, administrative and commercial importance. During the middle of the 6th century AD it represents a real social divide when one observes, in a context of general impoverishment, a greater resilience of commercial relations in the regional inner sites compared to some coastal cities. An organism dominated by a single large port acting as a regional emporium was replaced by a complex, more dispersive sorting system, made up of several multiple port sites of lesser importance, which have arisen in the recent lagoons of Grado and Marano. The present paper aims to discuss the establishment of this new distribution Adriatic system responsible for many imports from East to West.

## 9 LAMPS AND TRADE NETWORKS IN LATE ANTIQUE NORTH ADRIATIC REGION

**Abstract author(s):** Zago, Sabrina (Università di Verona)

**Abstract format:** Oral

This poster aims to analyze the transformation of the North Adriatic trade routes in late antiquity throughout the study of the late roman terracotta lamps. These manufactures have shown to be very influenced by the economic events that happened between the end of the Roman Times and the early Middle Ages.

In this research, I start from the observation of the lamps found in Aquileia during emergency excavations held between 1968 and 1972 in order to create the modern drainage system of the city. The typo-chronological study and the comparison with other late roman lamps found in other excavations in Aquileia show, at the same time, the persistence of long-distance trade networks (in particular with the North African region) and the growth of short and medium-range commercial relations. To better examine this phenomenon the data will be considered within the context of the late roman trade routes of the North Adriatic region.

## 10 IMPERIAL NETWORKS FOR THE SUPPLY OF AN IMPERIAL RESIDENCE IN LATE ANTIQUE GAUL

**Abstract author(s):** Schmidts, Thomas (Römisch-Germanisches Zentralmuseum)

**Abstract format:** Oral

In the *expositio totius mundi* (§58), an important source on the economic geography in the middle of the 4th century, the special role of Trier as an Imperial residence is pointed out for Gaul. Likewise, Arles is mentioned as a port city that plays a decisive role in supplying this metropolis. Thus there can be no doubt that in the 4th century AD Trier was

supplied via the axis of the Rhône and Saône rivers, which had already been decisive for the transport of goods from the Mediterranean to Inner Gaul and to the border areas of the Germanic provinces in the centuries before.

Although evidence of Mediterranean goods in Late Antiquity is rare in northern Gaul, Trier nevertheless seems to have had remarkable trade contacts. On the one hand, the lecture aims to reconstruct the Trier trade network on the basis of archaeological evidence and, on the other hand, to appreciate the importance of the route from Arles to the interior of Gaul. Among the goods known from Trier, e. g. lamps from North Africa are present in a remarkable quantity for this region. In addition, due to its high status as a residence or one of the most important administrative centres in Gaul, there was also a need for luxury goods, some of which can be evidenced by organic remains. Another important question is to what extent state measures helped to secure the trade route along the rivers into the interior of Gaul.

## 11 **TIMES OF CHANGE OR CONTINUITY? CERAMICS AND QUERNSTONES FROM MAYEN AND THEIR TRADE BETWEEN THE 4TH AND THE 6TH CENTURY**

**Abstract author(s):** Grunwald, Lutz - Wenzel, Stefan (Römisch-Germanisches Zentralmuseum)

**Abstract format:** Oral

The transition from the Late Antiquity to the Early Middle Ages is often associated with a collapse of trade networks and the economic fabric that occurred in the 5th century. But was this really always the case?

In order to find answers, the export of ceramic vessels (the Mayen ware) and lava quern stones from Mayen in the Eifel, which were widely used in the north-western provinces of the Roman Empire and beyond, will be examined from the 4th to the 6th century. It will have to be discussed whether the trade networks to be explored on the basis of the respective distribution areas collapsed during the 5th century or whether there is evidence for the continuation of the Roman economic structure into the Early Middle Ages. The influence of state agencies on the distribution of these goods has also to be examined, since the state apparently predetermined the structure of Roman Mayen and because it secured the first stage of the transport routes of the Mayen products in the long-distance trade networks.

## 12 **TOGETHER OR APART - WHAT GLASS BEADS FROM MEROVINGIAN GRAVES REVEAL ABOUT THEIR TRADE AND USE IN WESTERN EUROPE**

**Abstract author(s):** Van Ham-Meert, Alicia (Earth and Environmental Sciences, KU Leuven) - Langbroek, Mette (Faculty of Archaeology, Leiden University)

**Abstract format:** Oral

Beads provide a unique way of looking at trade in the Merovingian period. In this paper the beads from bead-ensembles (bracelets, necklaces, etc.) given as gravegoods in female burials from Lent, Wijchen en Elst are considered. Each string consists of a variety of bead-types that were made using different techniques, some originating from as far away as India, others made locally using heavily recycled roman materials (such as tesserae). This gives a composite image of a world where material from afar is still available even outside seats of power (i.e. in rural cemeteries), yet some of the material found in the same context points to re-use and recycling as a normal practice. Because of the large number of beads within a necklace, the chemical analysis (using pXRF and LA-ICP-MS) of these beads allows to answer questions not just of provenance, but also of similarity and variety within a single necklace. We want to interrogate the data to see whether beads (either from far away or with a more local origin) travelled together to be used in a string of beads, or whether strings of beads were collected over a long period of time. To answer these questions statistical tools are used. These analyses reveal the breadth of trade still occurring in this period. Besides the exchange of beads across Europe, ideas travelled as well, as strings of beads from different parts of Western Europe were strung in remarkably similar ways.

---

## 371 **POPULATION HISTORY AND COMMUNITY FORMATION IN EARLY MEDIEVAL EAST-CENTRAL EUROPE: INTEGRATING GENETIC, ISOTOPIC, ARCHAEOLOGICAL AND HISTORICAL PERSPECTIVES**

**Theme:** 3. The Carpathian Basin: Integration, Mobility and Diversity

**Organisers:** Vida, Tivadar (Institute of Archaeological Sciences, Eötvös Loránd University, Budapest; Institute of Archaeology, Research Center for Humanities, Eötvös Loránd Research Network, Budapest) - Hofmanová, Zuzana (Max Planck Institute for Evolutionary Anthropology, Leipzig; Department of Archaeology and Museology, Masaryk University, Brno) - Koncz, István (Institute of Archaeological Sciences, ELTE - Eötvös Loránd University, Budapest) - Szécsényi-Nagy, Anna (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Loránd Research Network, Budapest) - Knipper, Corina (Curt-Engelhorn-Centre of Archaeometry, Mannheim)

**Format:** Regular session

Few parts of Europe witnessed as many population shifts as the Middle Danube region between 400-900 CE. In this macro-region, Pannonians, Romans, Goths, Gepids, Longobards, Avars, Bulgars, Slavs and many other groups came,

settled and/or continued their migration or expansion towards other regions of Europe. Several very different social models coexisted here or replaced each other (e.g. the complex Christian and Barbarian societies, realms of steppe nomads and communities under their rule). The cohabitation and later the amalgamation of locals and newly-arriving foreign groups led to a continuous cultural transformation during this period that affected both lifestyle and material culture. The abundance of archaeological finds and the series of historical-political changes attested by the written sources make this region an intriguing test case for the relationship between ethnic identities constructed in texts, cultural and social habitus attested in the archaeological record and isotopic signatures, biological ancestries and relatedness attested by biomolecular analysis of human remains.

Recent bioarchaeological investigations and discoveries provide new perspectives on the role of mobility and kinship, social structure and organizations of these communities. This session aims to explore the people and their communities through comprehensive case studies from East-Central-Europe. The contributions should be based on interdisciplinary approaches, which interpret ancient DNA, isotope and other bioarchaeological results in the context of archaeology and history. Both fine-scale and large-scale studies are welcome. Furthermore, methodological papers on the integration of different disciplines are also invited to join the discussion.

## ABSTRACTS

### 1 INTEGRATIVE ARCHAEOLOGICAL AND ARCHAEOGENOMIC DATABASE FOR STUDYING THE POPULATION HISTORY OF THE HUN PERIOD

**Abstract author(s):** Vyazov, Leonid (University of Ostrava) - Flegontov, Pavel (University of Ostrava; Harvard University, Cambridge) - Işıldak, Ulaş (University of Ostrava; Middle East Technical University, Ankara) - Flegontova, Olga - Sagmanova, Gulnaz (University of Ostrava)

**Abstract format:** Oral

The Migration period in the Eurasian steppe and forest-steppe is a bizarre pattern of population processes. Hunnic invasion to the East European steppes in the 3rd started dramatic and wide-scale relocations of the local groups of different origins. It resulted in intensive population admixture and formation of heterogeneous societies, which were the main actors during the whole period. The sophisticated nature of the migrations process caused by the Huns and the associated groups requires a multi-proxi study based on integrated archeogenomic and archaeological records.

To perform multidisciplinary analysis, we developed a Web-based and GIS-driven database, integrating archeogenomic and archaeological data. From the archeological side, our database deals with both cultural and stylistic interpretations and relative chronological sequences as well as absolute datings. It is based on the use of a graph database (Neo4j) that allows us to store, analyze and manage complex relationships between the archaeological evidence, its context, and interpretations. The functionality of our multi-user system includes data mapping, visualization, selection, and processing.

Published genome-wide archeogenetic data from the Allen Ancient DNA Resource are stored in the database and linked to respective burials. The web-GIS toolkit enables users to select certain groups of burials and archaeological sites and perform simple analyses of genetic data: hierarchical clustering of genetic distances, PCA (both basic and with projection on user-defined axes), ADMIXTURE, f-statistics, and qpWave/qpAdm.

The database also enables users to store connections between ancient individuals revealed by the identity by descent (IBD) methodology. IBD sharing (autosomal haplotype sharing) is a high-resolution method of genetic analysis that recently became applicable to ancient DNA samples due to advances in genotype imputation and phasing for ancient DNA data in the Reich Lab.

We hope that this database and a simple toolkit will help to cross the divide between research in archaeology and archaeogenetics.

### 2 Y-CHROMOSOME ANALYSIS OF GOTHS FROM THE MASŁOMECZ GROUP CEMETERIES IN SOUTHEASTERN POLAND

**Abstract author(s):** Golubinski, Michal - Baca, Mateusz - Molak, Martyna - Popović, Danijela (Centre of New Technologies, University of Warsaw) - Kokowski, Andrzej (Institute of Archeology, Maria Curie-Skłodowska University, Lublin) - Węgleński, Piotr (Centre of New Technologies, University of Warsaw)

**Abstract format:** Oral

The Goths were an important part of European history from the 1st to the 8th century AD. For many years, various hypotheses have emerged among researchers regarding their origin and dispersal. Unknown is also the scale of assimilation of the local people they encountered during their migrations across Europe. The aim of this study was to determine the origin and genetic structure of the male lineages of the Goths from the Masłomęcz group who inhabited the Hrubieszów Basin (southeastern Poland) from the 2nd -4th century AD using Y chromosome. The material for analysis consisted of skeletal fragments collected from 43 individuals. Samples with the highest endogenous DNA

content were sequenced directly to low genome coverage. For the others, after sex determination, we performed targeted enrichment with a custom panel of 10k Y chromosome SNPs. This allowed us to determine the Y chromosome haplogroup of 18 individuals. A total of 14 individuals (78%) represents the Y chromosome haplogroups most closely related to the Scandinavian population. Thirteen individuals were classified into subclades of haplogroup I1, four to haplogroup R1a and one to haplogroup J2b. Haplogroup I1 currently occurs mainly among people living in Scandinavia. Ancient DNA analyses showed that I1 has been present in the Scandinavian population since at least the Bronze Age. One of the individuals belonging to haplogroup R1a-Z284 belongs to a subclade found almost exclusively in the ancient and modern Scandinavians. The remaining four individuals belong to haplogroups R1a and J2b most probably represent the effect of assimilation of local people, met by Goths during their numerous war expeditions and settlement expansion.

The research is part of the project „Genetic history of Poles” (2018/31/B/HS3/01464) financed by the National Science Centre, Poland.

### 3 **SNAPSHOT INTO KINSHIP STRUCTURE AND POPULATION HISTORY OF A LATE AVAR-PERIOD COMMUNITY FROM GENOME-WIDE ANALYSES OF THE WHOLE RÁKÓCZIFALVA CEMETERY.**

**Abstract author(s):** Gneccchi Ruscone, Guido Alberto (Max Planck Institute for Evolutionary Anthropology, Leipzig) - Rácz, Zsófia - Samu, Levente (Institute of Archaeological Sciences, Eötvös Loránd University) - Szeniczey, Tamás (Dept of Biological Anthropology, Eötvös Loránd University) - Traverso, Luca (Max Planck Institute for Evolutionary Anthropology, Leipzig) - Schmid, Magda (Kiel University) - Hajdu, Tamás (Dept of Biological Anthropology, Eötvös Loránd University) - Vida, Tivadar (Institute of Archaeological Sciences, Eötvös Loránd University; Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Research Network) - Krause, Johannes (Max Planck Institute for Evolutionary Anthropology, Leipzig) - Hofmanová, Zuzana (Max Planck Institute for Evolutionary Anthropology, Leipzig; Department of Archaeology and Museology, Faculty of Arts, Masaryk University)

**Abstract format:** Oral

Recent ancient DNA studies revealed the Avar period in the Carpathian Basin was characterized by the appearance of a population with an East Asian ancestry traceable to the ancient Mongolian steppe. This eastern profile is tightly associated but not exclusive to the early elite burials found in the core of the Avar empire. This finding opens many new questions about the population history of the Avar period. How did these eastern migrants interact with the “western” populations already living in the region? Did they admix with the local population? What happened to them after the fall of the Avar dominion in the Carpathian Basin? Only a multidisciplinary approach combining the co-analyses of complete cemeteries from an archeological and genomic perspective could allow to gain new insights into these complex societal phenomena. The site of Rákóczifalva 8 dated between the end of the 7th beginning of the 9th century located at the border of the core Avar region, represents a unique opportunity to this end. The cemetery spans the second half and end of the Avar rule in the Carpathian Basin and the archaeological record, as well as the spatial situation shows connections with other middle and late Avar period sites. At the same time, it reveals several elements of discontinuity with earlier cemeteries of the Transisza region. We sampled the entire cemetery and produced genome-wide data for all the individuals, which were integrated together with archaeological, anthropological, isotopic analyses in the framework of the ERC funded project ‘HistoGenes’. Our results reveal unprecedented insights into the kinship structure of this late Avar-period community and provide a glimpse into the dynamics of populations transformations occurring in this period.

### 4 **KINSHIP RELATIONS AND SPATIAL ORGANIZATION IN A LATE AVAR-PERIOD CEMETERY: ARCHAEOLOGICAL PERSPECTIVES ON THE RÁKÓCZIFALVA SITE (CENTRAL HUNGARY)**

**Abstract author(s):** Rácz, Zsófia (Institute of Archaeological Sciences, Eötvös Loránd University) - Gneccchi Ruscone, Guido Alberto (Max Planck Institute for Evolutionary Anthropology, Leipzig) - Samu, Levente (Institute of Archaeological Sciences, Eötvös Loránd University) - Szeniczey, Tamás (Department of Biological Anthropology, Eötvös Loránd University) - Traverso, Luca (Max Planck Institute for Evolutionary Anthropology, Leipzig) - Schmid, Magdalena M. E. (Kiel University) - Hajdu, Tamás (Department of Biological Anthropology, Eötvös Loránd University) - Hofmanová, Zuzana (Max Planck Institute for Evolutionary Anthropology, Leipzig; Department of Archaeology and Museology, Faculty of Arts, Masaryk University, Brno) - Krause, Johannes (Max Planck Institute for Evolutionary Anthropology, Leipzig) - Vida, Tivadar (Institute of Archaeological Sciences, Eötvös Loránd University; Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Research Network, Budapest)

**Abstract format:** Oral

Two Avar-period (late 6th – early 9th c.) cemeteries were excavated in 2006–2007 in the area of Rákóczifalva, in close proximity to each other. The sites are located in the Great Hungarian Plain, east of the Tisza River, along the Tisza's middle course. Cemetery No. 8 and 8A contains 58 and 249 graves, respectively. Early burials of the sites suit the cultural traits of Avar-period communities in the Transisza region (steppean nomad features, early Byzantine imports), whereas later burials blend into the more uniform material culture and burial rituals of the entire Carpathian Basin in

the 8th century. We investigate both sites using an interdisciplinary approach as part of the ERC HistoGenes project, conducting archaeological, anthropological, isotopic, and aDNA analysis.

In our presentation, we discuss the relationship between the two sites from an archaeological and anthropological point of view. We look at the demographics of the cemeteries as well as the health status of the people buried there. The new genomic analyses of the smaller Rákóczfalva burial place allow us to map the familial links of the deceased as well as the site's spatial organization. As a result, we will be able to learn more about community organization in the Avar period than ever before. We are also looking for answers to how funerary representation, grave goods and family relations of the cemetery are linked.

## 5 CHILDHOOD OF THE AVARS AND GEPIDS: RECONSTRUCTING DIET AND WEANING PRACTICES USING STABLE ISOTOPIC ANALYSIS AND MULTIPLE TISSUES

**Abstract author(s):** Verostick, Kirsten (Department of Geology and Geophysics, University of Utah, Salt Lake City) - Hajdu, Tamás - Szeniczey, Tamás (Department of Biological Anthropology, Institute of Biology, Faculty of Science, Eötvös Loránd University) - Farkas, Zoltán (Salisbury Ltd., Budaörs) - Dani, János (Déri Museum, Debrecen) - Bernert, Zsolt (Hungarian Natural History Museum, Budapest) - Masek, Zsófia (Institute of Archaeological Sciences, Eötvös Loránd University) - Kovács, Péter (Department of Archaeology, Damjanich János Museum, Szolnok) - Hoppál, Krisztina (MTA-ELTE-SZTE Silk Road Research Group, Eötvös Loránd Research Network) - Rácz, Zsófia (Institute of Archaeological Sciences, Eötvös Loránd University)

**Abstract format:** Oral

This presentation explores the breastfeeding, weaning and overall dietary practices in non-adults of Avar and Gepidic period populations in the Great Hungarian Plain during the Migration Period (5th-8th century). This research investigated hypothesis that breastfeeding and weaning practices (BWPs) differed between Avar and Gepid populations due variation in overall subsistence practices and general cultural practices. Bone collagen samples from 131 individuals (60 non-adults) from five sites (Berettyóújfalu, Tiszapüspöki, Tiszabura, Rákóczfalva sites 8 and 8/A), were analyzed for nitrogen and carbon stable isotopes. Collagen samples from non-adults were assessed using a Bayesian model called WARN. First permanent molars were also samples from 37 (16 adults, 21 non-adults) individuals across the five sites with tooth dentine incrementally sampled to analyze for nitrogen and carbon isotopic values. No significant differences in isotopic values from bulk collagen analysis was found between adults and non-adults at each of the sites analyzed, apart from breastfeeding or weaning non-adults. BWPs patterns drawn from the stable isotope data and the WARN program revealed no specific similarities between sites or populations. Incremental sampling of the first molars also suggests no specific patterns of BWPs within populations, as each site analyzed revealed different BWPs.

With no clear BWPs within the populations and a generally similar diet, it is suggested through the lens of life course theory that cultural practices, generational cohort differences and agency are responsible for variations in BWPs within the sites and populations. Additionally, the dietary practices found in non-adults paired with other archaeological evidence offer indications of the roles non-adults played in Avar and Gepid society.

## 6 HOW ARCHAEOLOGY AND ANTHROPOLOGY CAN BUILD ON ADNA ANALYSES OF ENTIRE CEMETERIES

**Abstract author(s):** Tobias, Bendeguz (Institute of Medieval Research, Austrian Academy of Sciences) - Berner, Margit - Pany-Kucera, Doris - Eggers, Sabine - Klostermann, Paul - Koger, Robin (Department of Anthropology, Natural History Museum Vienna) - Hofmanova, Zuzana - Wang, Ke (Max Planck Institute for Evolutionary Anthropology Leipzig) - Daim, Falko (Institute for Prehistory and Historic Archaeology - University of Vienna) - Pohl, Walter (Institute of Medieval Research, Austrian Academy of Sciences)

**Abstract format:** Oral

Within the ERC-funded HistoGenes project, we assess several hundred inhumations from Austrian cemeteries dated between the 4th and the 9th century A.D. The interdisciplinary analysis encompasses archaeological, anthropological as well as molecular methods, including aDNA and isotope analyses. Ancient DNA data creates new possibilities to reevaluate and interpret funerary customs and chronological sequences by tracking generations and families in the population. Based on preliminary data from the cemetery of Leobersdorf (7th to 8th c. A.D.), located at the periphery of the Avar empire, we will demonstrate new possible investigations on demography and disease burden.

This interdisciplinary perspective will show the impact of the integrated analyses on the anthropological, archaeological, and ultimately the overall cultural-historical interpretation. Joint interpretations shed new light on aspects of chronology, age at death, biological sex estimations gender, pedigrees, and maternity. Our data on these aspects will open up new perspectives on social life which previously could not have been recognised or verified.

This project has received funding the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement n° 856453 ERC-2019-SyG).

## 7 ANCIENT DNA REVEALS THE SETTLEMENT OF AVAR COMMUNITY IN LOWER AUSTRIA DURING EARLY MEDIEVAL PERIOD

**Abstract author(s):** Wang, Ke (Max Planck Institute for Evolutionary Anthropology, Leipzig) - Tobias, Bendeguz (Institute of Medieval Research, Austrian Academy of Sciences, Vienna) - Berner, Margit - Pany-Kucera, Doris (Department of Anthropology, Natural History Museum Vienna) - Ingrová, Pavlína (Department of Archaeology and Museology, Masaryk University, Brno) - Eggers, Sabine (Department of Anthropology, Natural History Museum Vienna) - Daim, Falko (Institute of Medieval Research, Austrian Academy of Sciences, Vienna) - Pohl, Walter (Department of Anthropology, Natural History Museum Vienna) - Krause, Johannes (Max Planck Institute for Evolutionary Anthropology, Leipzig) - Hofmanová, Zuzana (Max Planck Institute for Evolutionary Anthropology, Leipzig; Department of Archaeology and Museology, Masaryk University, Brno)

**Abstract format:** Oral

The archaeogenetic evidence of the Avar period in Europe records a group of people coming from the East Eurasian steppe. So far, the study of Avar-period individuals in Europe has been around the Carpathian Basin, where most of the rich archaeological material associated with the Avars has been found. That is also in concordance with historical records that designate this area as the core of the Avar Empire, waging wars against Byzantium. While eastern Austria is located in the periphery of the presumed Avar territory, there are also numerous finds associated with the Avar period, including a considerable amount of human skeletal remains buried during and after the Avar period. Within the HistoGenes project, we study the genetic architecture of several hundreds of samples from Austrian cemeteries dated to between the 4th and the 8th century A.D. One such cemetery, studied in detail by several disciplines involved in the project, is the cemetery of Leobersdorf. Located south of Vienna, it has been dated from the first half of the 7th until the beginning of the 9th century A.D. This is a particularly good example for studying Avar communities in Austria through a thorough archaeological, anthropological and genetic analysis of this necropolis. Within the ERC HistoGenes project, we show that the application of archaeogenetic approaches will allow us to uncover the past of population movements and admixture even in recent times. Ancient DNA studied in its archaeological, anthropological and historical context, and for an entire cemetery, enables us to jointly reconstruct the genetic origin, family relationships, social structure and demography of the inhabitants of Leobersdorf and gives us an insight into their genetic connections to the wider region.

## 8 BIOLOGICAL KINSHIP PATTERNS IN AN EARLY MEDIEVAL GRAVEYARD OF THE RHEINLAND AS PART OF THE FRANKISH KINGDOM

**Abstract author(s):** Lacher, Laura - Schiffels, Stephan - Gretzinger, Joscha (Max Planck Institute for Evolutionary Anthropology) - Pääffgen, Bernd (Ludwig-Maximilians-Universität München) - Krause, Johannes (Max Planck Institute for Evolutionary Anthropology)

**Abstract format:** Oral

The Frankish kingdom included vast areas of western Europe and has undergone intense archaeological examination. Ancient DNA studies on the other hand have not been performed so far. Here I present an interdisciplinary project regarding an early medieval graveyard of the Rhineland in northwestern Germany. We are using the archaeological record for chronological placing and interpreting social status; perform osteological analyses with focus on age estimation and identification of non-metric traits; and analyse genome-wide aDNA data to determine biological sex and kinship, as well as the broader ancestry patterns observed with contemporary and present-day genetic data. First, we reconstruct close genetic multigenerational kinship patterns among individuals, portraying the exploitation of the cemetery by a continuous population throughout its 400 years of usage. Second, we demonstrate a relatively high degree of genetic diversity as seen in ancestry profiles in these samples. Third, we compare genetic kinship patterns with kinship patterns obtained by non-metric traits, which have been traditionally used in anthropometric research.

Finally we interpret our results in light of comparison with contemporary patterns observed in East-Central Europe.

## 9 POPULATION DYNAMICS AND HISTORY OF SOUTH MORAVIA DURING THE 2ND HALF OF THE 5TH AND THE 6TH CENTURIES AD

**Abstract author(s):** Loskotová, Zuzana (Archeologický ústav AV ČR, Brno)

**Abstract format:** Oral

The contribution presents a new project of the Institute of Archaeology of the CAS in Brno "Lombard population in Moravia. Interdisciplinary research of the Migration Period necropolises" (granted by the Czech Science Foundation GACR). The revision of previous research but especially based on geophysical prospecting and field excavation of the selected cemeteries is aimed to bring new information about the structure, dynamics and mobility of populations. The horizon of the end of the 5th and the beginning of the 6th century AD deserves special attention as groups of the newly arriving Lombard population appear in the area of interest inhabited by the Germanic populations (Herules, remains of the local Suebian tribes, etc.). The project, which is currently in its initial phase, is based on an interdisciplinary



nary approach; archaeological-historical interpretations will be validated through the analyses of strontium, carbon and nitrogen isotopes; palaeopathological analysis, analysis of metals and textiles. Through the involvement in the international project "Histogenes", aDNA data from the Moravian cemeteries will be part of the European database and thus contribute to tackling the issue of migration and the formation of the Early Medieval Europe.

## 10 CONTINUITY AND DISCONTINUITY PRECEDING THE FORMATION OF GREAT MORAVIA IN POHANSKO REGION

**Abstract author(s):** Zlámalová, Denisa (Masarykova univerzita) - Schultz, Ilktra (Department of Biology, University of Fribourg; Swiss Institute of Bioinformatics, Lausanne) - Gneccchi-Rusccone, Guido - Traverso, Luca (Max Planck Institute for Evolutionary Anthropology, Leipzig) - Dresler, Petr (Department of Archaeology and Museology, Masaryk University, Brno) - Přichystalová, Renáta - Morris, Sam (UCL Genetics Institute, University College London) - Macháček, Jiří (Department of Archaeology and Museology, Masaryk University, Brno) - Wegmann, Daniel (Department of Biology, University of Fribourg; Swiss Institute of Bioinformatics, Lausanne) - Hofmanová, Zuzana (Department of Archaeology and Museology, Masaryk University, Brno; Max Planck Institute for Evolutionary Anthropology, Leipzig)

**Abstract format:** Oral

To this day, the question of the impact of migrations in the period predating the formation of the first Slavic states in East Central Europe is still debated. Traditionally accepted consensus is that Slavs migrated from East into the rest of Europe in the 5th or 6th century AD. There are however voices that question this narrative and suggest that the Slavic languages arrived in the region without a large migratory event. Even in the presence of a demographic shift in the population, the process itself is not well described and the social structure of the presumed incomers might have played a strong role (e.g. elite migration versus slow immigration distributed over generations). The situation is complicated by geographical and cultural variability throughout Central Europe at this time. To overcome this challenge, in this part of the project FORMOR (GAČR grant The Formation of Multi-ethnic Complex Societies in Early Medieval Moravia. Collective Action Theory and Interdisciplinary Approach), we focus on an archaeologically well-defined region near Pohansko (Břeclav, South Moravia, Czechia) where there was a settlement that was a part of one of the first states where Slavic language has been used (Great Moravia) and where there are skeletal remains also from preceding ("Early Slavic" and "pre-Slavic") occupation. We analyze whole genomes of medium coverage from these contexts and investigate continuity with various methods including explicit coalescent modeling. We also investigate the genetic relationship of these individuals to each other and known reference data in the wide region.

## 11 SLAVS OR MAYBE NOT? RADIOCARBON DATING OF CREMATED BONES FROM "PÄUCA - HUNGARIAN CHURCH SITE" (ROMANIA, SIBIU COUNTY)

**Abstract author(s):** Tiplic, Ioan Marian (Lucian Blaga University of Sibiu)

**Abstract format:** Oral

Archaeological research in the site of "Păuca - Hungarian Church" has started in 2010, and between 2010-2021 has uncovered over 90 graves, some being simple cremation graves with the deposit of remains in the urns, others being double graves (with two urns) and a single one is a mixed double grave (incineration and inhumation).

The dating of three samples from the necropolis would suggest that Păuca necropolis is contemporary with the final phase of the late Germanic period (Gepids) and the early Avar period. If we admit that it is more accurate to date to the upper limit of the range (7th century A.D.), the necropolis at Păuca could be connected with historical events spent between 567-630 A.D., i.e. the establishment and consolidation of Avars power in the Pannonian-Transylvanian space.

The C14 dating of the cremated bones from the Păuca necropolis is intending to launch a debate on the need for more samples of C14 data for the cremation necropolises attributed to the so-called Mediaș group and at the same time may represent a starting point for a re-discussion of the chronology for the period between 6 to 9 Century A.D. in the eastern part of Carpathian Basin.

## 12 AN INTEGRATIVE GENETICS APPROACH FOR STUDYING DISEASE IN EARLY MEDIEVAL EUROPE

**Abstract author(s):** Hiss, Alina - Gneccchi Ruscone, Guido - Traverso, Luca - Wang, Ke (Max Planck Institute for Evolutionary Anthropology, Leipzig) - Vida, Tivadar (Institute of Archaeological Sciences, Eötvös Loránd University, Budapest; Institute of Archaeology, Research Center for Humanities, Eötvös Loránd Research Network, Budapest) - Pohl, Walter (Institute for Medieval Research, Austrian Academy of Sciences, Vienna; Department of History, University of Vienna) - Geary, Patrick (Institute for Advanced Study, Princeton) - Hofmanová, Zuzana (Max Planck Institute for Evolutionary Anthropology, Leipzig; Department of Archaeology and Museology, Masaryk University, Brno) - Herbig, Alexander - Krause, Johannes (Max Planck Institute for Evolutionary Anthropology, Leipzig)

**Abstract format:** Oral

In the fields of archaeology, anthropology, and history, the study of human health and diseases have always played an important role as they have a substantial impact on individuals and societies. However, this is often limited to

diseases that either leave traces on the skeleton or are documented in historical sources. Applying genetic methods, the field of archaeogenetics could add to our understanding of numerous pathogens that do not leave visible lesions on the skeleton. However, meaningful interpretation of genetic results is only possible following an integrative approach by combining information from all disciplines. In the ERC funded project 'HistoGenes', researchers and scholars from various fields work together to study the population history of Early Medieval Eastern Central Europe to understand more about human migration and mobility, the structure of past societies, such as kinship, as well as health and diseases.

One pathogen that can be observed across sites and through time is the hepatitis B virus, the causative agent of chronic hepatitis, cirrhosis and hepatocellular carcinoma in humans, which can be transmitted vertically from mother to child and horizontally as a sexually transmitted disease. Combined with our knowledge about relatedness and kinship within these social groups, we can interpret infections in much more detail, potentially tracing back chains of transmission and gain insights about the impact this disease might have had on individuals in the past.

Here we present first genetic results about the hepatitis B virus in Early Medieval Europe that are discussed and interpreted in an interdisciplinary context.

### 13 WHAT WAS IT LIKE LIVING WITH LEPROSY IN THE AVAR AGE COMMUNITY OF KISKUNDOROZSMA–KETTŐSHATÁR I (HUNGARY)? – A CASE STUDY

**Abstract author(s):** Spekker, Olga (Department of Biological Anthropology, University of Szeged; Institute of Archaeological Sciences, Eötvös Loránd University) - Tihanyi, Balázs (Department of Biological Anthropology, University of Szeged; Department of Archaeogenetics, Institute of Hungarian Research, Budapest) - Kis, Luca (Department of Biological Anthropology, University of Szeged; Department of Archaeogenetics, Institute of Hungarian Research, Budapest) - Szalontai, Csaba (Archaeological Heritage Protection Directorate, Hungarian National Museum, Budapest) - Vida, Tivadar (Institute of Archaeological Sciences, Eötvös Loránd University) - Pálfi, György - Marcsik, Antónia - Molnár, Erika (Department of Biological Anthropology, University of Szeged)

**Abstract format:** Oral

The aim of our study is to demonstrate an individual (KK61) from the 8th-century-CE cemetery of Kiskundorozsma–Kettőshatár I (Hungary), who appears to have lived with leprosy (Hansen's disease). The severity and extent of the detected bony changes imply that KK61, a middle-aged male, suffered from the disease for a long time prior to his death. It has affected not only the rhinomaxillary region of his face but also his lower limbs, with severe deformation and disfigurement of the involved anatomical areas. Consequently, he would have experienced disability in performing the basic activities of daily living; and thus, he would have required regular and substantial care from others to survive. Despite his very visible disease and associated debility, that clearly marked the middle-aged male as afflicted with leprosy, he has not been segregated but buried within the cemetery boundaries, among others from his community. His grave has conformed to the mortuary practices characteristic of the Kiskundorozsma–Kettőshatár I cemetery. Based on the above, there seems to have been no distinction, leper from non-leper, in death in the late Avar Age community of Kiskundorozsma–Kettőshatár I. These findings are in accordance with the results of previous studies on other Avar Age cemeteries from the present-day territory of Hungary, indicating that prior to the 13th century CE, lepers have not been segregated from the healthy population, at least in death. It should be noted that distinction or segregation in life do not preclude normative treatment in death. Nevertheless, the long-lasting survival of KK61 with Hansen's disease indicates that he would not have been abandoned but cared for by others. The detailed contextual analysis of KK61 illuminates both the biological and social consequences of living and dying with leprosy in the late Avar Age community of Kiskundorozsma–Kettőshatár I.

### 14 POSTMARITAL RESIDENCE PRACTICES IN THE AVAR PERIOD EASTERN TRANS-DANUBIA, HUNGARY

**Abstract author(s):** Szeniczey, Tamás (Department of Biological Anthropology, Institute of Biology, Faculty of Science, Eötvös Loránd University) - Kiss, Krisztián (Department of Biological Anthropology, Institute of Biology, Faculty of Science, Eötvös Loránd University; Department of Anthropology, Hungarian Natural History Museum) - Líbor, Csilla (Department of Biological Anthropology, Institute of Biology, Faculty of Science, Eötvös Loránd University, Budapest, Hungary; Szent István Király Museum) - Marcsik, Antónia (Department of Biological Anthropology, University of Szeged) - Hajnal, Zsuzsanna (Hungarian National Museum) - Szűcsi, Frigyes (Szent István Király Museum) - Rácz, Zsófia (Department of Hungarian Medieval and Early Modern Archaeology, Institute of Archaeological Sciences, Eötvös Loránd University) - Hajdu, Tamás (Department of Biological Anthropology, Institute of Biology, Faculty of Science, Eötvös Loránd University)

**Abstract format:** Oral

In 568 AD the Avars, an Asian-originated tribal confederation appeared in the Carpathian Basin. The Avar conquerors united under their rule the whole territory, subjugated its inhabitant and eventually established the Avar Khaganate.

The provision of the regions was mainly implemented in a nomadic way. Thus, the established polity constituted a different way from the early European development.

During the early Avar period, Eastern Transdanubia can be regarded as a contact zone between the steppe, the Merovingian and the Mediterranean worlds. The coexistence was not only cultural, but it took also place at the biological level of populations.

Postmarital residence analysis accompanied with biodistance analysis could provide a suitable tool to explore the biological and social interactions between the different populations. Phenotypic traits of the human remains can be used as a proxy to evaluate the diversion between different populations and the extent of sex-specific variation. Significant differences in morphological variability between the sexes could be indicative of a sex-biased pattern of postmarital residence. Postmarital residence analysis in this study is based on the assumption that the sex with a higher migration rate exhibits greater phenotypic variability.

Concerning the between- and within-group variability of the sexes, it is possible to assume a higher rate of female exchange between the communities.

The study was supported by the „HistoGenes” (ERC Synergy grant).”

## 15 **COMPARATIVE ANALYSES OF SOCIOCULTURAL CHANGES AND GENETIC TRANSITIONS IN THE AVAR PERIOD SOUTHERN-TRANSDANUBIA**

**Abstract author(s):** Gyuris, Balázs (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Loránd Research Network; Department of Genetics, ELTE-Eötvös Loránd University, Budapest) - Vida, Tivadar (Institute of Archaeological Sciences, Eötvös Loránd University, Budapest; Institute of Archaeology, Research Center for Humanities, Eötvös Loránd Research Network, Budapest) - Hajnal, Zsuzsanna (Hungarian National Museum) - Szeniczey, Tamás (ELTE Department of Biological Anthropology, ELTE-Eötvös Loránd University, Budapest) - Rácz, Zsófia (Institute of Archaeological Sciences, Eötvös Loránd University, Budapest) - Mende, Balázs G. (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Loránd Research Network) - Hofmanová, Zuzana (Department of Archaeology and Museology, Masaryk University, Brno; Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany) - Knipper, Corina (Curt-Engelhorn-Centre of Archaeometry, Mannheim) - Krause, Johannes (Max Planck Institute for Evolutionary Anthropology, Leipzig) - Szécsényi-Nagy, Anna (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Loránd Research Network)

**Abstract format:** Oral

Kölked-Feketekapu is one of the largest cemeteries from the Avar Period Carpathian Basin. With more than 1300 graves and well-documented archaeological remains, it provides a unique resource for observing the numerous cultural transitions in the Southern-Transdanubian region. The cemeteries and the attached settlements were used between the 6th and the 8th century AD. This wide timescale gives archeologists and geneticists a great chance to track not only the impact of the Late Antique, Merovingian and eastern nomadic cultures but also the Avar Period transitions in the region. The social stratification can be examined at the site, due to the higher social status of several families in the community. Kölked-Feketekapu A site consists of a traditional Reihengräberfeld that contained around half of the burials excavated at Kölked. The other part of the graves are divided into 16 groups (Kölked-Feketekapu B) and were scattered all over the settlement's area. In the 6-7th centuries, the settlement was divided into households and elite grave groups which could be connected with several economic units of the village. This structure provides great potential in the reconstruction of social stratification. Our main goal in this paper is to 1) better understand the complex sociological and genetic kinship-based structure of the community in Kölked-Feketekapu B cemetery; 2) remodel the genetic and archeological transition in the Southern-Transdanubian region. For these purposes we have sequenced ~200 human DNA samples targeting 1.2 million polymorphic sites genome wide, involved stable isotopic data for most of the samples and analysed them in the context of the HistoGenes ERC project.

## 16 **DIETARY AND CULTURAL DIFFERENCES BETWEEN NEIGHBOURING COMMUNITIES: A CASE STUDY ON THE AVAR PERIOD CARPATHIAN BASIN**

**Abstract author(s):** Gulyás, Bence - Faragó, Norbert (ELTE) - Szenthe, Gergely (Hungarian National Museum)

**Abstract format:** Oral

Stable isotope ( $\delta^{15}\text{N}$ ,  $\delta^{13}\text{C}$ ) and  $^{14}\text{C}$  results from two early medieval cemeteries are presented and evaluated in this study in order to draw conclusions about diet, social differentiation and chronology in the Carpathian Basin during the Avar period (7th–9th century CE). At Tiszafüred and Hortobágy, two contemporaneous but distinct groups buried their deceased. The results reflect basic diet deviations between the two communities, which originated in alternative subsistence strategies and/or social differences. The Tiszafüred samples fit well into the general dietary picture of the period. The members of the rustic population consumed mainly cereals and millet, while the proportion of animal protein was significant also. Because of the exceptionally high  $\delta^{15}\text{N}$  levels of the Hortobágy-Árkus elite community, their diet was primarily based on animal protein, most probably of freshwater origin. Concerning the low number of our samples that were selected for radiocarbon dating, the present information is insufficient for an exhaustive recon-

struction. For now, we intend to grant some new additions to the sporadic data available for dietary reconstruction from this region and period. Our dataset is thought-provoking not only for the two distinct clusters of the plot but also for the rarity of stable isotope results from Avar sites.

## 17 THE ISSUE OF CONTINUITY OF POPULATION HISTORY BETWEEN 8-12TH CENTURIES IN CARPATHIAN BASIN BASED ON ARCHAEOGENETIC RESULTS OF FOUR CEMETERIES

**Abstract author(s):** Csáky, Veronika (Institute of Archaeogenomics, sResearch Centre for the Humanities, Eötvös Lóránd Research Network, Budapest) - Szeifert, Bea (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Lóránd Research Network, Budapest; Doctoral School of Biology, Institute of Biology, ELTE Eötvös Loránd University, Budapest) - Gerber, Dániel (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Lóránd Research Network, Budapest; Doctoral School of Biology, Institute of Biology, ELTE Eötvös Loránd University, Budapest) - Szőke, Béla (Institute of Archaeology, Research Centre for the Humanities, Eötvös Lóránd Research Network, Budapest) - Merva, Szabina (Freelancer) - Évinger, Sándor (Department of Anthropology, Hungarian Natural History Museum, Budapest) - Líbor, Csilla (King St. Stephen Museum, Székesfehérvár) - Petkes, Zsolt (Gyula Siklósi Research Centre for the History of the City of Székesfehérvár) - Mende, Balázs (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Lóránd Research Network, Budapest; Institute of Archaeology, Research Centre for the Humanities, Eötvös Lóránd Research Network, Budapest) - Szécsényi-Nagy, Anna (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Lóránd Research Network, Budapest)

**Abstract format:** Oral

As the Carpathian Basin is reputed as the westernmost point of the Eurasian steppe, it was influenced by movements of many nomadic tribes during migration period, as well.

One of the most important question for discussion in archaeology is the continuity or discontinuity of populations in the investigated region. Although the survival of population of e.g. 9th century in the 10th century is taken as evidence in Carpathian Basin (among others Avars and Slavs), based on only archaeological research these observations cannot provide unambiguous data to this day. For example, over half a dozen cemeteries are known in which conquering populations were excavated above or near of the late Avar tombs, and it could not be decided yet whether we could speak of population and/or place continuity in these cases. In this study we try to answer this question in a different extent by examining power centres of Transdanubia with a broader time range: late Avar period, Carolingian period, Hungarian Conquest period and the early Árpáadian Age.

We investigated 172 individuals from four cemeteries using NGS sequencing methods: Zalavár-Vársziget (9-12th centuries), Himod-Káposztásföldek (9-11th centuries), Visegrád (8-11th centuries), Sárbogárd-Tringer tanya (10th century). At least two of them (Zalavár-Vársziget and Himod-Káposztásföldek) contain well-separable chronological phases, based on which we created groups for population genetic analysis. The statistic and phylogenetic analyses based on whole mitogenomes were completed by whole genomic shotgun results. According to the later one, more precise conclusions have been drawn at individual level, although the different composition of the investigated populations is seen based on mitogenomic results as well.

This research was supported by The House of Árpád Programme (2018–2023) Scientific Subproject: V.1. Anthropological-Genetic portrayal of Hungarians in the Árpáadian Age.

## 18 POPULATION DYNAMICS IN THE ODER AND VISTULA BASINS AS INFORMED BY NOVEL GENOME-WIDE DATA

**Abstract author(s):** Molak, Martyna - Goluibinski, Michal - Popović, Danijela - Baca, Mateusz - Węgleński, Piotr (University of Warsaw)

**Abstract format:** Oral

Throughout the history the terrains of Oder and Vistula basins, which now make the Republic of Poland, have been a witness to an intense movement of people caused mainly by trade- or warfare-related factors. Despite the growing amount of the available genetic and genomic information for historic and prehistoric inhabitants of these lands, they remain severely understudied comparing to, for example, these of Germany or Hungary. Our project was designed to fill these gaps in the spatiotemporal genomic map of Central Europe. The skeletal material was obtained opportunistically with aim to cover the most periods and areas possible. We performed genomic analyses for individuals from between the Neolithic and Early Modernity from across today's Poland and neighboring regions. Shotgun sequencing, as well as Human Affinities Prime Plus and custom Y chromosome SNP panel enrichment were used to obtain confirmed aDNA low-coverage genome-wide data for 60 individuals (with the number still growing as our dataset is continuously updated). Using population genomic tools we explore the patterns of demographic changes in the Oder and Vistula basins since the Neolithic, the directions, timing and intensity of gene flow and its relation to the available written and material culture evidence as well as funerary practices and relatedness among the studied individuals within particular cultures and archaeological sites.

## BIOARCHAEOLOGICAL STUDY OF MEDIEVAL POPULATIONS BETWEEN THE DNEIPER AND DNIESTER VALLEYS

**Abstract author(s):** Szeifert, Bea (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Loránd Research Network - ELKH, Budapest; Doctoral School of Biology, Institute of Biology, ELTE Eötvös Loránd University, Budapest) - Gyuris, Balázs (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Loránd Research Network - ELKH, Budapest; Doctoral School of Biology, Institute of Biology, ELTE Eötvös Loránd University, Budapest) - Gerber, Dániel (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Loránd Research Network - ELKH, Budapest; Doctoral School of Biology, Institute of Biology, ELTE Eötvös Loránd University, Budapest) - Telnov, Nikolaj (Institute of Cultural Heritage, Academy of Sciences of Moldova, Kishinev) - Sinika, Vitalij - Kvitnytskyi, Maksym (Pridnestrovian State University named after T. G. Shevchenko, Tiraspol) - Komar, Oleksii (Institute of Archaeology, National Academy of Sciences of Ukraine, Kyiv) - Türk, Attila (Institute of Archaeological Sciences, Faculty of Humanities and Social Sciences, Pázmány Péter Catholic University, Budapest; Hungarian Prehistory Researchgroup, Research Centre for the Humanities, Eötvös Loránd Research Network - ELKH, Budapest) - Mende, Balázs - Szécsényi-Nagy, Anna (Institute of Archaeogenomics, Research Centre for the Humanities, Eötvös Loránd Research Network - ELKH, Budapest)

**Abstract format:** Oral

Genetic data is very scarce on the medieval people of the Dnieper and Dniester Valley. We examine more than 50 human DNA samples from different medieval cemeteries, which can be dated to the 8-10th century AD and linked to different ethnic groups (like Slavs, Pechenegs, Hungarians) based on historical and archaeological findings.

This region was the last settlement area (so-called *Etelköz*) for Hungarian conquerors before arriving in the Carpathian Basin. The archaeological material of some studied cemeteries – dated to the 9th century AD by <sup>14</sup>C measurements – shows connections with cultures of the Volga-Ural region and the Carpathian Basin as well.

Our uniparental and genomic analyses also show that several distinct groups lived in the studied area. Moreover, Slavic groups on the left and right bank of the Dnieper have a different genetic composition. Keeping in mind the archaeological data, we examine genetic relations of the studied groups in comparison with other Eurasians at both individual and population levels. In addition to identification of the "Hungarian component" in the region, we compare our results with the data of medieval groups from the Carpathian Basin and Volga-Ural regions. These areas can be related to each other through the early Hungarians, whose migration is not just documented by fresh archaeological data but has been also confirmed by the genetic examinations of the recent years.

Our goals are to gain genetic insight into the composition of the Dnieper and Dniester Valleys' ethnic groups and to learn about unique stories of the individuals who composed the populations. Our results can not only shed light on the sources of migration events, but also show the impact of the newcomers on the population of the studied area.

This research was supported by: Eötvös Loránd Research Network; Thematic Excellence Program (TKP2020-NKA-11); Árpád dynasty program (IV.2).

## DIVERSITY, COMMUNITY FORMATION, AND SOCIAL STRUCTURE IN THE EARLY MEDIEVAL CARPATHIAN BASIN – ARE WE THERE YET?

**Abstract author(s):** Szabó, Dóra (University of Exeter)

**Abstract format:** Oral

It has long been acknowledged that the Carpathian Basin has a great potential in the understanding of the various aspects of transformation during the Early Middle Ages. Due to its geographical position, this territory was a hotspot of changes: communities with diverse backgrounds – the late Roman population and the manifold newly arrived groups of people – created here a fusion of cultures, lifestyles, social models, and probably languages. In the last decade, a growing number of studies have used bioarchaeological tools to better understand the population histories and mobilities in the addressed period. Genetic data has informed about the heterogeneity of populations, multi-isotope analyses have shed light on mobility, migration, and diet, and physical anthropology has provided clues about general health and lifestyles. However, key aspects of the question – how these heterogeneous, probably multi-lingual people, who practised diverse lifestyles formed communities? – have remained unrevealed.

The reconstructed diet profiles indicated diverse strategies containing elements of both pastoral and sedentary lifestyles. This paper argues that the processes of community formation – the survival strategies, lifestyles, and social organisation – of these heterogeneous communities cannot be understood without the careful examination of contemporary settlements and their natural environments. The choices of settling places, the use of local resources, the layouts of settlements, the organisation of productive tasks, the crop and animal husbandry strategies, and storage systems are crucial elements of the formation, survival, and ultimately success of a community.

Aiming for a deeper understanding of the diversity in the period, this paper proposes a pilot methodological framework, which integrates various disciplines – bioarchaeological evidence on population history, general health, and

diet, archaeological data on settlements and cemeteries, environmental data, and historical information – and demonstrates their application through various case studies from the early medieval Carpathian Basin and beyond.

## A. YOU EAT WHAT YOU HAVE - SOCIAL DIFFERENCE AND FOOD CONSUMPTION IN AN EARLY MEDIEVAL COMMUNITY

**Abstract author(s):** Koncz, István - Faragó, Norbert (Institute of Archaeological Sciences, ELTE - Eötvös Loránd University, Budapest) - Pap, Ildikó (Savaria Museum, Szombathely) - Tugya, Beáta (Thúry György Museum, Nagykanizsa) - Tóth, Gábor (Department of Biology, Berzsenyi Dániel Teacher Training Centre, Savaria University Centre, ELTE - Eötvös Loránd University, Szombathely) - Vida, Tivadar (Institute of Archaeological Sciences, ELTE - Eötvös Loránd University, Budapest) - Knipper, Corina (Curt-Engelhorn-Zentrum Archäometrie gGmbH, Mannheim)

**Abstract format:** Poster

In the Carpathian Basin during the early Medieval period, i.e. between the 5th and the 9th centuries CE, many graves contained various remains generally described as food offerings, such as animal bones or different types of vessels including pottery, glass or even wooden containers. While they are clearly part of the grave inventory, their purpose is often largely unexplained or they are vaguely interpreted as sacrifices, leftovers from funerary feasts or offerings necessary in the afterlife. Nevertheless, access to good quality food, especially animal protein could be a similar indicator of social status, as certain artifact types, such as weapons or jewellery. But how did the people decide which member of a community should be buried with food offerings? Did it only depend on the social and/or economic standing of the individual or their family, or did personal preference also come into play? Did individuals buried with animal remains consume more meat than those buried without?

We address these questions with the help of the fine-scale analysis of the 6th-century cemetery at Szeleste, Hungary. We combine archaeological and osteological data and results of carbon and nitrogen stable isotope analysis to see whether there is a difference in nutrition among different socially identifiable groups (age, gender, economic or social status, etc.) in a community, where different types of food offerings are much more common - circa half of the graves contained animal remains or vessels - than in case of other contemporaneous sites.

## B. POPULATION HISTORY OF EARLY MEDIEVAL UKRAINE

**Abstract author(s):** Saag, Lehti (University College London) - Utevska, Olga - Zadnikov, Stanislav - Shramko, Irina (V. N. Karazin Kharkiv National University) - Scheib, Christiana (University of Tartu; University of Cambridge) - Anastasiadou, Kyriaki - Kelly, Monica - Gilardet, Alexandre - Skoglund, Pontus (The Francis Crick Institute) - Thomas, Mark (University College London)

**Abstract format:** Poster

Ancient DNA research indicates that, to a first order of approximation, the genomes of present-day Europeans comprise ancestries of three major groups of people: 1) indigenous Mesolithic hunter-gatherers; 2) Near Eastern early farmers; 3) Steppe pastoralists. However, the detailed genetic history of any given area is always much more complex, calling for more focused and local-scale studies. One such interesting but so far understudied region is modern-day Ukraine which borders with Central European Poland, Slovakia and Hungary to the west while Southern Ukraine is part of the vast Eurasian Steppe. As such, the area has been in the path of several migrating groups, including Yamnaya Steppe pastoralists, mixed-origin Cimmerians and Scythians, Gothic Chernyakhov people, Iranian Alans, Golden Horde Mongols, Turkic Nogais, Slavic Cossacks.

Here we present novel genome-wide shotgun sequencing data from 9 individuals associated with the Alan group of the Early Medieval Saltovo-Mayaki Culture, 11 individuals associated with the preceding Chernyakhov Culture and 4 and 7 individuals, respectively, from the succeeding Golden Horde and Nogai periods. Most of the genomes – 23 out of 31 – have been sequenced to an average coverage of around 1x. The ancestry compositions of the individuals are characterised in the context of modern and ancient samples, and interpreted in the context of archaeological and historical information.

---

## 372 ADVANCES IN GEOMETRIC MORPHOMETRIC METHODS APPLIED TO LITHIC STUDIES [PAM]

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Araujo, Renata (Museum of Archaeology and Ethnology, University of São Paulo.) - Matzig, David (School of Culture and Society, Department of Archaeology and Heritage Studies, Aarhus University.) - Okumura, Mercedes (Department of Genetics and Evolutionary Biology, Biosciences Institute, University of São Paulo.) - Araujo, Astolfo (Museum of Archaeology and Ethnology, University of São Paulo.) - Riede, Felix (School of Culture and Society, Department of Archaeology and Heritage Studies, Aarhus University.)

**Format:** Regular session

Geometric morphometric methods (GMM) applied to the analysis of stone tools have gained sharply in popularity over the last decade. Many traditional lithic-based culture-historical sequences are fundamentally based on artefact

shape changes. GMM offer the possibility of translating narrative or qualitative assessments of shape into precise and data-rich quantifications readily amenable to downstream statistical analyses. Often but by no means always embedded in a cultural evolutionary framework, GMM have shown to be effective, robust and replicable tools for elucidating processes of cultural change in prehistoric artefact classes, as well as for assessing re-use and re-sharpening dynamics in the context of curation. Morphological analysis of lithic artefacts by means of GMM do not stand alone. They may be considered complementary to, for instance, technological studies. This session welcomes papers focused on GMM analyses or analyses that couple morphometric evidence to other information, such as technological attributes or microwear studies; we also highly welcome papers that explore innovative further analyses of shape data (e.g. cultural phylogenetics). The session focuses on lithics, although other artefact classes will be considered. In surveying current approaches, we seek to also explore what theoretical, methodological and empirical developments are moving the field of artefact morphometrics forward.

## ABSTRACTS

### 1 3D GEOMETRIC MORPHOMETRICS AND LITHIC ANALYSIS OF RECURRENT CENTRIPETAL KNAPPING METHODS: TWO CASE STUDIES

**Abstract author(s):** Bustos-Pérez, Guillermo - Romagnoli, Francesca (Universidad Autónoma de Madrid)

**Abstract format:** Oral

Lithic morphological variability has long been a challenge for lithic analysis. The application of 3D geometric morphometrics has allowed quantifying the morphological variation of lithic elements. The combination of geometric morphometric methods with Machine Learning models allows performing high precision classification along with gaining insights into variable importance. In this presentation, the authors present the results from two case studies that combine 3D geometric morphometric methods with Machine Learning models. Both case studies are focused on backed products (core edge flakes –débordant–, core edge flakes with limited back, and pseudo-Levallois points) removed from Discoid and recurrent centripetal Levallois experimental knapping. In the first case study geometric morphometrics along with Machine Learning models have been applied to differentiate backed flakes removed from each knapping method. Results show that a high level of classification (accuracy of 0.76 and AUC of 0.8) can be achieved. Interpretation of principal components indicate that laminarity index and the interaction between IPA and carenated index account for much of the differentiation between methods. In the second case study geometric morphometric methods and Machine Learning models have been applied along with resampling methods (obtaining balanced datasets) to evaluate the validity of technological categories employed to classify backed flakes. Results show little overlapping between the three categories (average precision above 0.8) indicating that geometric morphometric methods are effective in identifying the morphological features which are linked to their technological definitions of backed products. The results of this investigation highlight the potential of combining geometric morphometrics with Machine Learning not only as classificatory methods, but also to evaluate technological categories employed in lithic analysis.

### 2 STATISTICAL CULTURAL TRANSMISSION MODELS PROVIDE INSIGHTS INTO THE SOCIAL CONTEXTS OF TECHNOLOGICAL CHANGE DURING THE LATE PLEISTOCENE IN KOREA

**Abstract author(s):** Park, Gayoung - Marwick, Ben (University of Washington)

**Abstract format:** Oral

Concepts of cultural evolution link material evidence to cultural processes and phenomena. This provides testable frameworks for archaeologists to understand human behaviors. Cultural transmission suggests that technological transitions can result from changes in social learning processes, with transmission biases as important loci of changes. Through the identification of material traces of different transmission biases, we investigate the social contexts of technological transitions during the Late Pleistocene in Korea, from the Early to Late Paleolithic. The onset of the Late Paleolithic period in Korea, represented by the appearance of projectile points and blades, is a key event in understanding modern human dispersal in East Asia. Previous studies mainly focus on the possible origin locations of new technologies, but they rarely address the process of change. Using a cultural evolutionary approach, we examine the transitioning process by asking: what is the dominant mode of cultural transmission for technological innovation in the Korean Late Palaeolithic? Inspired by Bettinger and Eerkens (1999), we propose two models using guided variation and model-based bias. To test the models, we compute coefficients of variation (CV), correlations, and Principal Components Analysis (PCA). Our results show that information about the new technology was transmitted via combinations of guided variation and model-based bias. Some attributes including length and width were transmitted through model-based bias, while other attributes appear to have been more dependent on raw materials or other local factors. Our results indicate that people learned and copied crucial parts of the stemmed points from one origin and then adjusted the shape based on their own situation. We anticipate this approach to be applicable to understanding technological change in a variety of social and cultural contexts.

### 3 UNRAVELLING SHAPE VARIABILITY OF STONE TOOLS IN SOUTHEASTERN BRAZIL FOR REASSESSING ARCHAEOLOGICAL TRADITIONS

**Abstract author(s):** Araujo, Renata (Museum of Archaeology and Ethnology, University of Sao Paulo - MAE-USP) - Okumura, Maria Mercedes (Laboratory for Human Evolutionary Studies, Department of Genetics and Evolutionary Biology, Biosciences Institute, University of São Paulo) - Araujo, Astolfo (Laboratory for Interdisciplinary Research in Culture, Evolution and Environment, Museum of Archaeology and Ethnology, University of São Paulo)

**Abstract format:** Oral

The application of geometric morphometric methods (GMM) in Brazilian archaeology is a fairly new endeavour and was introduced by the co-authors of this paper about twelve years ago, at the same period when geometric morphometrics use saw a significant increase in material culture studies. The co-authors of this paper were the first to apply geometric morphometrics to the analysis of Brazilian lithic bifacial points. The project consisted in an initial attempt to describe the morphological variability of projectile points from Southern and Southeastern Brazil to reassess the original classification of bifacial points in an archaeological tradition named Umbu, defined in the 1960s. This paper presents preliminary results of the doctoral research under development by the first author, featuring GMM analysis of lithic bifacial points and unifacial tools from Southeastern Brazil. Theoretically embedded in a framework that combines Evolutionary Archaeology and Cultural Transmission Theory, this project highlights the relation between shape variability and cultural traditions, giving endurance to previous work published by the co-authors.

### 4 MESOLITHIC HARPOONS IN ACTION. GEOMETRIC MORPHOMETRICS AND CONTINUUM MECHANICAL SIMULATION AS TOOLS TO IDENTIFY FUNCTIONAL ROLES"

**Abstract author(s):** Lundström, Fredrik (Stockholm University) - MacLeod, Norman (Nanjing University) - Isaksson, Sven - Glykou, Aikaterini (Stockholm University)

**Abstract format:** Oral

Projectile and point performance research has long been an important part of Stone Age archaeology. Arguably, projectile functionality research is largely focused on issues that require direct conclusions, for example projectile/delivery system identification and classification. These are common themes in Palaeolithic research where material can be scarce and time deep. In contrast, technological studies of lithic (and osseous) projectiles and points often provide quantitative and descriptive data that can address societal questions and test specific narratives. Naturally, these types of studies are far more common than projectile performance studies in Mesolithic and Neolithic research. In our project, we approach Mesolithic projectile morphology from the opposite direction of technological studies—the produced form in action—with the goal of providing geometric data. The project aims to study the relationship between environmental, social and projectile function changes around the Baltic Sea after the 8200 cal BP cold event. In order to obtain quantitative descriptions of osseous Mesolithic harpoons, a geometric morphometrics approach (the extended eigenshape analysis) is employed, and the results will be combined with continuum mechanical simulations, archaeological experiments and organic residue analysis. This paper presents preliminary results of the geometric morphometrics analysis and highlights theoretical and methodological problems related to morphology and function, particularly the relations between craft tradition, cultural evolution, physiology, mechanics and environment.

### 5 2D GEOMETRIC MORPHOMETRIC APPROACH TO KNAPPER SKILLS AMONG NEOLITHIC AXES

**Abstract author(s):** Bustos-Pérez, Guillermo - Castañeda, Nuria (Universidad Autónoma de Madrid)

**Abstract format:** Oral

Although different levels of expertise among knappers is a commonly referred cause of variation of the lithic archaeological record, it is not usually explored, especially in post-Palaeolithic assemblages. The shaping of lithic artifacts into a desired morphology (façonnage) offers an ideal material record to evaluate different knapping levels since it is expected that as the knappers ability decreases so will the ability to reach the desired morphology. Flaked Neolithic axes are standardized products were the knapper aims to obtain a tool symmetric in three axes (failing to do so results in increasing amounts of work in the following stages). Thus, Neolithic axes are ideal to search for different levels of expertise. Geometric Morphometrics are an effective way to quantify morphological variation among lithic materials. However, 3D approaches are sometimes limited for the analysis of archaeological collections (time, size, accessibility, etc.) making the use of digital photographs a highly desirable method despite the loss of resolution due to a missing dimension. We present the results from an experimental program aimed to test morphological variability among Neolithic axes according to knappers expertise. A total of 67 experimental flaked Neolithic axes were knapped, classified according to knapper experience level (inexperienced, intermediate and expert), and selected for Geometric Morphometrics. Specially developed porcelain was employed as raw material allowing standardizing initial morphology and volume for all knappers. 2D Geometric morphometrics were performed on the photographs of the front, laterals and edge views. Principal Components Analysis is employed for dimensionality reduction and Machine Learning models are employed for the classification of knapper experience. Results indicate a good level



of separation according to knapper experience, especially when lateral views are considered. These results support the use of digital photographs in combination with Geometric Morphometrics and Machine Learning and allow for an application to the archaeological record.

## 373 DISCUSSING THE FUTURE OF BIG DATA FOR THE STUDY OF THE HUMAN PAST

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Coccozza, Carlo (Ludwig-Maximilians-Universität München, Fakultät für Kulturwissenschaften; Max Planck Institute for the Science of Human History, Department of Archaeology) - Fernandes, Ricardo (Max Planck Institute for the Science of Human History, Department of Archaeology; University of Oxford, School of Archaeology; Masaryk University, Arne Faculty of Arts) - Lubritto, Carmine (Università degli studi della Campania Luigi Vanvitelli, Dipartimento di Scienze e Tecnologie Ambientali, Biologiche e Farmaceutiche) - Rosenstock, Eva (Universität Bonn, Bonn Center for ArcheoSciences)

**Format:** Regular session

The use of Big Data for the study of the human history is a major trending topic. In this session, we want to promote a fruitful dialogue that engages with multiple and diverse issues concerning the usage of Big Data for the study of the human past.

Much is being promised of how Big Data and interfaces with modelling methods such as Artificial Intelligence will revolutionize our study of the past. However, there is apparently less debate on the underlying theoretical framework that should support such initiatives. There are also reasonable concerns that highly centralized systems, typically based in Western countries, may appropriate data from the rest of the world resulting in a kind of "data colonialism". Whereas the use of rigid metadata standards can produce highly-structured data, which is useful to address specific research questions, it also risks marginalizing some sectors of research which are less easily subject to standardization. Another concern, relates to the potential dilution of original data production efforts by those working in the field, lab, or library. As Big Data projects draw in increasingly more attention, it becomes necessary to faithfully acknowledge those who produced the data in the first place. Related to this, safekeeping and impartial original IDs, for instance those given by the excavators, across databases is sometimes a neglected asset to maintain the context of samples and allow for their recontextualization. A broader question concerns what should be collaborative and network models for Big Data initiatives bringing together various archaeological and historical disciplines.

We welcome both contributions offering a theoretical perspective and case studies that showcase the development of innovative organizational models and technological solutions.

## ABSTRACTS

### 1 MAPPING MONGOLIA: TRANSMETHODOLOGICAL DATA INTEGRATION AND NATIONAL CULTURAL PATRIMONY

**Abstract author(s):** Fisher, Michael - Jamsranjav, Bayarsaikhan - Jambajanstan, Delgermaa - Jurkenas, Dovydas (Max Planck Institute for the Science of Human History)

**Abstract format:** Oral

The Mongolian Archaeology Project: Surveying the Steppes (MAPSS) draws on a variety of methodologies to document the archaeological and ethnographic landscapes of Mongolia. The overarching goal of the project is to produce the first open-access, semantically interoperable, reproducible, and comprehensively populated geospatial database of Mongolian cultural heritage resources. This work is 'transmethodological' in that it integrates several distinct approaches in order to address questions in both the archaeological and cultural heritage disciplines. MAPSS combines archival field data with the results of manual remote sensing, Machine Learning detection, ground truthing survey, and digital imaging to record tens (and potentially hundreds) of thousands of sites and their conditions. Our research uses these data to explore topics such as palaeohydrology and human-environment interaction, diachronic patterns of nomadic mobility, development of an early nomadic state, large-scale prehistoric funerary practices, community archaeology, and heritage resource vulnerability.

Among the issues that MAPSS considers in the design of its data collection and management systems are breadth versus depth of data, modeling uncertainty at scale, multilinguality, multivocality, and interpretive multiplicity. Thus, the project balances capture of metadata, paradata, resource relationships, site conditions, and archaeological interpretation with the scope, ambition, and inclusivity of populating a national cultural heritage database. In this paper, we demonstrate how our design principles reflect this balance. We present an argument for the interrelationship between reproducibility, sustainability, and inclusivity. Finally, we discuss future directions for utilizing a dataset as large as—but fully situated within—the national boundaries of Mongolia.

## 2 OPENATLAS - A DATABASE SYSTEM FOR ARCHEOLOGICAL DATA AND BEYOND

**Abstract author(s):** Richards, Nina (Austrian Academy of Sciences) - Watzinger, Alexander (Austrian Centre for Digital Humanities and Cultural Heritage)

**Abstract format:** Oral

OpenAtlas (<https://openatlas.eu/>), developed mainly at the Austrian Center of Digital Humanities and Cultural Heritage (ACDH-CH) of the Austrian Academy of Sciences (ÖAW), is an open-source database software developed especially to acquire, edit and manage research data from various fields of humanities. It allows recording archeological data, linked with anthropological analyzes and the results of scientific methods, such as radiocarbon dating or stable isotope analyses.

OpenAtlas is an open-source project (<https://github.com/craws/OpenAtlas>) and projects that use the database in a cooperative effort subsequently make their data available as open access.

The user interface, which is accessible via any common browser, allows for easy data entry, while the data is mapped in the background according to CIDOC CRM version 7.1.1 (<https://cidoc-crm.org/>). Therefore, using OpenAtlas takes care of today's requirements regarding data standards, data management, and aims for FAIR principles (<https://www.go-fair.org/fair-principles/>) against the background of current standards in Digital Humanities. The usage of CIDOC CRM allows easy re-use of the created data by other scientists and projects. In addition, OpenAtlas offers possibilities to link data entries with external references - such as GeoNames or Wikidata - which can be freely selected by the projects and can thus provide Linked Open Data.

Integrated map applications allow easy acquisition of geographic data and subsequently the creation of cemetery plots and distribution maps. Data created within the OpenAtlas system can further be used to create presentation sites for state-of-the-art dissemination (compare for example <https://thanados.net>).

## 3 "BIG DATA" FOR STABLE ISOTOPE RESEARCH IN THE CARIBBEAN AND MESOAMERICAN ARCHAEOLOGY

**Abstract author(s):** Ebert, Claire (University of Pittsburgh) - Hixon, Sean (Max Planck Institute of the Science of Human History) - Buckley, Gina (University of Missouri Research Reactor) - George, Richard (University of California, Santa Barbara) - Pacheco-Forés, Sofía (Hamline University) - Palomo, Juan Manuel (University of Arizona) - Solís-Torres, Óscar (Instituto Nacional de Antropología e Historia - INAH) - Kennett, Douglas (University of California, Santa Barbara)

**Abstract format:** Oral

Large-scale syntheses of stable isotope data can answer "big questions" with "big data." In the Caribbean and Mesoamerica, however, comparative regional analyses of diet and mobility based on stable isotope analyses of human skeletal tissues are difficult because of inconsistencies in reporting and publication. CAMBIO (the Caribbean and Mesoamerica Biogeochemical Isotope Overview) is a collaborative effort led by Early Career researchers working in Latin America, the US, and Europe to systematically compile published isotopic data in an open-access and multilingual format (Spanish, French, and English). As the largest repository for human isotopic measurements from the Caribbean and Mesoamerica, analyses of the datasets in CAMBIO have the potential to address major questions in archaeology about the spread of maize agriculture and migration related to urban development and colonial encounters. Here we describe our preliminary analyses of these events based on the CAMBIO dataset. We also highlight the potential to expand stable isotope projects to focus on the dynamic interactions between humans, animal, and ecological in Caribbean and Mesoamerican over the past 10,000 years.

## 4 EXPLORING SHIFTS IN ROMAN SUBSISTENCE PRACTISES THROUGH A BAYESIAN META-ANALYSIS OF ISOTOPIC DATA

**Abstract author(s):** Formichella, Giulia - Soncin, Silvia (Sapienza University of Rome, Department of Environmental Biology, and Mediterranean bioArchaeological Research Advances - MAREa - centre) - Coccozza, Carlo (Ludwig-Maximilians-Universität München, Institut für Vor- und Frühgeschichtliche Archäologie und Provinzialrömische Archäologie, and ArchaeoBioCenter; Max Planck Institute for the Science of Human History, Department of Archaeology, Jena; Università degli studi della Campania "Luigi Vanvitelli", DiSTABIF, and Mediterranean bioArchaeological Research Advances - MAREa - centre) - Tafuri, Mary Anne (Sapienza University of Rome, Department of Environmental Biology, and Mediterranean bioArchaeological Research Advances - MAREa - centre) - Lubritto, Carmine (Università degli studi della Campania "Luigi Vanvitelli", DiSTABIF, and Mediterranean bioArchaeological Research Advances - MAREa - centre) - Craig, Oliver (University of York, Department of Archaeology, and BioArCh) - Fernandes, Ricardo (Max Planck Institute for the Science of Human History, Department of Archaeology, Jena; University of Oxford, School of Archaeology; Masaryk University, Arne Faculty of Arts)

**Abstract format:** Oral

In our presentation we explore the interplay between shifting human subsistence practises and the establishing, expansion, apogee and collapse of the Roman Empire. To achieve this, we introduce "Isotópia", a collection of

human, animal, and plant stable isotope data ( $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$ ,  $\delta^{18}\text{O}$ ,  $\delta^{34}\text{S}$ ,  $^{87}\text{Sr}/^{86}\text{Sr}$ ) measured on archaeological material dated between 800 BCE and 500 CE and set within the geographical extension of the Roman Empire.

The increasing number of isotopic datasets has led to a significant accumulation of data that can be gathered together within independent databases. Amassed isotopic data, combined with historical, archaeological and biological metadata, represent a palimpsest of information providing for new insights on past human lifeways at different scales and resolutions. Isotópia is part of the IsoMemo&Pandora initiatives bringing together a network of independent isotopic databases and aiming to investigate past human societies via open-access compiled data and advanced spatio-temporal Bayesian modelling tools.

We combine Isotópia and the CIMA isotopic database on medieval Europe and employ Bayesian models to explore subsistence practises over nearly two millennia. Preliminary results of the meta-analysis suggest an increase in both  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  values during the Roman imperial period, which could be explained by a general increase in marine protein consumption, imports of  $^{15}\text{N}$ -enriched cereals from North Africa and more intensive manuring and animal husbandry. A following decrease of  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  values during the Late Antiquity (300-600 CE) possibly relates to political and economic collapse, depopulation processes and different cultural traditions derived from incoming populations but also to climatic and/or environmental changes.

Our results illustrate the research potential of large-scale meta-analysis of bioarchaeological data and obtained preliminary results reveal clear links between historical developments and human lifeways in pre-Roman, Roman and Post-Roman Europe.

## 5 A NETWORK OF ISOTOPIC DATASETS FOR MEDIEVAL EUROPE: THE COMPENDIUM ISOTOPORUM MEDII AEVI (CIMA)

**Abstract author(s):** Cocozza, Carlo (Institut für Vor- und Frühgeschichtliche Archäologie und Provinzialrömische Archäologie, Ludwig-Maximilians-Universität München; Department of Archaeology, Max Planck Institute for the Science of Human History) - Fernandes, Ricardo (Department of Archaeology, Max Planck Institute for the Science of Human History; School of Archaeology, University of Oxford; Arne Faculty of Arts, Masaryk University)

**Abstract format:** Oral

In our contribution, we present the Compendium Isotoporum Medii Aevi (CIMA), an open-access and collaborative database gathering more than 50,000 isotopic measurements for bioarchaeological samples located within Europe and its margins and dating between 500 and 1500 CE. One the CIMA's aims is to disentangle archaeological data collections from rigid and hierarchical approaches and to convey a message of collaboration among fellow researchers from different countries and institutions. This offers a better recognition of contributions to data collection effort and to the employment of meta-data structures better suited to address specific, and often localized, research questions. This will benefit both individual researchers and the broad scientific community.

Stable isotope analysis has been employed since the late 1970's to pursue a variety of archaeological goals. In the last decade, an exponential growth highlighted the need for a new research perspective. Isotopic "Big Data" collections and new statistical meta-analyses are now widely employed to address archaeological questions at super-regional scales. This includes, the study of human lifeways across space and time. However, whenever information from the cultural, social, political and religious spectrum are available, the analysis may offer a deeper understanding of past societies. This becomes particularly relevant for the Medieval period, where written evidence and a vast archaeological knowledge might allow for novel insights.

CIMA includes a variety of supporting information offering, for instance, taxonomic characterisation of the samples and data on social, religious, and political contexts. In addition, CIMA operates as a network of independent isotopic databases each with regional or sub-regional focus. This increases data quality via having multiple data checks and offers the possibility of undertaking multiple spatiotemporal meta-analyses.

## 6 ISOBERMED: USING BAYESIAN META-ANALYSIS TO EXPLORE A NEW ISOTOPE DATABASE FOR MEDIEVAL IBERIA

**Abstract author(s):** Alexander, Michelle (BioArCh, Department of Archaeology, University of York) - García-Collado, Maite (BioArCh, Department of Archaeology, University of York; GIPYPAC, Department of Geography, Prehistory and Archaeology, University of the Basque Country - UPV/EHU) - Cocozza, Carlo (Institut für Vor- und Frühgeschichtliche Archäologie und Provinzialrömische Archäologie, Ludwig-Maximilians-Universität München; Department of Archaeology, Max Planck Institute for the Science of Human History, Jena) - Teegen, Wolf-Rüdiger (Institut für Vor- und Frühgeschichtliche Archäologie und Provinzialrömische Archäologie, Ludwig-Maximilians-Universität München) - Fernandes, Ricardo (Department of Archaeology, Max Planck Institute for the Science of Human History, Jena; School of Archaeology, University of Oxford; Arne Faculty of Arts, Masaryk University)

**Abstract format:** Oral

Over the last 15 years, growing attention has been placed on the rich context of medieval Iberia using isotopic analysis. We have created the IsolberMed database collating publicly available isotopic data from the Medieval period

comprising approximately 2500 human, 750 fauna and 300 plant data from all over Iberia (Spain, Portugal, Andorra) and the Balearic Islands. This represents mainly carbon and nitrogen stable isotope values of bulk collagen from bones in the majority, but also teeth, with contributions of a small proportion of sulphur, oxygen and strontium data.

The Medieval period (c. 500-1500 CE) was a transformative time in the history of the Iberian Peninsula and Balearic Islands which witnessed multiple significant socio-political transitions. Suevo, Vandal and Visigothic kingdoms emerged after the disarticulation of the Roman Empire, which themselves fell after the Islamic conquest in 711. For around 800 years Iberia harboured a multifaith society, where the co-existence of Christian, Jewish and Muslim communities led to a uniquely blended culture. New Christian kingdoms arose in the north and slowly expanded south throughout the later Medieval period (the so-called Reconquista), consolidating feudal regimes and finally taking the last Islamic rulership of Granada in 1492.

We use a large-scale meta-analysis of this isotopic data using newly developed Bayesian approaches (IsoMemo <https://isomemoapp.com/>) to examine patterning in diet and mobility through time and space exploring these intricate cultural backgrounds in the context of a mosaic of climatic and environmental differences that also characterise this dynamic region between the Atlantic and the Mediterranean. We will explore dynamics related to faith, sex, status, age and urban and rural economies, and finally the patterning of C4 and marine resources.

## 7 ISOMEDITA, AN ISOTOPIC DATABASE FOR MEDIEVAL ITALY AND BAYESIAN META-ANALYSIS

**Abstract author(s):** Mantile, Noemi (Dipartimento di Scienze e Tecnologie Ambientali Biologiche e Farmaceutiche - DISTABIF, Università degli studi della Campania "Luigi Vanvitelli") - Coccozza, Carlo (Institut für Vor- und Frühgeschichtliche Archäologie und Provinzialrömische Archäologie, Ludwig-Maximilians-Universität München; Department of Archaeology, Max Planck Institute for the Science of Human History, Jena) - Lubritto, Carmine (Dipartimento di Scienze e Tecnologie Ambientali Biologiche e Farmaceutiche - DISTABIF, Università degli studi della Campania "Luigi Vanvitelli") - Fernandes, Ricardo (Department of Archaeology, Max Planck Institute for the Science of Human History, Jena; School of Archaeology, University of Oxford; Arne Faculty of Arts, Masaryk University)

**Abstract format:** Oral

Whereas many past stable isotope applications in Italian archaeology focused on Prehistoric and Roman sites, the last decade saw a substantial number of published isotopic measurements exploring human lifeways in medieval populations. Hence, we compiled IsoMedIta, a database for stable isotope measurements ( $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$ ,  $\delta^{18}\text{O}$ ,  $\delta^{34}\text{S}$ ,  $^{87}\text{Sr}/^{86}\text{Sr}$ ) on human, animal and plant samples from Italian medieval sites (c. 500-1500). The database currently gathers together more than 2000 human individuals, circa 500 animal samples and a small number of available plant data. Furthermore, IsoMedIta is furnished of archaeological, historical and biological meta-data rendering the isotopic database well-framed within the composite Italian Middle Ages.

IsoMedIta is part of the IsoMemo network which includes several independent collaborative isotopic databases. Moreover, a series of Bayesian modelling options are available through <https://isomemoapp.com/>. A meta-analysis of IsoMedIta data employing these modelling tools allows to explore subsistence practises in the Italian Middle Ages across spatial and temporal variables.

The medieval period in Italy marks an age of fragmentation amidst multiple political entities. Since the collapse of the western part of the Roman Empire, the Early Middle Ages presented a period of socio-economic crisis following invasions, wars, famines and power fragmentation that led to subsistence diversification. For example, an increase in C4 cereals (millet) consumption in Northern Italy in the late 6th century is observed. This finds no parallel in central and southern Italy. The existence of "two Italies" in the Late Middle Ages, contraposing the Norman Kingdom of Sicily and the Communes, still underlies a clear political, cultural and economic break.

Preliminary results from the meta-analysis of IsoMedIta data suggest that the existence of several political entities, multiple faiths, different cultures and varying environmental features across the peninsula likely affected local adaptations of crop and animal management strategies and potential dietary diversification.

## 8 CREATING DATA NETWORKS USING THE PANDORA PLATFORM

**Abstract author(s):** Fernandes, Ricardo (Max Planck Institute for the Science of Human History; University of Oxford; Masaryk University)

**Abstract format:** Oral

To better understand the historical trajectories followed by past societies it becomes necessary to gain access to large and diverse datasets informing on multiple aspects that characterize these and their environments. To achieve this a collective effort is necessary which, given the magnitude of the task, is incompatible with hierarchical models of data collection. In my contribution, I will present Pandora, the first data platform devoted to the study of the human past following a distributive data model based on an equity principle. This allows independent data communities to self-manage their data space and community membership, self-curate data, and to establish networks of datasets. A characteristic of this approach is its flexibility. Data communities may define own metadata standards while

simultaneously within Pandora it is possible to link diverse datasets to address historical research questions at various spatio-temporal scales.

The Pandora data platform (<https://pandora.earth/>) was developed using open-source technology and it interfaces with newly developed R apps offering additional options for data querying and modelling. It now includes over 40 data communities from diverse fields within historical and archaeological research (e.g. aDNA, isotopes, radiocarbon, archaeobotany, archaeozoology, physical anthropology, etc.). It also includes a first dataset network, IsoMemo which brings together datasets from independent data communities devoted to the collection of isotopic data.

In this contribution, I will describe the philosophy behind Pandora, its technological implementation, and exemplify its research potential through illustrative examples that include the application of machine learning in the study of historical causation.

---

## 374 THE ARCHAEOBOTANICAL PUZZLE: (DIS)INTEGRATING BOTANICAL PROXIES TO BETTER COMPREHEND PAST PLANT-PEOPLE INTERACTIONS

**Theme: 6. A Decade after the 'Third Science Revolution in Archaeology'**

**Organisers:** Esteban, Irene (ERAAUB, Universitat de Barcelona; Evolutionary Studies Institute, University of the Witwatersrand) - Albert, Rosa Maria (ERAAUB, University of Barcelona; ICREA) - Théry-Parisot, Isabelle (CEPAM, Université Côte d'Azur; Directrice de Recherche au CNRS) - Neumann, Frank (Geology, School for Geo- and Spatial Science, North West University)

**Format:** Regular session

The study of plant remains recovered from archaeological deposits provides information about past people's subsistence strategies, technology and behaviours, past environments and vegetation changes. However, this can only be achieved after overcoming important challenges that can impact the way past plant use and gathering strategies are examined and interpreted.

The first of these challenges relates to the origin of different botanical remains found in archaeological sites, which may be natural (in-situ growth; transport of plants or plant remains by animals, wind or water) or induced by humans (introduced by site inhabitants intentionally or accidentally). The second refers to their preservation after deposition, since various depositional environments and taphonomic processes might affect the various plant remains in different ways. The third is related to the information that can be obtained from these plant remains, which is closely related to their taxonomic and anatomical identification, and therefore intrinsic to each discipline. The fourth and last relates to the factors triggering plant gathering activities, which may be associated with human preferences and actions (opportunistic or targeted collection) or natural, thus depending upon availability and abundance in the surrounding environments, therefore influenced by climate changes.

The session aims to bring together researchers working in different archaeobotanical disciplines to discuss factors ruling plant taphonomy, peoples' uses of plants and palaeoenvironments. We specifically seek case studies that address the challenges of integrating the signatures obtained through a diversity of macro- and micro-botanical remains, as well as those that researchers must overcome when plant preservation is poor. We are also interested in contributions from studies that discuss the strengths and weaknesses of proxy data, and ways to overcome the latter to better contribute to the study of past societies and human behaviour. Contributions concerning different regions and chronologies are welcomed.

## 1 APPROACHING PREHISPANIC HERDING ACTIVITIES IN LA PALMA (CANARY ISLANDS) THROUGH COUPLED PALEOBOTANICAL AND BIOMOLECULAR PROXIES

**Abstract author(s):** Fernández-Palacios, Enrique - Castilla-Beltrán, Alvaro (UDI de Prehistoria, Arqueología e Historia Antigua, Departamento de Geografía e Historia, Facultad de Humanidades, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers - AMBI - Research Lab, Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna) - Jambrina-Enríquez, Margarita (Departamento de Biología Animal, Edafología y Geología, Facultad de Ciencias, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers - AMBI - Research Lab, Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna) - Rodríguez de Vera, Caterina (Archaeological Micromorphology and Biomarkers - AMBI - Research Lab, Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna) - Hernández, Cristo (UDI de Prehistoria, Arqueología e Historia Antigua, Departamento de Geografía e Historia, Facultad de Humanidades, Universidad de La Laguna) - Herrera-Herrera, Antonio (Archaeological Micromorphology and Biomarkers - AMBI - Research Lab, Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna; Departamento de Química, Facultad de Ciencias, Universidad de La Laguna) - de Nascimento, Lea (Island Ecology and Biogeography Group, Universidad de La Laguna) - Mallol, Carolina (UDI de Prehistoria, Arqueología e Historia Antigua, Departamento de Geografía e Historia, Facultad de Humanidades, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers - AMBI - Research Lab, Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna)

**Abstract format:** Oral

The indigenous populations of La Palma (Canary Islands) arrived on the island from Northwest Africa around the change of Era and their subsistence relied heavily on pastoralism. However, the procurement and use of plant resources in this insular environment, mostly concerning fodder and fuel, is still unclear. Here, we present results from an interdisciplinary study combining phytoliths and lipid biomarker analyses. Phytoliths constitute a major component of the identifiable microbotanical archaeological record, and are useful to identify past presence and use of specific plants; and n-alkanes, lipid molecular compounds derived from leaf epicuticular waxes, also provide taxonomic clues to plant and plant part sources. For this study, we obtained phytolith reference material from native and endemic Canarian flora, analysed phytoliths on sediment samples from the prehispanic archaeological site of Belmaco Cave, and coupled these data with previously obtained n-alkane data from the same sequence. Belmaco Cave is an indigenous rockshelter site, located in the southeastern part of La Palma, which displays an approximately 700-to-1100-year old fumier deposit. Sediment samples for botanical and biomolecular analyses were extracted from the 2.8 m-deep fumier sequence located at the central area of the cave. Our results shed light on plant use at the cave, the local endemic vegetation and the preservation potential of its phytolith and lipid molecular components.

## 2 THE CURIOUS CASE OF HORVAT KUR (GALILEE, ISRAEL): A CISTERN BENEATH AN ANCIENT SYNAGOGUE REVEALS A ROMAN-BYZANTINE LANDSCAPE

**Abstract author(s):** Neumann, Frank (Geology, School for Geo- and Spatial Science, North West University) - Rassalle, Tine (Department of Religious Studies, University of North Carolina at Chapel Hill) - Shvitiel, Yinon (Zefat Academic College, Israel Studies) - Muenger, Stefan (Universität Bern, Institut für Judaistik) - Belmaker, Miriam (The University of Tulsa, Department of Anthropology) - Bes, Philip (Österreichisches Archäologisches Institut – Österreichische Akademie der Wissenschaften, Vienna) - Zangenberg, Jürgen (Universiteit Leiden, Institute for History)

**Abstract format:** Oral

We present palynological results from a sealed Roman-Byzantine cistern in the village of Horvat Kur. The deposits produced pollen, spores, bones, charcoal, fungal, mollusc remains in large quantities and in excellent preservation due to reduced environmental conditions. This assemblage of organic findings offers a great potential for multi-proxy studies.

The chronology of the sediment deposits inside the cistern warrants further investigation. One sample, on a mollusc shell, points to 80-240 AD. The second sample on bulk sediments gives an older age, probably due to hardwater effect: 1105-920 BC. The latter date pre-dates the ceramics -so far 38 complete and restored ceramic vessels were excavated- from the same sediments.

The pollen content points to a Mediterranean open woodland with e.g. pollen of the mallow family (Malvaceae), daisy family (Asteraceae), carrot family (Apiaceae), rock rose (Cistus), pincushion flower (Scabiosa), chenopods (Amaranthaceae/Chenopodiaceae), lilies (Liliaceae), oak (Quercus), pine tree (Pinus), and carob tree (Ceratonia). Cultivars like olive tree (Olea), cereals and rare findings of flax (Linum) as well as weeds indicate agricultural activities.

The small vertebrate remains are dominated by frogs, toads and a large assemblage of *Crocidura* ssp. (White toothed shrews) and murids (*Mus* sp., *Apodemus* sp.). The absence of open grassland species such as voles (*Microtus guentheri*) and jirds (*Meriones tristrami*) support the reconstruction of the immediate vicinity of the cistern as a Medi-

terreanean woodland. While amphibia probably estivated in the cistern, small mammals might have been transported in after the cistern was disused probably until Late Byzantine or early Ummayyad times.

The multi-proxy data from Horvat Kur reveal 1. the functional change of the cistern from a regularly cleaned water reservoir to a waste deposit, 2. a whole landscape reflecting agriculture and animal husbandry, local living conditions and vegetation, as well as local fauna and can provide information on climatic changes.

### 3 **NORTHERN EUROPEAN AGRICULTURAL TERRACES: A MULTI-PROXY APPROACH TO BJØRNSKINN (NORWAY) TO UNDERSTAND ITS USES BY APPLYING GEOCHEMISTRY, PHYTOLITHS, AND POLLEN**

**Abstract author(s):** Alonso-Eguiluz, Mónica (Fundació Bosch i Gimpera) - Albert, Rosa María (ICREA; Equip de Recerca Arqueològica i Arqueomètrica de la Universitat de Barcelona) - Fallu, Daniel - Alsos, Inger (Tromso University Museum, UiT The Arctic University of Norway) - Høeg, Helge (University of Oslo) - Brown, Antony (Tromso University Museum, UiT The Arctic University of Norway)

**Abstract format:** Oral

Agricultural terraces are widespread around the world, with a chronology that ranges from Prehistory to modern times. The construction of terraces allows the preservation of soils and sediments reducing erosion, retaining nutrients, and soil organic carbon (SOC). All these improvements have a direct impact on food production, as they enhance the quality, quantity, and range of agricultural products, which has a direct effect on society at the subsistence level. Terraces can also provide a surplus which has implications for demography and contributes to the complexity of past societies. Stratigraphically, agricultural terraces are complex due to their variable construction and reworking due to maintenance and cultivation, inevitably resulting in the movement of sediments and datable materials. For this reason, the TerrACE project has designed a protocol that includes thin section micromorphology (TSM), portable x-ray fluorescence spectroscopy (pXRF), Fourier-transform infrared spectroscopy (FTIR), environmental scanning electron microscope (ESEM), portable optical stimulated luminescence (pOSL), carbon dating, and the analysis of biological microremains (pollen, phytoliths, ash pseudomorphs, and fecal spherulites), to better understand their formation, chronology and uses. This protocol is being applied to different agricultural terraces around Europe. As one of the main goals of the project is to better understand the development of farming practices, here we present the results obtained from the pollen, phytoliths, and geochemical (pXRF) analyses to shed new light on the agricultural practices carried out in one of the northernmost known agricultural terraces, Bjørnskin (Norway). Carbon dating and pOSL provisionally date the construction of and use of this terrace to the 17th-19th centuries. The results of the microremains analyses point out the presence of animals, through the occurrence of *Sordaria* spores, and also cereal pollen. Phytoliths identified in the sequence highlight the presence of C3 grasses, however crop morphotypes were scarce to absent.

### 4 **THE USAGE OF WOOD IN FUNERY CULTURE, THE EXAMPLE OF COFFINS FROM A CHURCH IN SZCZUCZYN (PODLASKIE VOIVODESHIP, POLAND)**

**Abstract author(s):** Michalik, Jakub (Institute of Archaeology, Nicolaus Copernicus University in Torun)

**Abstract format:** Oral

Archaeological research at the Church of the Name of the Blessed Lady Mary in Szczuczyn (Podlaskie Voivodeship, Poland) has been carried out since 2011. Originally, the main task of the work was to preserve three crypts under the church, as they had been systematically devastated and looted since the beginning of the 19th century, due to their easy access. This caused significant pollution that disturbed the local microclimate, which in turn began to destroy wooden coffins and the mummified bodies of people buried in them. Hence, the research conducted in Szczuczyn was largely of a rescue nature. For the next three seasons, until 2014, two crypts under the presbytery and one under the west nave were tidied up. The archaeological work in Szczuczyn so far has focused on classifying coffins based on their shape and, if possible, on determining the social status of the person buried in it. The compilation of archaeological, historical and xylogenetic analyzes makes it possible to trace whether the species and quality of the wood used for the construction of the coffin and coffin's joints may indicate differences in the burials of clergy, lay people and children. The wood used for the coffin's joints should be harder than the wood intended for boards. The comparison of the results of the taxonomic analysis of the wood used for the construction of both the coffin and its joints allows to observe whether the coffins were made in accordance with the art of carpentry. The presented results are a contribution to further research on the use of wood in the broadly understood modern funeral culture.

## 5 INTEGRATING CONTRASTING SIGNATURES OF ARCHAEOBOTANICAL PROXIES: THE CASE OF WATERFALL BLUFF, EASTERN CAPE PROVINCE, SOUTH AFRICA

**Abstract author(s):** Esteban, Irene (ERAAUB, Universidad de Barcelona; Evolutionary Studies Institute, University of the Witwatersrand) - Bamford, Marion (Evolutionary Studies Institute, University of the Witwatersrand) - Cawthra, Hayley (Geophysics and Remote Sensing Unit, Council for Geoscience Western Cape Office) - Fisher, Erich (ICARHEB, Universidade do Algarve) - House, Alisoun (Evolutionary Studies Institute, University of the Witwatersrand) - Miller, Charlotte (MARUM, University of Bremen) - Neumann, Frank (School for Geo- and Spatial Science, North West University) - Pargeter, Justin (Department of Anthropology, New York University) - Schefuss, Enno (MARUM, University of Bremen)

**Abstract format:** Oral

Waterfall Bluff, in Eastern Mpondoland (Eastern Cape Province, South Africa), is a recently excavated coastal archaeological site with deposits spanning Marine Isotope Stage 3 to the Middle Holocene. From an archaeobotanical point of view, the site stands out by the good preservation of botanical remains, such as preserved plant remains, charcoal, phytoliths and pollen, as well as of plant waxes. This unusual high variety of biotic and abiotic indicators preserved at Waterfall Bluff provided a unique opportunity to investigate the coupled response of coastal movements and climate change to palaeoenvironments and plant availability, and hunter-gatherer's use of plants in coastal Eastern Mpondoland from MIS 3 to the Early Holocene.

Here, we discuss this previously published data, but this time focusing on the approach used to integrate the contrasting signals obtained, both from an anthropogenic and environmental perspective. We centre our discussion on the taphonomical pathways that each of these proxies might have undergone to be introduced and preserved in the archaeological record. Special mention is made of the challenges we faced in using these proxies to reconstruct past uses of plants and plant foraging activities, and infer past environmental conditions.

## 6 IDENTIFYING RITUAL BEHAVIOUR WITHIN THE HUMAN-PLANT RELATIONSHIP. THE CASE OF CHALCOLITHIC SITE ISĂIIA, EASTERN ROMANIA

**Abstract author(s):** Brasoveanu, Casandra (Arheoinvest Centre, Institute of Interdisciplinary Research, Alexandru Ioan Cuza University of Iasi) - Danu, Mihaela (Faculty of Biology, Alexandru Ioan Cuza University of Iasi) - Tencariu, Felix-Adrian (Arheoinvest Centre, Institute of Interdisciplinary Research, Alexandru Ioan Cuza University of Iasi) - Vornicu, Diana Măriuca (Institute of Archaeology, Romanian Academy, Iasi Branch) - Asăndulesei, Andrei (Arheoinvest Centre, Institute of Interdisciplinary Research, Alexandru Ioan Cuza University of Iasi) - Delhon, Claire (CNRS, CEPAM, UMR 7264, Université Côte d'Azur)

**Abstract format:** Oral

During the last decades, the analysis of phytoliths has provided important insights to the research of historical periods, in general, and prehistoric ones, in particular. On the Romanian territory, the Chalcolithic period, although with a long history of research, still benefits of a relatively small number of studies dedicated to archaeobotanical analysis, which are absolutely necessary when talking about the human-plant relationship. These are all the more necessary given the specific beliefs of these communities, which are concentrated around the fertility cult.

Thus, we aim to present the archaeological context and palaeobotanical investigations of an important discovery, from Isăia-Balta Popii Chalcolithic settlement of Eastern Romania. The excavation of a dwelling in 2015 and 2017 brought to light a rather rare finding, meaning a medium sized ceramic vessel sitting on the floor near the western corner of the house, having deposited inside two objects of burnt clay: an anthropomorphic figurine depicting pregnancy attributes and a small cone. Given the special character of the deposition, several samples from the vessel and near it were collected for phytolith analysis; also, samples of bone found next to the vessel and from the nearby features were dated by AMS radiocarbon.

The palaeobotanical evidence based on phytolith analysis nuances and augments the ritual interpretation of the deposition. The plants which possible were in association with the small artefacts are cereals and mugwort; both, and especially the latter, are known, besides their practical uses, as powerful symbols, used through the ages in magic practices. All of these facts are strong arguments to interpret this find as a result of a ritual related to fertility (possible to counteract some physiological problems or reproductive disorders), involving both feminine and masculine symbols and use of plants.



## HOW TO SEE POLYETHYLENE GLYCOL IN REINFORCED WATERLOGGED ARCHAEOLOGICAL WOOD?

**Abstract author(s):** Grupa, Malgorzata (Nicolaus Copernicus University in Torun, Faculty of History, Institute of Archaeology) - Wypych, Aleksandra (Nicolaus Copernicus University in Torun, Centre of Modern Interdisciplinary Technologies) - Łukaszewicz, Jadwiga (Nicolaus Copernicus University in Torun, Faculty of History, Institute of Archaeology)

**Abstract format:** Oral

Underwater research carried out (since 1982) in Ostrów Lednicki (Wielkopolska province) delivered unique information concerning the construction of early mediaeval bridge crossings (eastern and western) and many other artifacts of material culture of the period. They included both flat and spherical objects (spoons, bearers, bowls, buckets, and many others). The excavated objects came from various depths of deposition - from 6 to 15 m down. Brief analysis of the items' surfaces indicated differences in their state of preservation, which was problematic for their restorers, because they were uncertain as to the final results of impregnation processes using polyethylene glycol 400 and 4000.

One of the most important research problems in the conservation of archaeological wood is to determine its internal texture before and after consolidation. So far, only phenomena occurring on the surface of the object have been described. The internal structure of the reinforced wood remains unrecognized. Therefore, for over 30 years, researchers have been looking for non-destructive analytical methods that would allow to visualize the internal structures of wood.

The main objective of the research in the presented work was to determine the distribution of consolidants in model wood samples, and in real archaeological objects. Two imaging techniques were used to analyze the internal structure of wet archaeological wood: 64-slices computed tomography and 3T magnetic resonance. MRI was more effective in assessing the internal features of the wood structure and visualizing elements that were invisible in traditional imaging methods. What's more, thanks to the use of several different test protocols, it was also possible to assess internal structures in terms of the maintenance carried out and the degree of penetration of polyglycol solution into the tested object.

## IMPACT OF THE SAMPLING STRATEGY ON THE REPRESENTATIVENESS OF PLANT ASSEMBLAGES AT THE EARLY NEOLITHIC SETTLEMENT OF BISKUPICE (S POLAND)

**Abstract author(s):** Moskal-del Hoyo, Magdalena - Kapcia, Magda - Wacnik, Agnieszka - Korczyńska, Marta (W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków) - Kenig, Robert (W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków; Institute of Archaeology, Jagiellonian University, Kraków) - Nowak, Marek (Institute of Archaeology, Jagiellonian University, Kraków)

**Abstract format:** Oral

The first Neolithic communities that appeared in southern Poland occupied regions exclusively limited to loess-mantled areas. They represented the Linear Pottery Culture of Danubian origin. Although this culture was responsible for introducing the agriculture, the archaeobotanical remains, representing plant-based economy, were not frequently studied. Therefore, there is still a relatively low number of representative macroscopic plant assemblages that may shed light on the earliest agrarian practices. Partly, this is due to the generally insufficient number of samples collected during excavation and a low density of plant charred remains recovered at Early Neolithic settlements located in so-called dry sites. In order to show the importance of sampling strategy for gaining a relatively high number of plant remains we will present the case-study site no. 18 of Biskupice situated in the Wieliczka Foothills, where remains of five so-called longhouses were discovered (within the framework of the project no. NCN 2018/30/E/HS3/00867). This site provided numerous samples from various archaeological features (e.g., typical so-called clay extraction pits, features with hearths at their bottoms, post-holes). The presentation will focus on the data obtained from all features associated to two fully excavated houses, which differ slightly in their chronology, although both represent the youngest Źeliezowce phase. Sampling in archaeobotanical research is a crucial factor, which has a significant impact on the knowledge about the use of plants in prehistory. This is especially relevant in the case of dry archaeological sites like Biskupice, in which only a small part of plants utilized by people are usually preserved as charred due to environmental conditions. Thanks to relatively deep archaeological features also some samples taken for palynological analysis contained pollen grains. The results of carpological, anthracological and palynological analyses will be discussed in the context of the type of archaeological features and their possible functions.

## A. UNLOCKING THE KING'S SPICE CABINET – PLANT REMAINS FROM A 15TH CENTURY ROYAL SHIPWRECK IN THE BALTIC SEA

**Abstract author(s):** Larsson, Mikael - Foley, Brendan (Department of Archaeology and Ancient History, Lund University)

**Abstract format:** Poster

Underwater archaeobotany has recently recovered plant material from the wreck of a warship called Gribshunden, the flagship of King Hans of Denmark and Norway that sank close to the southern edge of Sweden more than 500 years ago. The exceptional environmental conditions of the Baltic Sea have preserved plant foods stored on the ship, including cereals, oilseeds, fruits, vegetables, spices, nuts and berries. Among these are plants species from far distant origins: saffron, peppercorn, clove, ginger, almond and grape. Despite the status of exotic foods and spices among the aristocracy in Scandinavia and around the Baltic Sea during the Middle Ages (AD 1050-1550), few of these foods have survived archaeologically, and much of our knowledge of the use of such foods are reliant on written sources. Taking this into account, the preservation of these plant foods from Gribshunden constitutes a valuable discovery.

Exotic food items are probably some of the most easily identifiable indicators of social context. From historical sources, we know that King Hans and his courtiers, noblemen, and soldiers, were travelling on Gribshunden, together with a squadron of ships to attend a June 1495 political summit in Sweden. Many of them never arrived, as the king's flagship sank after a fire broke out en route. The plants remains recovered from the wreck offer not only the unique possibility to contextualize the social environment in which such luxurious foods were consumed, but to link these food commodities to a travelling medieval king and a historical event.

While these discoveries will add relevance to research on medieval ships and provide insights to the use of luxury foods in medieval society, it also illustrates the potential of plant remains in underwater environments connected to wreck sites.

## B. PLANTBITES – A DATABASE FOR PLANT RESOURCES IN EARLY HUMAN ENVIRONMENTS

**Abstract author(s):** Bruch, Angela (ROCEEH Research Centre, Senckenberg Research Institute, Frankfurt/M) - Papikyan, Astghik (A.L. Takhtajyan Institute of Botany, Armenian Academy of Sciences, Yerevan) - Hahn, Karen (Institute for Ecology, Evolution and Diversity, Goethe University, Frankfurt/M) - Altolaguirre, Yul - Haidle, Miriam (ROCEEH Research Centre, Senckenberg Research Institute, Frankfurt/M)

**Abstract format:** Poster

Studies on possible plant food and its availability for different groups of early humans so far usually consider only a pre-selected set of plant species often based on the scarce archaeobotanical record. In contrast, the database PlantBITES is a tool to consider the full range of potentially available, dominant plant species in vegetation units. It serves assessing the amount and variety of obtainable food (and other) resources for early humans. Data collected in PlantBITES comprise information mainly on edibility and other uses of plants that occur in natural environments as well as their relevant botanical traits. Based on such records it is possible to analyze and quantify plant resources and their seasonal availability for humans in a given environment.

The availability of plant resources is considered taking into account not only natural aspects but also the different levels of cultural capacities necessary for the utilization of plants – as it is usually not included in ethnobotany. Cultural capacities of different hominin groups regarding the exploitation of plant resources change considerably through time with respect to the use of tools and fire, and especially the capability to process and store plant materials. Therefore, the PlantBITES database facilitates the evaluation of the relevance and impact of climate or other environmental changes as well as of cultural developments on the resource availability for early humans through time.

PlantBITES provides a range of applications for exploring the resource space of early humans. This will be highlighted by examples of exploring the database to quantify the spatial and seasonal availability of plant food resources for early Homo in the South of the Iberian Peninsula, as well as the availability of plant food resources in relation to changing cultural performances of early Homo in Southern Africa.

---

## 375 THE SOCIETAL IMPACTS OF CLIMATE CHANGES IN THE PAST – WHAT CAN HUNTER-GATHERER ARCHAEOLOGY CONTRIBUTE TO THE CURRENT DEBATE? [PAM]

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Grimm, Sonja (CRC 1266 Scales of Transformation; ZBSA - Centre for Baltic and Scandinavian Archaeology) - Nyland, Astrid (Museum of Archaeology, University of Stavanger) - Riede, Felix (School of Culture and Society, Aarhus University) - Wygal, Brian (Environmental Studies and Sciences, Adelphi University)

**Format:** Session with presentation of 6 slides in 6 minutes

The realities of climate change are with us: rising sea levels, melting glaciers, droughts, desertification, deforestation, changing storm tracks, and extreme weather events. Calls for socio-economic changes are getting louder, yet im-

plementations remain slow. Palaeolithic and Mesolithic archaeology has often focused on responses to changing climatic and environmental conditions; discussing human adaptation is not new. But can an archaeological perspective and the study of hunter-gatherers bring new understanding and knowledge to the current debate?

Climate change was sometimes creeping, rapid at others, including systemic tipping points; adaptations similarly had to occur at different times. In analogy with foragers of the recent past and present, the people of the Pleistocene and Early Holocene were likely astute observers of their surroundings. Observations of short-term extreme phenomena such as tsunamis or volcanic eruptions, and of long-term developments such as sea-level rise were vital and transmitted across generations. Such knowledge is today referred to as Traditional Ecological Knowledge (TEK) and widely recognised as essential in climate change response. Yet, demonstrating the efficacy of such TEK under current climate remains elusive, raising the question of hunter-gatherers' limits to adapt.

In this session we ask:

- When did the people of the Palaeolithic and Mesolithic move from 'business as usual' to significantly changing their behaviours? How can these changes be identified archaeologically?
- Can we recognise the socio-economic responses to tipping points?
- How does TEK influence responses and their timing?
- Are there general patterns of responding to climate and environmental change?
- What methods and proxies – traditional and innovative – do we have for studying deep past coping strategies?
- And finally, is understanding Palaeolithic/Mesolithic adaptations relevant to the present?

We invite you to discuss these topics and questions through short talks or statements (6 slides in 6 minutes) to initiate what we hope may be fruitful discussions.

## ABSTRACTS

### 1 CONTINUITY AND CHANGE AT THE MESOLITHIC-NEOLITHIC TRANSITION ON THE NORWEGIAN WEST COAST: INSIGHTS GAINED FROM PREHISTORIC DEMOGRAPHY AND CULTURAL EVOLUTION.

**Abstract author(s):** Lundström, Victor - Bergsvik, Knut (University Museum, University of Bergen)

**Abstract format:** Oral

Some cultural traditions last for centuries or longer, some go out of fashion and disappear whereas others emerge rapidly, and sometimes seemingly, out of nowhere. Understanding why these patterns emerge and what their potential correlates may be is not only an important task for archaeologists in particular, but also for future challenges to society in general. Many of the above-mentioned patterns become particularly pronounced during the transition from the late Mesolithic (8500-6000 cal. BP) to the Early Neolithic (5950-5250 cal. BP) on the west coast of Norway. Although hunter-fisher-gatherer subsistence patterns persisted across the transition, old and long-standing modes of lithic blade production and axe production either continued or disappeared, whereas completely new technologies emerged. Furthermore, some lithic raw materials continued to be used, while others were introduced during the transition. These changes have, so far, only been described rather than explained. We wish to contribute to this session by conceptualising cultural change as the material expression of socially transmitted information between individuals which, in turn, also interfaces with larger macro-scale patterns in both palaeodemography and palaeoclimate.

### 2 RECONCILING LATE PLEISTOCENE ENVIRONMENTAL ARCHAEOLOGY IN ALASKA WITH THE FUTURE OF HUMANITY ON EARTH

**Abstract author(s):** Wygal, Brian (Adelphi University, New York)

**Abstract format:** Oral

Late Pleistocene archaeology in Alaska informs us how hunter-gatherers responded to abrupt changes in climate. Deep time studies into human environmental interactions are fundamental to informing policy development around our species' survival on planet Earth. Of particular interest, where in archaeology can we determine if or when a society responded to climate changes? Were there climate shifts so rapid that its effects were noticeable within a single lifetime? From central Alaska, there are enough dated archaeological components between 14,000 and 8,000 cal BP to broadly assess population numbers and categories of stone technology over time and from different ecological zones. Matching dated cultural components to climate proxy records has been a standard method of analysis for describing adaptations to environmental changes. And comparing site elevations and faunal assemblages can provide data at the seasonal level. But these hypotheses are difficult to prove and, in some cases, contradict one another. During the late Pleistocene in Alaska, it appears that colonizing populations fluctuated in size over the first two millennia after initial arrival into eastern Beringia followed by a spike during the initial onset of the Younger Dryas. A population bottleneck may have occurred in Alaska mid-way through the Younger Dryas. Are these studies accurate

or even relevant to our current climate conundrum? How did hunter gatherers survive difficult climatic transitions? Wisdom accumulated through generations are preserved among descendant Dene communities.

### 3 WEATHER-WATER-MESOLITHIC WORLDS

**Abstract author(s):** Nyland, Astrid (Museum of Archaeology, University of Stavanger)

**Abstract format:** Oral

In the 7th Millennium BC, the 8.2 ka climatic cold event arguably made the weather wetter and wilder, and the massive Storegga tsunami, 8200 years ago, battered the coasts of the North Sea basin and Norwegian Sea. Both may significantly have impacted the worlds of the marine oriented coastal dwellers. In archaeological literature, these events together are claimed to have caused demographic decline, even societal collapse. However, despite geological evidence of the tsunami itself, there are no direct trace of 'squashed Mesolithic people' (Wickham-Jones 2002), nor does the tsunami seem to have caused immediate massive material change. Should we still regard the events as significant thresholds in time, or as considerably influencing the coastal societies we seek to understand? Is there a paradox in the way mobile fisher-hunter-gatherers are (more often than not) portrayed as adaptive and flexible, but not when facing bad weather or crisis? In this paper, I suggest to utilize knowledge of the physical world, of stormy weather and waters, to learn how societies lived with natural hazards. But how do we do that if the material demonstrates continuity? I admit I have more questions than answers, but hope that to raise these questions, and suggest some alternative interpretative perspectives, we might explore more sides of the Mesolithic worlds.

Reference: Wickham-Jones, C. (2002). In Search of Squashed Mesolithic People. *Current Archaeology* 179.

### 4 CLIMATE CHANGE AND ENVIRONMENTAL RISK PERCEPTION ON PREHISTORIC COASTAL COMMUNITIES

**Abstract author(s):** Fernández-López de Pablo, Javier (I.U. I en Arqueología y Patrimonio Histórico - INAPH, University of Alicante)

**Abstract format:** Oral

Hunter-gatherer archaeology holds a privileged position to the current debate of societal impacts of climate change, as no other discipline provides the longest record of human-environmental interactions. However, identifying behavioral and cultural responses to climatic and environmental change remains a difficult task. The adoption of appropriate analytical scales, the acquisition and/or downscaling of palaeoenvironmental data of sufficient spatial and temporal resolution, and the need of multi-proxy archaeological evidence are fundamental components of modern archaeological research. Very often this scientific effort remains not fully understood by the general non-specialized public, social media, policy makers and stakeholders.

In this contribution to the session 'Societal Impacts of Climate Changes in the Past', I will discuss the applicability of 'environmental change risk perception' in the study of human-environmental interactions in prehistoric communities. Adopting an explicit human scale approach based on central place foraging, I will use recent ethnographic studies on traditional fisher communities to illustrate how local groups perceive environmental disruptions on coastal ecosystems and produce different kind of behavioral and societal responses to mitigate risk in timescales of just one generation. I will then show how this conceptual framework and analytical scale is well suited to interrogate the impacts of Postglacial sea level rise on Mesolithic communities through intergenerational timescales.

We believe human-scale approaches can foster fruitful discussions for the session and holds the potential of bridging gaps between science and society on the recognition of past, present and future impacts of climate change.

### 5 OUR HUNTER-GATHERER FUTURE? EVALUATING THE EFFICACY OF FORAGER-INSPIRED UNCIVILIZATION SCENARIOS FOR THE FUTURE OF HUMANITY UNDER CLIMATE CHANGE

**Abstract author(s):** Riede, Felix (Department of Archaeology and Heritage Studies Aarhus University)

**Abstract format:** Oral

In a recent paper, John Gowdy (2020) has presented the argument that future climate change will make agriculture impossible, lead to state collapse and a return to resilient hunter-gatherer lifestyles globally. Anthropogenic warming will seriously challenge agriculture and both increasing heat and the increasing frequency of extreme events will put global networks under pressure; system collapse may indeed follow, most likely at temporal horizons beyond 2100. To equate uncivilization (cf. <https://dark-mountain.net/about/manifesto/>) with a return to foraging, however, reproduces the tired trope of primitiveness and ecological noblesse said to be inherent in hunter-gatherer societies. In this short contribution, I seek to offer a more cross-culturally and archaeological informed evaluation of which aspects of a hunter-gatherer lifestyle may prove efficacious as we move into the warm and unstable future of the Anthropocene. The cultural distance between most contemporary humans and past hunter-gatherers is substantial making it unlikely that direct and specific insights about resilience can be derived. However, there are good reasons to see the hunter-gatherer lifestyle *sensu lato* as hyper-resilient, so the structural combination of risk management strategies with

a primacy on reciprocity and mobility does offer useful insights. And these insights can, I suggest, be made useful in the context of risk communication, story-lining and scenario-planning.

References:

- Gowdy, J., 2020. Our hunter-gatherer future: Climate change, agriculture and uncivilization. *Futures* 115, 102488. <https://doi.org/10.1016/j.futures.2019.102488>

6

## USING THE GRAVETTIAN-SOLUTREAN TRANSITION TO CREATE AWARENESS OF CURRENT CLIMATE CHANGE: THE EXAMPLE OF PORTELA 2 (PORTUGAL) PUBLIC ARCHAEOLOGY ACTIONS

**Abstract author(s):** Gameiro, Cristina (UNIARQ - Lisbon University) - Carvalho, Vânia (Leiria Museum) - Gomes, Telmo (Leiria SMAS) - José, Cátia (Leiria Museum) - Lucena, Armando (Independent researcher)

**Abstract format:** Oral

In early 2009, the opening of a ditch related to the Maceira (Leiria, Central Portugal) sanitation network led to the discovery of the Portela 2 archaeological site. The recovery of Vale Comprido points suggested a Proto-Solutrean occupation dating from the beginning of the Last Glacial Maximum (LGM). The fact that this is a transitional phase between the Gravettian and the Solutrean, poorly known in south-western Europe, prompted a new archaeological excavation, conducted in 2021 in the scope of the PALEORESCUE project. Several public archaeology actions were undertaken: guided visits to the excavation, open day during the weekend, advertised locally with the help of social media, and a conference held in the municipal museum.

Paleolithic archaeology is often seen as 'Stone & Bones'. Surprisingly, the local population showed an enormous curiosity about our work, felt very proud of their local heritage and made an effort to understand the twenty-thousand-year-old knapped stones.

We strongly believe that emphasizing a common History, the same type of lithic artefacts, and a social network during the beginning of LGM, joining people across different countries of south-western Europe, is a way of promoting equality and inclusion among these countries and of showing the existence of gathering, sharing and transmission of knowledge in the past. Being able to establish a correlation between technical innovation and the setting-up of long-distance networks and paleoclimate history (LGM) is relevant when dealing with climate change and a pandemic situation that broke human contact and interactions. Demonstrating that social contact can lead to innovation and that learning to adapt to environmental variability is part of human history can strengthen resilience today and contribute to increasing awareness of the need for urgent measures to fight climate change.

376

## ECONOMIC SYSTEMS IN THE NEOLITHIC AND BRONZE AGE: PATHWAYS OF PRODUCTION, CONSUMPTION, STORAGE, CONTROL AND EXCHANGE

**Theme:** 2. [Re]integration

**Organisers:** Schaefer-Di Maida, Stefanie - Brozio, Jan Piet - Filipović, Dragana (Institute of Pre- and Protohistoric Archaeology, CAU Kiel; CRC 1266) - Nordvall, Linn (Department of Historical Studies, University of Gothenburg) - Iversen, Rune (Saxo Institute, University of Copenhagen)

**Format:** Regular session

The Neolithic was marked both by the dominance of materials and food production and by the increased scale of storage and consumption. Steady increase has since been observed globally in the production and consumption of goods and materials, and in the distribution of resources, techniques, skills and ideas. This has enabled the establishment of networks which, in the Neolithic and Bronze Age, gave rise to important exchange and trade routes.

Residential and ritual elements of the built environment – huts, houses, megaliths, barrows – entailed not only high production and consumption of raw materials but also many hours of labour and logistics expenses. Similar economic investments and cooperation structures were also required, for example, for the extraction and production of tradable goods (both raw materials and finished products). Storage pit-complexes of the Neolithic and Bronze Age serve as evidence of food production and surplus, offering insights into their management. Finds of hoards, weights and ingots are crucial for the reconstructions of networks and exchange systems, while they can also be taken as evidence of the complex politics of storage and control of goods and resources. The latter were key to sustaining large-scale economic investments and labour.

With this session we would like to bring together Neolithic and Bronze Age studies that discuss and problematize the complex interplay between production, storage, control and exchange of resources and the significance of economy on the Longue durée. We welcome contributions from all over the world and from, but do not limit them to, archaeology (including subdisciplines), environmental science and geosciences, in the form of case studies, comparative studies or theoretical approaches.

## 1 SCALES OF ECONOMIC SYSTEMS – NEOLITHIC SOCIOECONOMIC STRATEGIES FROM THE CENTRAL EUROPEAN PLAIN

**Abstract author(s):** Brozio, Jan Piet (Institute of Pre- and Protohistoric Archaeology CAU Kiel)

**Abstract format:** Oral

In the agricultural communities of the Neolithic of the Central European Plain we find phases of different economic intensities and characteristics. Improvements in production methods, selective use of crops and domestic animals, and the generation of a surplus led to demographic growth, the construction of monumental structures and the agglomeration of people.

In addition to production at the household level, groups were involved to varying intensities in regional and supra-regional exchange networks. This is also reflected in the import of metal objects and early metallurgical knowledge, which, based on the origin of the raw materials, points to long-distance trade relations.

The socioeconomy of the Neolithic can therefore be described on different spatial scales. Besides small-scale economic action at the micro level of households, economically conditioned actions at the level of meso-regions can be reconstructed, as well as macro-scale integration into exchange networks. These different scales of action and their interaction are in the focus of this talk.

## 2 SUBSISTENCE AND EXPANSION IN LATE NEOLITHIC SOUTHERN SCANDINAVIA

**Abstract author(s):** Johannsen, Jens (Aarhus University; ROMU)

**Abstract format:** Oral

The Late Neolithic period in Southern Scandinavia (2350-1700 BC) is marked by several shifts. Where settlements from the preceding period are few, small and dispersed, hundreds of Late Neolithic settlements have been excavated throughout Southern Scandinavia. These are often large and were sometimes inhabited for centuries indicating a heavy increase of sedentism. The period is also characterised by the transition from regional cultural diversity to overall cultural homogeneity and by the emergence of the first stable Neolithic societies in some of the outskirts of Southern Scandinavia. Thereby the Late Neolithic represent a third Neolithic expansion after the introduction of the Funnel Beaker Culture around 4000 BC, and secondly the Corded Ware Culture around 2800 BC. The background for all these changes shall likely be sought in Bell Beaker influence, but the fuel for the expansion were improvements in the subsistence economy and the thereby derived population increase, while the motor may have been continuous migrations into hitherto unoccupied land, possibly as a reaction against attempts of power centralisation.

## 3 A WEB OF WEALTH MEASURES – QUANTIFYING WEALTH AND INEQUALITY IN 3RD MILLENNIUM BCE CENTRAL EUROPE

**Abstract author(s):** Nørtoft, Mikkel (Saxo Institute, University of Copenhagen) - Rohrlach, Adam (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology)

**Abstract format:** Oral

Following the mostly male-driven migrations of people from the Pontic steppe in the 3rd millennium BCE, the genetic landscape of most Europe was forever changed, and individualized burials became the dominant form of interment. As it has been suggested that this major migration made societies more patriarchal, it is of importance to quantify this phenomenon, both before and after the steppe migrations, and to incorporate both aspects of production, and trade of raw materials, into consistent measures.

Here we introduce QuantWealth, a multi-variable approach for modeling prehistoric grave wealth and wealth inequality, which we apply to a number of case studies from Central Europe, and compare the results. Our approach combines grave wealth measures such as grave good manufacturing hours (incorporating their respective chaîne opératoires), skill, scarcity, prestige, imported raw material distance, grave good category count, and estimated meat expenditure from deposited animal bones. However, we also include critically important grave architecture measures such as grave depth, as well as mound and cist labour-hours. These wealth measures can be used to model wealth and wealth inequality in different ways, including via Gini indices of inequality (and combined Gini indices from different grave measures), but can also be used as more holistic grave wealth measures correlated with demographic aspects such as age, genetic sex and archaeological gender determination, mobility, diet, pathologies, and genetics.

QuantWealth, and its growing collections of grave, house size, and raw material GIS data, is open source, flexible, and semi-automated, making results comparable between regions, periods and grave contexts, allowing researchers to obtain a deeper understanding of the development of social organization across time and space in Europe. The system is currently focused on Middle-Late Neolithic to Early Bronze Age periods, but its open format allows expanding it to other periods as well.

- 4 VALUE, SIGNIFICANCE AND USE OF 'EXOTIC' MATERIALS – IN VIEW OF THE PRESENCE OF OBSIDIAN ON NEOLITHIC SITES IN POLAND**
- Abstract author(s):** Werra, Dagmara H. (Institute of Archaeology and Ethnology, Polish Academy of Sciences, Warsaw) - Szeliga, Marcin (Institute of Archaeology, Maria Curie-Skłodowska University in Lublin) - Pyżewicz, Katarzyna (Faculty of Archaeology, University of Warsaw)

**Abstract format:** Oral

The 'exotic' (non-local) raw materials are marked as special by humans cross-culturally, and we imagine that Neolithic communities may have made analogous distinctions. There are no natural outcrops of obsidian in Poland, so all of the artefacts and nodules recovered from archaeological sites must have been conveyed there by some means (exchange, direct access, mobility, etc.) at different times in the past.

In Poland, we have obsidian recovered from more than several dozen Neolithic sites. The occurrence of obsidian at any one site could have represented different prehistoric communities activities. This could be a redistribution effect, and the redistribution centre could be the site with the highest presence of these artefacts. Whereas it is conceivable that a stray find could represent a non-systematic message such as a personal keepsake and/or gift.

During the presentation, we would like to discuss what economic systems can be observed in the conveyance of obsidian. To investigate the importance of "exotic" items (obsidian) for the economy of Neolithic communities. It will be conducted taking into consideration the forms in which obsidian reached the territory of present-day Poland in the Neolithic. In order to see changes in its use through time. Furthermore, to challenge the hypothesis of "special" use of "imported" raw materials. Those investigations support the results of the obsidian use-wear analysis.

The conveyance and use of obsidian in the Neolithic will be presented as an example to reconstruct the transaction, distribution, and importance of "exotic" items in the economy of prehistoric communities.

Acknowledgements: The research is carried out thanks to funding from the National Science Centre, Poland (grant No 2018/29/B/HS3/01540).

- 5 RAW MATERIALS PROCUREMENT AND TECHNOLOGY OF MACROLITHIC TOOLS FROM THE NEOLITHIC AND COPPER AGE IN THE INNER AND SOUTH IBERIA**
- Abstract author(s):** Martínez-Sevilla, Francisco - Barroso Bermejo, Rosa - Bueno Ramírez, Primitiva (University of Alcalá) - Rojas Rodríguez-Malo, Juan (Independent Researcher) - Cárdenas Párraga, Juan (Independent Researcher) - Lozano Rodríguez, José (Instituto Español de Oceanografía. Centro Oceanográfico de Canarias)

**Abstract format:** Oral

Macrolithic tools are among the most abundant archaeological materials at late prehistoric sites. These tools were used in many activities of daily life, from food processing to making and maintenance of other objects. Among them, grinding tools were used for cereal processing and the production of flour, making them important since cereals were one of the main food sources for farming societies. It has been assumed, based on their lithologies, that sources of these essential objects for domestic activities are geological contexts located close to the settlements. However, the archaeological evidence suggests that the

picture is much more complex and varied. Furthermore, the technological processes and tool maintenance have rarely been studied. In this communication, we present a study of raw materials, their geological source and the technological processes involved with macrolithic tools from four archaeological sites in the inner and south parts of the Iberian Peninsula. The chronology of these sites spans from the Early Neolithic to the Copper Age. The evidence on the variety of rocks and the places where they were acquired to make macrolithic tools is diverse and complex, showing similar patterns to other broadly studied artifacts such as knapping tools.

- 6 NEOLITHIC AND EARLY BRONZE AGE SETTLEMENT IN SOUTH MORAVIA IN A DIACHRONIC PERSPECTIVE**
- Abstract author(s):** Novotný, Jaroslav - Hons, David - Denis, Solène (Masaryk University) - Čerevková, Alžběta (Moravian Museum)

**Abstract format:** Oral

Our paper is focused on the research of Neolithic and Early Bronze Age settlement of South and South-Western Moravia. Our goal is dedicated to the recognition of socioeconomical interactions in archaic societies. Models based on theoretical study will be tested by the analysis of lithic chipped industry. Krumlovský les, located in the center of our studied area, is a geomorphological unit from which the chert of the same name originates. This chert was distributed over a wide area in Prehistory. During the Neolithic and Early Bronze Age, a network of settlements, hillforts and round enclosures was created around the Krumlovský les area. Using a diachronic perspective, we want to find out: a) how social and economic ties were developing in time, b) how the power of individuals or groups manifested itself and c) how social institutions were formed. The combination of diachronic and synchronous perspective could be appropriate for better understanding the development of socio-political and economic relationships.

## 7 THE CONNECTIVITY OF LAND AND SEA. INTERACTION OF LOCAL COMMUNITIES FOR THE EXCHANGE OF GOODS IN THE EARLY BRONZE AGE

**Abstract author(s): Nordvall, Linn (Göteborgs universitet)**

**Abstract format: Oral**

Interpretations of interaction in the Bronze Age has been drawing on the mobility of prestige goods and other commodities, as well as changes in architecture, movement of people, and transfer of technological know-how. Interaction between local communities and the underlying organization needed for participating in long distance exchange as regards to maritime transport, surplus production, resource utilization and labor on a micro-level are still to be discussed. Political and economic relations between inland and coast bound settlements, topographical landscape features, rivers and lakes providing landing places for seaborne transport and distribution of goods further inland are important for understanding the interaction between local communities as being part of broader networks of exchange. Single depositions and hoards, grave goods, settlements, and architecture as well as maritime conditions and resource utilization are analyzed in a coast bound micro-region in the province of Halland, Western Sweden, in the present case study where the concept of Maritory is explored.

## 8 SOCIAL ORGANIZATION AND PRODUCTION IN THE BRONZE AGE IN TRANSYLVANIA

**Abstract author(s): Wittenberger, Mihai (National History Museum of Transylvania)**

**Abstract format: Oral**

In this presentation, I try to remake some aspects of the organisation of the production of metal artifacts, starting from the extraction until the finished product. Unlike other prehistoric activities, metallurgy required social, political, military and religious support. While in the Early and Middle Bronze Age we have relatively few pieces made of bronze and these are generally famous pieces, in the Late Bronze Age things has changed. Bronze is becoming more popular! The company's communal involvement in the metallurgical process has been highlighted over time by several specialists. New studies have recently appeared about the social component of metallurgy. I am referring in particular to the community's ability at the time to organize the production of metal starting with the mining phase until the finished product. When I talk about the organization of society, I think about all the components: economic, political, military and spiritual ones. The Bronze Age craftsmen were people with a special status in their communities, not only because of their ability to turn "stone" into metal, but also because they were able to turn metal into finished products. For this reason, I believe that the research of metallurgical settlements provides special information on the craftsmen in the Bronze Age. Certainly, a large part of the bronze products was made for exchange purposes. Either as a ingot, raw or as a finished product. Trading, both over short distances, but especially over long distances, has led to the social cooperation between different communities, the exchange of ideas and cultural elements.

## 9 SILO PITS AND STORAGE VESSELS: WAYS OF STOCKPILING IN THE YOUNGER AND LATE NEOLITHIC OF THE GERMAN LOWER MOUNTAIN RANGE

**Abstract author(s): Hoffmann, Robert (Institut fuer Ur- und Fruehgeschichte Kiel; CRC 1266, CAU Kiel)**

**Abstract format: Oral**

The primary goal of subsistence economies is the extraction and/or production of sufficient food for its own consumption (Bartl 2004). One strategy to ensure adequate food supply in times of, e.g. environmentally-caused, food shortages is to build up stocks. The focus of this paper is on pit structures and ceramic finds connected to storage as an indicator of economic transformations in the region of the German Lower Mountain Range during the transition of the Younger to the Late Neolithic in the 4th millennium BCE. The results contribute to a better understanding of the shift from the Michelsberg to the Wartberg culture.

Analyses of settlement and burial structures have shown that there is a notable change in the idea of collective during the Younger and Late Neolithic and one aim of this project is to find out if these changes had an impact on subsistence strategies or vice versa. To explore this, metric dimensions of selected pits and ceramic vessels from settlement sites will be used to determine the form and capacity of these storage containers, as the degree of stockpiling in a settlement might indicate a change, or even a continuity, in agricultural strategies.

## 10 THE ORIGIN OF SURPLUS ECONOMY. UNDERGROUND SUPRA-HOUSEHOLD STORAGE DURING THE LATE NEOLITHIC AND EARLY BRONZE AGE IN NE IBERIA

**Abstract author(s): Prats, Georgina - Moya, Andreu (Grup d'Investigació Prehistòrica, Departament d'Història, Universitat de Lleida) - Antolín, Ferran (Natural Sciences Department, German Archaeological Institute) - Alonso, Natàlia (Grup d'Investigació Prehistòrica, Departament d'Història, Universitat de Lleida)**

**Abstract format: Oral**

Storage capacity analysis of silo pits can be used as an indicator of productivity and, often, of the existence and development of social inequality. The interpretation of capacity values must be done in close connection to archae-



obotanical research (in order to understand what was being produced and how) and, in general, archaeological research of a given region. This communication wants to put the focus on underground storage features that are clearly beyond the average capacity values in the NE of the Iberian Peninsula, a region with a large dataset of silo pit features generated by the team.

The boundary in the domestic unit between a usual surplus and extraordinary surplus is blurred, particularly in the initial stages of the Neolithic, when most structures tend to be of small size. Storage features exceeding what is considered domestic production first appeared at the end of the Neolithic and the beginning of the Bronze Age. How can one interpret supra-household storage capacity in this period? Which are the sites where this sort of storage is detected? Who is managing the production? How can it be integrated in the context of the origin of social inequalities? Although it is impossible to rule out that these features represent the outset of modest speculative and commercial actions, they could have a cooperative finality. The extraordinary silos could evidence specific needs in episodes of social coalescence or indicate collective use of the structures by the community's inhabitants. They could also reflect the beginning of social inequality. These different scenarios will be discussed in the light of the information available at a site level.

## 11 BETWEEN THE DOMESTIC AND THE COLLECTIVE: A COMPARATIVE STUDY OF TWO BRONZE AGE STORAGE METHODS AT CABEZO REDONDO (VILLENNA, SPAIN)

**Abstract author(s):** Martín de la Sierra Pareja, Paula - García Atiénzar, Gabriel - Barciela González, Virginia (University of Alicante)

**Abstract format:** Oral

The Bronze Age site Cabezo Redondo (Villena, Spain) represents one of the earliest known models with defined and structured urban planning based on houses, quarters, and streets. In addition, other areas related to specialised craft activities and food storage have been documented. In this study, we will analyse two different storage systems both inside domestic spaces -House XXXII- and in specialised areas -open space-.

House XXXII corresponds to a household unit that contained large ceramic vessels for storage, one of them even embedded in a bench as part of the room's furniture. The size and capacity of some of the vessels suggests that the stored grain was possibly intended for the subsistence of the members of a domestic unit. This activity shares space with other daily tasks such as working with raw materials, cooking, and eating. This diversity of activities in the same space has also been documented in other houses in the settlement, although not with the same level of preservation.

In an area located on the periphery of the residential zone, a small building used exclusively for storage was documented. Inside, abundant ceramic vessels and sacks of esparto grass were documented, as well as a large quantity of charred seeds. The location of this room in an open space associated with other specialised activities (metallurgy, ivory work, etc.) could indicate its collective and redistributive nature.

In short, we will try to define the two food storage systems by studying the documented vessels (typology, number, capacity, etc.). Our main objective is to analyse the social and economic implications derived from the possible coexistence of different storage systems in the same settlement.

## 12 UNDERSTANDING DIET, POPULATION, AND LABOR THROUGH STORAGE IN BRONZE AGE WESTERN ANATOLIA

**Abstract author(s):** Shin, Nami (Koç University; Eberhard Karls Universität Tübingen)

**Abstract format:** Oral

To date, the archaeobotanical record from western Anatolia is represented by a very small number of sites, with only a few from the Bronze Age. The analysis of plant remains from Late Bronze Age Kaymakçı, a citadel site, provides new insights into the agricultural patterns and practices of this understudied region. The citadel's size, location, and close proximity to several contemporary citadels demonstrates its importance and points to its potential participation in larger networks of interaction.

Kaymakçı houses dozens of circular features within its walls, with the majority of these potential storage structures located in the more heavily fortified inner citadel.

Preliminary calculation of the volumes of the circular features provides initial understanding of how much plant food could have been stored in the citadel. Archaeobotanical analyses at Kaymakçı thus far have revealed that barley (*Hordeum vulgare*), free-threshing wheat (*Triticum aestivum/durum*), bitter vetch (*Vicia ervilia*), chickpea (*Cicer arietinum*), and grape (*Vitis vinifera*) are the major crops at the site. The combined assessment of plant-food storage capacities and archaeobotanical analysis evidence helps to reconstruct ancient diets and nutrition as well as the potential sustainable population of Kaymakçı. Calculating crop storage capacity not only allows population size reconstruction, but can also indicate the amount of labor necessary to produce enough plant food to fill up the site's circular storage features. By understanding the relationship between storage capacity, population, and labor needs,

we are able to begin answering the question of whether Kaymakçı could have served as a central storage place for the other smaller citadels surrounding the lake basin.

### 13 SUBSISTENCE STRATEGIES AND SOCIAL COMPLEXITY IN THE BRONZE AGE LESSER POLAND

**Abstract author(s):** Korczynska, Marta (W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków) - Lityńska-Zając, Maria (Institute of Archaeology and Ethnology, Polish Academy of Sciences, Kraków) - Moskal-del Hoyo, Magdalena (W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków)

**Abstract format:** Oral

Obviously, food is essential to survive and as an economic capital it can be converted into a symbolic one, augmenting prestige, authority and status. The other way round, prestige and status can also be converted into economic capital thanks to advantages in access to resources and networking they provide. Subsistence and food production are crucial elements of societal activity, with the balance of costs and yields determining the range of possible economic strategies allowing a community to avoid crisis. Changing a strategy permit a community to adapt to changes in ecological or/and cultural (social or ideological) environment. In the Middle/Late Bronze Age southern Lesser Poland we can notice the implementation of new land-use strategies (e.g. increase in the popularity of broomcorn millet) and food storage techniques. These new elements appear parallel with the demographic growth and stabilisation of settlement structures, which become evident from the turn of the Late Bronze Age onwards. In our presentation we use the available archaeological and archaeobotanical record to investigate food supply strategies among Bronze Age communities of Lesser Poland. Furthermore, we ask whether the food supply strategies introduced during that period reflect increased levels of cooperation, and did they eventually triggered social inequality. In order to do so, we analyse these strategies and the scale of social differentiation in the Late Bronze Age against models proposed for Early Neolithic, traditionally viewed as egalitarian, and those used to describe more complex Eneolithic societies.

### 14 BRONZE AGE ANIMAL HUSBANDRY IN SZÁZHALOMBATTA-FÖLDVÁR AND THE BENTA VALLEY

**Abstract author(s):** Bergerbrant, Sophie (Department of Historical Studies, Gothenburg University) - Giblin, Julia (Department of Sociology and Anthropology, Quinnipiac University) - Vicze, Magdolna (Hungarian National Museum) - Gál, Erika - Kiss, Viktória - Kulcsár, Gabriella (Institute of Archaeology, Research Centre for the Humanities, ELRN) - Kovács, Gabriella (Hungarian National Museum, Hungary)

**Abstract format:** Oral

The relationship between communities who lived on tell settlements and those that lived in the surrounding landscape during the Neolithic and Bronze Age have long been debated within archaeology. Is it one of dominance or equivalence? This paper will explore the relationship between the tell inhabitants at Százhalombatta-Földvár and its neighbours in the Benta Valley by weaving together traces of animal husbandry practises during the Hungarian Middle Bronze Age. Drawing from evidence of land-use, the composition of faunal remains, patterns of secondary products use, and strontium isotope data from animal teeth, we will reconstruct how domesticated animals were managed across these varying types of settlements. We will then evaluate whether subsistence practices were similar both on and off the tell, or whether there is evidence for centralized control and exchange by the inhabitants of Százhalombatta-Földvár. The strontium isotope data will also be used to identify whether animals were traded from regions outside of the Benta Valley.

### A. MILK IT FOR ALL IT'S WORTH: DAIRY CONSUMPTION AND DIACHRONIC DIETARY PATTERNS OF NEOLITHIC TO BRONZE AGE COMMUNITIES (SOUTHERN PORTUGAL)

**Abstract author(s):** Leite, Adriana (Interdisciplinary Center for Archaeology and Evolution of Human Behaviour) - Costa, Cláudia (Interdisciplinary Center for Archaeology and Evolution of Human Behaviour - ICArEHB, University of Algarve) - Maurer, Anne France (HERCULES Laboratory, University of Évora) - Zdráhal, Zbyněk (Central European Institute of Technology, Masaryk University, Brno) - Chocholová, Eva (Department of Experimental Biology, Faculty of Science, Masaryk University, Brno) - Gillis, Rosalind (Referats Naturwissenschaften an der Zentrale des Deutschen, Deutsches Archäologisches Institut, Berlin, Deutschland; Interdisciplinary Center for Archaeology and Evolution of Human Behaviour - ICArEHB, University of Algarve) - Godinho, Ricardo Miguel (Interdisciplinary Center for Archaeology and Evolution of Human Behaviour - ICArEHB, University of Algarve)

**Abstract format:** Poster

Milk is a rich nutritional food source and, nowadays, considered as a product of global major importance. Adoption of animal milk represents one of the major transitions in human diet that, consequently, brought profound changes to diet. The role of dairy production and consumption in prehistoric communities is a key topic that is still in the centre of a long-standing debate in Archaeology. To date, the role of dairy products within the diet of these communities remains unclear, with only a few published studies proving direct dairy consumption. In Iberia, this period was characterized by the introduction of farming in the beginning of the Neolithic, followed by a growing complexity of the communities during the Chalcolithic and Bronze Age. Within this geographical region, Southern Portugal emerges

as an excellent study case to further comprehend recent prehistoric communities and dairy subsistence practices. Zooarchaeological studies in this region suggest increased presence of dairy animals (and probably increased dairy consumption) in the Chalcolithic – Bronze Age, but direct evidence for such hypothetical increases in consumption is lacking. New insights based on multi-disciplinary studies are crucial to perform a complete and comprehensive assessment towards understanding consumption and long-term evolution of milk and dairy products. This project will apply a novel approach of Neolithic to Bronze Age populations from the Lower Guadiana Basin (Southern Portugal) to clarify this debate. Through an integrated investigation in bioarchaeology combined with cutting-edge methodologies (proteomic analysis of ancient human dental calculus and stable isotope analysis), the project will investigate the role of foodstuffs, more specifically milk and dairy products, within prehistoric societies and its impact on health and nutrition. This will enable an enhanced understanding of dairy consumption patterns, strategies and differential access to food (sex, age-at-death, geographical location, and chronology).

## **B. EVALUATING ANIMAL REMAINS FOR RECONSTRUCTIONS OF PALAEOECONOMY AND PALAEOENVIRONMENT IN BRONZE AGE SETTLEMENTS (WIETENBERG CULTURE) IN THE MUREŞ VALLEY (ROMANIA)**

**Abstract author(s):** Malaxa, Daniel (Alexandru Ioan Cuza University of Iasi; Iasi Institute of Archaeology) - Marc, Antoniu (Museum of Dacian and Roman Civilisation, Deva) - Stanc, Simina (Alexandru Ioan Cuza University of Iasi) - Benjenaru, Luminita (Alexandru Ioan Cuza University of Iasi; Romanian Academy – Iaşi Branch, “Olga Necrasov” Center of Anthropological Research)

**Abstract format:** Poster

The archaeological Wietenberg culture is a local one, attributed to the Middle Bronze Age, and dated to about 1900-1450/1400 BCE.

The present study, based on the faunal remains recovered from sites located on the Mureş Valley in Hunedoara County, Romania (i.e., Şoimuş-Telegi, Şoimuş-Lângă sat, and Uroi-Sighet), evaluates the animal resources in terms of palaeoeconomy (i.e., animal husbandry, hunting, fishing and mollusk gathering) and palaeoenvironment.

The studied material belongs to the phases II (1900-1700/1650 BCE) and III (1700/1650-1450/1400 BCE) of the Wietenberg culture (noted W II, and W III). Animal husbandry was the main activity that supplied animal protein, with domestic mammals being predominant in all the studied assemblages. The identified domestic species are *Bos taurus*, *Ovis aries*, *Capra hircus*, *Sus domesticus*, *Equus caballus*, *Equus asinus*, and *Canis familiaris*. The list of hunted wild mammals includes *Cervus elaphus*, *Sus scrofa*, *Capreolus capreolus*, *Bos primigenius*, *Canis lupus*, *Castor fiber*, *Lepus europaeus*, *Lynx lynx*, *Meles meles*, *Vulpes vulpes*, and *Ursus arctos*.

As additional food procurement activities, the studied Wietenberg communities also practiced wild bird hunting in the W II and W III of Şoimuş-Telegi, mollusk gathering at all of the analysed settlements, and fishing in the W II of Şoimuş-Telegi and W III of Uroi-Sighet.

The paleoenvironment was composed predominately of forested areas, with the rich hydrological network of the Mureş River, and also with forest edges and open spaces, especially near the Şoimuş-Telegi and Uroi-Sighet settlements.

---

## **378 MOVING BEYOND THE FACT OF MOBILITY? RE-EVALUATING THE STRENGTHS AND LIMITATIONS OF STRONTIUM ISOTOPE ANALYSES IN ARCHAEOLOGY**

**Theme:** 6. A Decade after the ‘Third Science Revolution in Archaeology’

**Organisers:** Snoeck, Christophe (Brussels Bioarchaeology Lab - BB-LAB, Vrije Universiteit Brussel - VUB) - Britton, Kate (Department of Archaeology, School of Geosciences, University of Aberdeen)

**Format:** Regular session

Strontium isotope ( $^{87}\text{Sr}/^{86}\text{Sr}$ ) analysis is now widely used in archaeology to investigate the movements of past humans and animals. In recent years, significant methodological advances have been made, e.g., in sampling approaches (e.g., laser ablation); the establishing of baseline spatial datasets (isoscapes); and in assessing diagenesis. However, the abundance of data available also highlights potential new limitations and caveats: a need is emerging not only for continued experimental and methodological innovation, but also for further cross-disciplinarity and critical consideration of the archaeology of human and animal movements. This session aims to bring together scholars focused on the methodological refinement of strontium isotope analyses with those interested in applying these approaches to study past movements, as well as archaeologists interested in the archaeology of movement more broadly or from a theoretical standpoint. Some questions this session will aim to answer through presentations and in depth discussions are:

1. When can we use Sr isotopes and what are the sampling requirements?
2. How important are baselines and how best can we use them in analysing our data?

3. What is 'local' and how do we determine this for past sites and populations?
4. How can we discriminate between mobility, landscape use and migration?
5. How can we best combine Sr data with other types of evidence?
6. Can we use Sr data to reconstruct individual life histories, and how?
7. What are the limitations of Sr isotope analyses?
8. How can we better understand physiological and dietary impacts on tissue Sr?
9. How should we approach 'origins' in isotope archaeology?
10. How can we manage the potential politicization of our data?

We encourage presentations that will foster the discussion on the use of Sr in archaeological studies, bring novel issues to light, and help answer some of the abovementioned questions.

## ABSTRACTS

### 1 STRONTIUM ISOTOPE ANALYSIS IN A GEOLOGICALLY VARIABLE LANDSCAPE: IRON AGE LANDSCAPE USE AND MOBILITY IN THE SOUTHERN UPPER RHINE VALLEY

**Abstract author(s):** Knipper, Corina (Curt Engelhorn Center Archaeometry gGmbH, Mannheim) - Bräuning, Andrea (Regierungspräsidium Stuttgart, Landesamt für Denkmalpflege) - Kilian, Imma (Independent Researcher) - Plouin, Suzanne (Université de Strasbourg, UMR 7044) - Roth-Zehner, Muriel (Archéologie Alsace, Sélestat; Université de Strasbourg, UMR 7044) - Stephan, Elisabeth (Regierungspräsidium Stuttgart, Landesamt für Denkmalpflege)

**Abstract format:** Oral

The southern Upper Rhine valley of Eastern France, Southwest Germany and Northern Switzerland is a fertile landscape, which was settled throughout pre and early history. A recent research project focused on the burials and settlements of the Hallstatt and early La Latène period along both sides of the Rhine River in Alsace and in the Breisgau area. Embedded in an interdisciplinary approach, isotope analysis of strontium, oxygen, carbon and nitrogen of human and animal remains aimed at exploring diet, mobility and landscape use of the Iron Age population. The geological properties of the area cause considerable variation in the isotopic composition of the biologically available strontium. Loess and riverine sediments prevail in the plain, the Vosges and the Black Forest consist of granites and gneisses, and the Kaiserstuhl hills have a core of Tertiary volcanic rocks. These circumstances are advantageous to explore ancient patterns of landscape use and the spatial organization of animal husbandry. However, at the same time, they challenge the identification of human and animal individuals that are non-local to specific sites and the research area in general. Using examples from Iron Age burial mounds and settlements from both sides of the Rhine River, the paper contributes to a differentiated evaluation of possibilities and limitations of Sr isotope analysis in a geologically variable landscape.

### 2 HOW TO CONSTRUCT A RELEVANT BASELINE OF BIOAVAILABLE $87\text{Sr}/86\text{Sr}$ ? TESTING DIFFERENT APPROACHES TO CONSTRAIN MOBILITY IN BRONZE AGE GREECE

**Abstract author(s):** Frank, Anja (National Museum of Denmark; University of Hamburg) - Ioanna, Moutafi (University of Cambridge; American School of Classical Studies at Athens) - Herrmann, Nicholas (Texas State University) - Anna, Lagia (University of Freiburg) - Frei, Robert (University of Copenhagen) - Kristiansen, Kristian (University of Gothenburg; GLOBE Institute) - Frei, Karin (National Museum of Denmark)

**Abstract format:** Oral

Sr isotopes have provided us with unprecedented insights into past human mobility, but their interpretation can drastically change based on the applied reference baseline of bioavailable  $87\text{Sr}/86\text{Sr}$ . At present, no consensus exists on the methods and materials applied to establish these baselines. A recent multi-proxy baseline of Greece has shown that despite a heterogeneous geological background the bioavailable Sr isotopic range is rather narrow. This complicates the identification of ancient mobility within Greece, as overlapping baseline ranges from different regions can mask the presence of mobility. Here, we present a large Sr isotope dataset of ancient human remains from Greece, consisting of 260 Bronze Age individuals from ten archaeological sites, and test the results within regional and site-specific  $87\text{Sr}/86\text{Sr}$  baselines. The regional baselines constrain bioavailable  $87\text{Sr}/86\text{Sr}$  based on 1) the municipality and 2) surface lithology of the sites, while the site-specific baselines were defined using human  $87\text{Sr}/86\text{Sr}$  values of 1) the entire population and 2) children of the sites. The investigated individuals are characterised by a narrow range in  $87\text{Sr}/86\text{Sr}$  (0.70822-0.7105), resulting in significant overlap and similar average human  $87\text{Sr}/86\text{Sr}$  values for all sites. While the municipal baselines identify only two non-local individuals at two sites, the surface lithological baselines flag six individuals from three different sites as non-local. At five sites, a total of seven non-locals were identified using the  $87\text{Sr}/86\text{Sr}$  values of their population, of which only three were grouped as non-local by the surface lithological baselines. Finally, the  $87\text{Sr}/86\text{Sr}$  values of the children identify potential mobility at every site with sufficient individuals,

suggesting a more transient population. The different number of non-locals identified by the different baseline approaches reveal the limitations of Sr isotopes in regards to identifying mobility in regions characterised by isotopically narrow ranges, emphasising the need for caution when interpreting Sr data.

### 3 **87SR/86SR AT COASTAL SITES – WHAT WE LEARN FROM MODERN ENVIRONMENTAL SAMPLES, GREENHOUSE STUDIES, AND PREHISTORIC INDIVIDUALS OF KNOWN RESIDENCE**

**Abstract author(s):** Göhring, Andrea (Ludwig Maximilian University, Faculty of Biology, Department of Biology I, Anthropology and Human Genomics) - Jungklaus, Bettina (Anthropologie-BüroJungklaus) - Hölzl, Stefan (RiesKraterMuseum Nördlingen)

**Abstract format:** Oral

At coastal sites strontium isotope ratios of terrestrial individuals are influenced by the local sea spray aerosols. Isotope analyses of modern environmental samples (plants, soil, water) at the Baltic coast illustrate the marine impact on the  $87\text{Sr}/86\text{Sr}$  ratios of the terrestrial environment (sea spray effect). Regional and seasonal differences in the strontium isotope ratios of the collected samples show differences in the local as well as the seasonal magnitude of the sea spray effect. This is also of importance for baseline maps of strontium isotope ratios.

Moreover, an artificial sea spray applied to greenhouse plants demonstrates that the  $87\text{Sr}/86\text{Sr}$  ratios of plants are clearly shifted towards the isotopic signature of spray water. This experiment allows to quantify the local sea spray effect on the isotopic signature of environmental samples.

The impact of the sea spray effect can additionally be visualized by the investigation of prehistoric individuals of known identity and known residence, namely some of the dukes and duchesses of Schleswig-Holstein-Gottorf (16th/17th century), buried in the Schleswig Cathedral in Northern Germany. By investigating the individuals' diet based on an isotopic mixing model, a marine impact on strontium isotope ratios caused by sea spray can be clearly distinguished from a shift due to a marine-based diet. Based on these results, sites with higher or lower sea spray impact can be identified.

### 4 **PROGRESS AND PITFALLS IN THE QUEST FOR FINDING THE TRUE NON-LOCALS. LESSONS FROM THE NORTH EUROPEAN PLAIN**

**Abstract author(s):** Pospieszny, Lukasz (Bristol Isotope Group, University of Bristol; Institute of Archaeology and Ethnology, Polish Academy of Sciences) - Lewis, Jamie (Bristol Isotope Group, University of Bristol)

**Abstract format:** Oral

In our paper, we will discuss the potential and limitations of using the strontium isotope ( $87\text{Sr}/86\text{Sr}$ ) in human mobility studies in the context of examples from the lowlands of East-Central Europe. Here the ranges of bioavailable  $87\text{Sr}/86\text{Sr}$  are largely determined by the postglacial origins of most of the surface sediments. Theoretically, this also allows the detection of long-distance migrants from two main directions, in the north and south. The first is Scandinavia, built mostly of older rocks of the Fennoscandian Shield that are the source of highly radiogenic strontium. The second is a strip of highlands covered with loess, stretching along the southern mountain ranges, mainly the Carpathians. Recent studies show that although strontium isotope values are higher in the South than previously assumed, they are still clearly less radiogenic than in the northern lowlands. In practice, tracking travellers from beyond the plains, is extremely difficult. The growing amount of data revealed a high variability of strontium isotope ratios in the postglacial landscapes. As a consequence, it has become clear that non-local strontium isotope values observed in humans may reflect both long-distance travels and migrations, and more local mobility ruled by specific residence patterns.

We will address the challenges of using strontium isotopes to answer archaeological questions, basing on our own research and re-analysis of published data. These will include tackling the problem of establishing local baseline values, selection and processing of environmental samples, and statistical and spatial analysis of the obtained data. We will also give examples of using other isotope systems to increase the efficiency and accuracy of detecting non-local individuals and determining their places of origin. Finally, we will look at the possibilities of integrating strontium and other isotopic data with archaeological evidence, and the role of archaeological theory in creating narratives about human mobility and migrations.

### 5 **SR VS TRIPLE (S-SR-O) ISOSCAPES: WHAT IMPACT ON GEOGRAPHICAL AND HISTORICAL ASSIGNMENTS OF MEDIEVAL INDIVIDUALS?**

**Abstract author(s):** Jaouen, Klervia (GET/OMP/CNRS) - Méjean, Pauline (Géosciences Environnement Toulouse) - Marcigny, Cyril - Carpentier, Vincent (INRAP) - Colleter, Rozenn (Simon Fraser University; INRAP) - Bataille, Clément (University of Ottawa)

**Abstract format:** Oral

The use of Sr isotope ratios as a tracer of past human mobility has been greatly enhanced by the development of isoscapes. However, for medieval populations that sometimes traveled thousands of miles in the context of wars

and raids, it is not possible to accurately determine the geographic origin of single individuals due to overlapping Sr isotope ratios of various regions with similar geologies. We recently developed a sulfur isoscape which we combined with pre-existing oxygen and strontium ones. We were thus able to define very precise probabilistic geographical assignments. In this paper, we take the example of two medieval French archaeological sites, one associated with the French-Breton war (1491) and the other with Viking raids (Rennes and Alizay-Igoville, respectively) and produced maps of probable geographical origin for individuals suspected of being soldiers in the first case, and either locals or Vikings in the second one. Our aim is to present how our conclusions would change using the Sr isoscape alone, compared to the story we were able to tell using the triple S-Sr-O isoscape.

## 6 LEAD ISOTOPES OF PERSONAL OBJECTS AND STRONTIUM ISOTOPES OF HUMAN REMAINS – USEFUL COMBINATION IN MULTI-ISOTOPE PROVENANCING

**Abstract author(s):** Danielisova, Alzbeta - Bursák, Daniel (Institute of Archaeology of the CAS, Prague)

**Abstract format:** Oral

In prehistory, for which only a few contemporary sources exist, diachronic perspective to societal phenomena, like mobility, can be approached through limited evidence only. The common approach is aimed mostly at the identification of “foreigners” through stylistic analysis of their material culture. However, the La Tène culture (4th – 1st century BC), which is our period of interest, is known for its high level of interconnectedness that resulted in shared artistic and stylistic techniques across the large areas.

Nowadays, the standard way to detect movement is through strontium isotope analysis. The isotopic data on mobility can indicate changes of residence, although evidence of long-distance movement is problematic as same manifestations of mobility reflected in the data can represent different socio-economic, cultural or demographic models. Analysis of skeletal material from La Tène cemeteries across Europe shows that bio-archaeometric evidence alone makes no case for large-scale migrations labelled as the great “Celtic expansion”: a phenomenon between the 5th to 2nd century BC, that is supposed to affect large territories of Europe by repeated waves of migrants. Seemingly thus, the usual image of ‘Celtic migrations’ as conveyed in historical sources does not seem to be supported by isotopic analysis.

It is amid such fragmentary evidence that provenancing involving geochemical analysis of personal objects, in addition to traditional mobility isotopes (Sr, O, Pb) of human remains, may be useful in addressing questions of mobility by detecting various origins for what seem to be typologically identical everyday objects.

In this presentation, we would like will demonstrate our methodological approaches by examples and the individual case studies from this period in Central Europe.

## 7 RECONSTRUCTING LIFE HISTORIES USING SERIAL CARBON, OXYGEN, AND STRONTIUM ISOTOPE VARIATION IN HUMAN DENTAL ENAMEL

**Abstract author(s):** Griffith, Jacob - James, Hannah - Veselka, Barbara - Cheung, Christina - Snoeck, Christophe (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Maritime Cultures Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel)

**Abstract format:** Oral

The application of strontium (Sr) isotopic analysis to bulk human dental enamel is an established technique used to assess mobility. However, conventional Sr bulk analysis provides only a single averaged datapoint, which hinder our ability to investigate mobility patterns at high resolution. In recent years, researchers have attempted to tackle this issue by constructing incremental sampling milling protocols, which enable the tracking of Sr isotopic variations over an individual's early life. Whilst these hand-milling methodologies significantly increase our interpretations of residency biographies, they are currently limited in the number of increments one can remove, in comparison to their application on faunal specimens and in-situ analysis. As such, there is a requirement to continue adapting these techniques, increasing the number of viable increments sampled, to improve the resolution of mobility life-histories observable in human teeth.

This study presents an expanded incremental technique for human tooth enamel, revealing variations in strontium isotopes ( $87\text{Sr}/86\text{Sr}$ ) and elemental concentrations, in combination with carbon ( $\delta^{13}\text{C}$ ), oxygen ( $\delta^{18}\text{O}$ ) isotopic values, to be observed at a high-resolution during the tooth enamel formation period. This technique uses thin sections of enamel to guide the milling of incremental samples. Preliminary results from a collection of recently excavated human teeth reveals a promising indication that enamel increments can be successfully sampled along a human tooth enamel growth axis. However, the growth pattern of human tooth enamel, and the volume of powdered enamel required for analysis, limits the number of increments that can be milled in a resolvable time series. As such, this presentation will discuss the potential as well as the limitations of this technique, providing a plan of how to we will increase the resolution of the methodology in future research.

## 8 COMBINING STRONTIUM AND SULPHUR ISOTOPIC ANALYSIS WITH ISOSCAPE MODELLING TO BETTER UNDERSTAND FAUNAL MOBILITY AND SPATIALITY

**Abstract author(s):** Barakat, Sarah (Department of Archaeology, University of Aberdeen) - Jimenez, Elodie-Laure (Department of Archaeology, University of Aberdeen; Department of Direction Earth and History of Life, Royal Belgian Institute of Natural Sciences, Brussels) - Le Corre, Mael (Department of Archaeology, University of Aberdeen) - Grimes, Vaughan (Department of Archaeology; Department of Earth Sciences, Memorial University, St. John's) - Discamps, Emmanuel (TRACES, French National Centre for Scientific Research, University of Toulouse Jean Jaurès) - Britton, Kate (Department of Archaeology, University of Aberdeen)

**Abstract format:** Oral

Strontium isotopic analysis ( $87\text{Sr}/86\text{Sr}$ ) has dominated human mobility studies since the mid-1980s. While strontium allows researchers to identify movement between different lithologies, it can prove ineffective in regions with homogenous or overly heterogenous lithology. Additionally, the multi-isotope systems can often prove more effective in determinations of origin (e.g.,  $87\text{Sr}/86\text{Sr}$  with  $\delta^{18}\text{O}$ ).

Sulphur isotopic analysis ( $\delta^{34}\text{S}$ ) is proving increasingly useful in archaeological case studies due to an ever-improving understanding of sulphur isotope variability within ecosystems, recent innovations in mass spectrometry, and its potential to infer aspects of both diet and movement histories in the past. Sulphur isotopic variation across landscapes is correlated with lithology and is strongly influenced by the coastline and the sea spray effect allowing researchers the potential to identify mobility through variations in geology but (perhaps more so) also with changes in distance from the coastline. When combined with strontium isotope analysis, sulphur isotopes have the potential to allow exploration of individual movement histories and to infer species-specific spatial behaviours.

This project aims to explore the potentials in multi-isotopic analysis and isoscapes to reconstruct Late Pleistocene herbivore spatial ecology. Focusing on combining strontium with sulphur isotopic analysis, this project is being approached in three phases: 1) the development and refining of a sulphur isoscape for the Dordogne, France; 2) application of sulphur isotope analyses to faunal remains (bone and dentine) from Middle and Upper Palaeolithic study sites in the Dordogne and 3) the integration of sulphur isotope data with laser ablation strontium isotope data from the same fauna. Furthermore, this project will also focus on best methods to establish a sulphur isoscape and how to meaningfully interpret sulphur results when combined with strontium.

## 9 IS THREE A CROWD? APPLICATIONS OF MULTI-ISOTOPE ANALYSIS OF TOOTH ENAMEL TO RECONSTRUCT SUB-ANNUAL MOBILITY PATTERNS IN PLEISTOCENE HOMININ PREY-SPECIES

**Abstract author(s):** Heddell-Stevens, Phoebe (Max Planck Institute for the Science of Human History; Friedrich-Schiller-Universität) - Roberts, Patrick (Max Planck Institute for the Science of Human History; University of Queensland)

**Abstract format:** Oral

It is increasingly acknowledged that comparison of hominin adaptive behaviours and capacities necessitates detailed, multi-scalar analysis of the local environments they inhabited. Stable isotope analysis has long played a key role in providing direct evidence of hominin prey-species ecology, most prominently via stable carbon and nitrogen analysis of bone collagen in relation to individual diet and habitat preference. More recently, stable oxygen isotope analysis and strontium isotope analysis ( $87\text{Sr}/86\text{Sr}$ ) of tooth enamel have been increasingly used to explore mobility, range and migration patterns of hominin prey. As researchers begin to move beyond 'local' and 'non-local' interpretations, a number of studies have demonstrated the potential of strontium isotope analysis to reconstruct individual mobility at higher resolution on a sub annual scale, providing key data on prey species' movement on the scale of human activity. Unfortunately, the use of stable oxygen isotope analysis and strontium analysis is often hindered by a lack of local isoscapes, the complexities of underlying geological or hydrological variation, and a lack of past references. When used in tandem, however, combination of isotopic proxies can refine interpretations. Here we present a multi-isotope case study of archaeofaunal material for two prey-species, horse and reindeer, from two Palaeolithic sites in Central Germany. We applied stable carbon and oxygen isotope analysis, as well as strontium isotope analysis, of serially sampled tooth enamel. We demonstrate the advantages of combining strontium isotope analysis with other isotopic proxies when reconstructing Pleistocene prey species ecology and discuss how the information generated can contribute to broader interpretations of Palaeolithic hominin subsistence adaptations.

## PREY MOBILITY DURING THE LAST GLACIAL MAXIMUM IN EASTERN CENTRAL EUROPE

**Abstract author(s):** Lengyel, György (University of Miskolc, Miskolc, Hungary; The Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków) - Anczkiewicz, Robert (Institute of Geological Sciences, Polish Academy of Sciences, Kraków) - Kowalik, Nina (The Institute of Systematics and Evolution of Animals Polish Academy of Sciences, Kraków) - Szegedi, Kristóf (Hungarian National Museum, Budapest) - Wilczyński, Jarosław (The Institute of Systematics and Evolution of Animals Polish Academy of Sciences, Kraków)

**Abstract format:** Oral

Marine Isotope Stage (MIS) 2 was the coldest period of the Upper Pleistocene between 26.5 and 20.0 ka cal BP, the Last Glacial Maximum (LGM). This climatic condition greatly limited the geographic distribution of human settlements and herbivorous large mammal faunal elements in Eastern Central Europe (ECE). Recent archaeological studies implied MIS2 human population withdrew the northern area of ECE (south Poland) from the foraging area and occupied the southern areas, the Carpathian Basin, Moravia, and Lower Austria. Therefore, humans ceased visiting northern ECE. A reason to restrict northbound mobility could have been the absence of a sufficient amount of prey (reindeer and wild horse) in the north, thus we supposed that the foraging area of reindeers and wild horses was also restricted to the south of ECE. To test whether these species limited the area of their habitat and changed behaviour in the LGM, we performed  $87\text{Sr}/86\text{Sr}$  isotope analyses on reindeer ( $n = 14$ ) and horse ( $n = 8$ ) molars from the faunal assemblages of archaeological sites of Poland, Hungary, Slovakia, Czechia, and Austria. We applied laser ablation to sample the enamel. Having compared to the current geological and bioavailable  $87\text{Sr}/86\text{Sr}$  isotope ratios of ECE, we expected to find matches with the archaeological samples. The results, however, were not straightforwardly supporting the theory, and thus we aim to present the difficulties we faced during the accomplishment of this research.

## RECONSTRUCTING RANGIFER PALAEO-MIGRATIONS: USE OF COMPUTATIONAL MODELLING TO LINK INTRA-TOOTH STRONTIUM ISOTOPE PROFILES TO BIOAVAILABLE STRONTIUM ISOSCAPES

**Abstract author(s):** Le Corre, Mael (Department of Archaeology, University of Aberdeen) - Grimes, Vaughan (Department of Archaeology, Memorial University of Newfoundland, St. John's) - Wright, Joshua (Department of Archaeology, University of Aberdeen) - Côté, Steeve (Caribou Ungava, Département de Biologie, Université Laval, Québec) - Britton, Kate (Department of Archaeology, University of Aberdeen)

**Abstract format:** Oral

Hunting strategies and landscape use of past human groups were likely shaped by the seasonal mobility of prey taxa, such as reindeer. It is therefore crucial to reconstruct the movement palaeoecology of these species to understand past human behaviour. Recent developments in isotope techniques offer the tools to study past mobility. Strontium ( $87\text{Sr}/86\text{Sr}$ ) isotope can be used to assess the geographic origin of archaeological and palaeontological remains. By targeting tissues that develop incrementally such as tooth enamel,  $87\text{Sr}/86\text{Sr}$  analyses can be used to determine migratory behaviour and to assess potential seasonal ranges. However, to identify possible migratory pathways, new approaches linking intra-tooth  $87\text{Sr}/86\text{Sr}$  profiles to  $87\text{Sr}/86\text{Sr}$  isoscapes are needed. We developed an isotope-based model, the PleistoHERD model, to assess the distribution and the seasonal movements of Rangifer from their intra-tooth  $87\text{Sr}/86\text{Sr}$  isotope data using modern caribou data from the Western Arctic herd (Alaska, USA) and the Rivière-aux-Feuilles herd (Québec, Canada). High resolution  $87\text{Sr}/86\text{Sr}$  sampling profiles of the 2nd and 3rd molars of the individuals were obtained by laser ablation multi-collector inductively coupled plasma mass spectrometry (LA-MC-ICP-MS). Variations in the  $87\text{Sr}/86\text{Sr}$  isotope profiles of most of the individuals reflected their migratory behaviour during their first 18th month of life. We performed a Bayesian spatial assignment of the endmembers of the profiles to identify potential seasonal ranges and we generated a distribution map time-series for each caribou, using their intra-tooth profile. Caribou movements were then modelled throughout the distribution map time-series accounting for topography and hydrography. As a case study, we applied the model to archaeological reindeer data from France, contrasting seasonal movements of resident and migratory individuals. The interdisciplinary approach we developed, combining isotope analysis, isotope mapping and animal movement modelling, will allow us to better understand the movement ecology of past ungulates and, consequently, how past humans used their landscape.

## RECONCEPTUALIZING THE "EXOTIC SPECIES" THROUGH STABLE ISOTOPE ANALYSIS; THE INSIGHT FROM THE WARI EMPIRE'S ZOOARCHAEOLOGY

**Abstract author(s):** Tomczyk, Weronika (Stanford University) - Ebert, Claire (University of Pittsburgh)

**Abstract format:** Oral

Regardless of the epoch or context, Andean zooarchaeological assemblages are dominated by the remains of large endemic mammals such as camelids and deer, which were valued for their multipurpose use. Species that are less frequently encountered often fall under the umbrella term of "exotic" animals. This category includes non-edible (e.g., Andean condors) and non-local animals (e.g., Amazonian parrots and monkeys). Using a multi-isotopic approach that combines carbon, nitrogen, oxygen, and strontium stable isotopes, we reconstruct the osteobiographies of "exotic" species recovered from Castillo de Huarmey, the only known Pacific coast center of the Wari Empire.



Combined with standard zooarchaeological data, our results shed light on multispecies mobility and document the extent of Wari control over various Andean landscapes. Simultaneously, we aim to reconceptualize the term "exotic species" itself. The modern distinctions between local and non-local fauna might not be identical in the past and likely varied among social groups. People acculturate the meaning of animal species, and we argue that modern scientists construct their own. Such constructs should be acknowledged when differentiating between rare zooarchaeological finds and rare species, as these distinctions influence not only archaeological interpretations but also contemporary conservation policies.

### 13 ACCEPTING THE CHALLENGE: STRONTIUM ISOTOPES ON THE BALEARIC ISLANDS (SPAIN)

**Abstract author(s):** Valenzuela-Suau, Lua (ArqueoUIB Research Group. University of the Balearic Islands; SERP Research Group. University of Barcelona) - Valenzuela-Lamas, Sílvia (CSIC-Institució Milà i Fontanals) - Pena, Leopoldo (GRC Geociències Marines. University of Barcelona) - Díaz-Zorita Bonilla, Marta (Institut für Ur- und Frühgeschichte und Archäologie des Mittelalters. University of Tübingen) - Ramis Bernad, Damià (Independent researcher)

**Abstract format:** Oral

Strontium isotopes ( $^{87}\text{Sr}/^{86}\text{Sr}$ ) have been broadly used in Archaeology to discriminate local and non-local humans and animals. In an archipelago context like the Balearic Islands, the application of these analyses enables us to assess how people and animals moved between islands as well as the arrival of new populations. However, there are a number of challenges to consider, most especially when none or limited studies have previously been done on that geographical area surrounded by water.

This paper will present our most recent work on animal and human mobility in the Balearic Islands during the Recent Prehistory, presenting both the main challenges and the strontium isotopic results. To achieve this goal, animal and human samples from more than 10 Bronze Age-Iron Age archaeological sites located on Mallorca, Menorca and Formentera are included, which provides the first and most comprehensive overview for both animal and human mobility for this archipelago so far.

### 14 FACING CHALLENGES: MOBILITY STUDY THROUGH $^{87}\text{SR}/^{86}\text{SR}$ AND $\delta^{18}\text{O}$ IN HUMAN DENTAL REMAINS BETWEEN THE CHALCOLITHIC AND IRON AGE IN BEJA(PORTUGAL)

**Abstract author(s):** Melo, Linda (CIAS) - Bonilla, Marta (Institut für Ur- und Frühgeschichte und Archäologie des Mittelalters, Tübingen Universität) - Soares, António (Centro de Ciências e Tecnologias Nucleares - C2TN, Instituto Superior Técnico, Universidade de Lisboa) - Silva, Ana (Laboratory of Prehistory. Research Center in Anthropology and Health - CIAS, Department of Life Sciences, University of Coimbra)

**Abstract format:** Oral

During the last years strontium isotope analysis has been widely used in studies of archaeology as a way to investigate the movements of the past populations, animals and objects. However, the application of this method has some issues and limitations that we are facing and that we would like to discuss.

The study that we carried out is based on an interdisciplinary methodological approach combining anthropological, archaeological and biochemical data from the Chalcolithic to the Early Iron Age in Portugal. We applied strontium and oxygen ( $^{87}\text{Sr}/^{86}\text{Sr}$ ,  $\delta^{18}\text{O}$ ) isotope analyses. The sample is composed by dental enamel of 65 human and 3 faunal remains. Our purpose is trying to understand whether changes could be observed through time and if we can detect any exogenous individuals in the communities.

Furthermore, we also consider interesting to address other questions such as: evidences of disease and signs of physiological stress, signs of inequalities between community members or social distinctions (age, sex, gender or status) during 2500 years in Beja region (southern Portugal).

### 15 STRENGTHS AND WEAKNESSES OF STRONTIUM ISOTOPES ANALYSIS ON THE EXAMPLE OF RESEARCH ON MEDIEVAL COMMUNITIES OF MAZOVIA AND PODLACHIA, POLAND

**Abstract author(s):** Blaszczyk, Dariusz (University of Warsaw)

**Abstract format:** Oral

In the last decades strontium isotope analyses have become a wide applied method of tracing movement of humans and animals in archaeology beside traditional archaeological methods used so far like object attribution. As every method, stable isotope analysis has its strengths and weaknesses.

In my speech, I would like to present and discuss the experience gained from the use of strontium stable isotope analysis to investigate provenancing and mobility of medieval communities living in Poland (Mazovia and Podlachia regions), burying their dead in graves with stone structures. Cemeteries with stone settings have been the subject of interest for researchers and amateurs for over a hundred years. One of the main questions concerns the origin of people buried in this type of cemeteries. Were they the local Slavic individuals or newcomers from other areas, e.g. from Scandinavia or Rus', who brought a specific funeral rite with them. So far, attempts have been made to answer

this question using traditional archaeological methods, such as ethnic attribution of graves constructions and objects, which provided contradictory results. As part of the research project Populus Masoviae Medii Aevi, it was decided to use the method of stable strontium isotopes analysis to answer this question. Samples were taken from human and animal bone remains unearthed during earlier excavations and stored in museum resources. The conducted research has provided the largest database of isotope signatures collected so far for the Polish lands. They allowed us to answer some research questions, but also created some methodological and interpretation problems.

## 16 **CONSIDERING CULTURAL DIETARY PRACTICES FOR INTERPRETING STRONTIUM ISOTOPES: THE PROBLEM OF NIXTAMALIZATION IN ANCIENT AND MODERN MEXICO**

**Abstract author(s):** Buckley, Gina - Renson, Virginie (University of Missouri Research Reactor)

**Abstract format:** Oral

For the past 20 years, strontium isotope analysis of human skeletal remains has drastically changed and improved the way archaeologists understand and interpret mobility and migration in Mexico, home to the great ancient cultures of the Maya, Aztecs, and Teotihuacan, among many others. However, widespread cultural practices that influence diet have not been meaningfully considered until recently. Nixtamalization is a process that was frequently used in the production of tortillas in ancient times and continues to be used in domestic and commercial settings today. This method adds an alkali solution of lime or wood ash to maize (corn) to enhance the nutritional value of this staple dish in Mexico. However, limestone is not easily assessable in key parts of this country, particularly in the Trans-Mexican Volcanic Belt that runs across the central-southern region and encompasses modern-day Mexico City, the Aztec Empire, and the ancient city of Teotihuacan. Additionally, wood ash can also affect bioavailable Sr-isotope signatures when used from a non-local source. Two case studies from Teotihuacan and the Soconusco region of Mexico are presented that demonstrate the potential effect of the nixtamalization process on strontium isotope measurements of human tissue. New and recent data from the site of Teotihuacan highlights the importance of a multi-isotope approach for this region, and further research into the feasibility of using lead isotopes in Mexican migration studies is also discussed.

## 17 **BEYOND MOBILITY: STRONTIUM, BARIUM AND CALCIUM RATIOS IN TOOTH ENAMEL AS SUPPLEMENTARY PALAEODIETARY INDICATORS**

**Abstract author(s):** Blanz, Magdalena (Archaeology Institute, University of the Highlands and Islands; Vienna Institute for Archaeological Science - VIAS, University of Vienna; Human Evolution and Archaeological Sciences - HEAS, University of Vienna) - Stewart, Samuel (Environmental Research Institute, University of the Highlands and Islands; Université Paris-Saclay) - Mainland, Ingrid (Archaeology Institute, University of the Highlands and Islands) - Ascough, Philippa (NEIF Radiocarbon Laboratory, Scottish Universities Environmental Research Centre) - Raab, Andrea - Feldmann, Jörg (Institute for Chemistry, TESLA - Analytical Chemistry, University of Graz) - Taggart, Mark (Environmental Research Institute, University of the Highlands and Islands)

**Abstract format:** Oral

In strontium isotope ratio studies, strontium concentrations are routinely determined prior to the determination of the strontium stable isotope ratios themselves. During this initial step, concentrations of additional trace elements can easily be determined at little to no additional cost. Concentrations of barium in particular may be helpful to provide additional dietary information, provided the sampled enamel is sufficiently well-preserved.

This presentation provides a brief overview on the history and use of Ba, Sr and Ca concentrations and ratios as palaeodietary indicators, starting with initially inflated expectations, and followed by disillusionment in the face of diagenetic problems. Nevertheless, concentration ratios of Sr to Ba in tooth enamel may provide additional information on past diets: Using both present-day reference material and archaeological tooth enamel samples from the Orkney islands, this presentation gives a case-study on the use of Ba/Sr ratios to identify seaweed-consumption by sheep, with a comparison to the use of  $\delta^{13}\text{C}$  as a palaeodietary indicator. It was found that tooth enamel from present-day seaweed-eating sheep had significantly lower  $\lg(\text{Ba}/\text{Sr})$  values (-2.4 to -1.6; enamel  $\delta^{13}\text{C}$  of -6.7‰ to -3.3‰; n = 10) compared to terrestrial-feeding sheep (0.6 to -0.5; enamel  $\delta^{13}\text{C}$  of -15.5‰ to -14.7‰; n = 5). Comparisons between  $\delta^{13}\text{C}$  values and  $\lg(\text{Ba}/\text{Sr})$  values from several Neolithic archaeological sites showed similar trends, indicating that  $\lg(\text{Ba}/\text{Sr})$  may be useful as a dietary indicator, supplementary to  $\delta^{13}\text{C}$ .

Literature data indicates that Ba/Sr ratios may also be useful to study dietary uptake in other contexts, including trophic level, consumption of fish and seaweed-fertilised crops and differentiating between grazing and browsing. In conclusion, the inclusion of Ba and Ca concentration measurements in preparatory analyses of strontium concentrations for later strontium isotope ratio measurements is strongly advocated.

## MOBILITY AND PALAEODIETARY RECONSTRUCTIONS FROM COMBINED $\Delta 88\text{Sr}$ AND $87\text{Sr}/86\text{Sr}$ ANALYSIS WITH FOCUS ON SLOVENIAN CEMETERIES

**Abstract author(s):** Gerritzen, Carina (Analytical, Environmental & Geo-Chemistry Research Unit, Vrije Universiteit Brussel; Maritime Cultures Research Unit, Vrije Universiteit Brussel) - Goderis, Steven (Analytical, Environmental & Geo-Chemistry Research Unit, Vrije Universiteit Brussel) - Leskovar, Tamara - Črešnar, Matija (Centre for interdisciplinary Research in Archaeology, Department of Archaeology, Faculty of Arts, University of Ljubljana) - James, Hannah (Analytical, Environmental & Geo-Chemistry Research Unit, Vrije Universiteit Brussel; Maritime Cultures Research Unit, Vrije Universiteit Brussel) - Potočnik, Doris - Ogrinc, Nives (Department of Environmental Sciences, Jožef Stefan Institute) - Snoeck, Christophe (Analytical, Environmental & Geo-Chemistry Research Unit, Vrije Universiteit Brussel; Maritime Cultures Research Unit, Vrije Universiteit Brussel)

**Abstract format:** Oral

Radiogenic strontium isotope ratios ( $87\text{Sr}/86\text{Sr}$ ) have been widely applied to the archeological study of landscape use. Vast amounts of isoscapes created in the past decade are used to studying past populations' mobility. Slovenia, as a crossroads country of Europe, is an excellent target for investigation. Thousands of cremated and inhumated remains buried in Slovenia's ancient cemeteries give access to a millenium's worth of European history, stretching from the late bronze age to the region's conquest by the Roman empire in the late iron age (LIA).

While  $87\text{Sr}/86\text{Sr}$  ratios are relatively static on the strontium path from bedrock, through soil, to plants,  $\delta 88\text{Sr}$  can vary depending on multiple processes, including chemical and biological processes. The  $\delta 88\text{Sr}$  analysis in this study focuses on a better understanding of bioavailable strontium. These analyses will help investigate the limitations of  $87\text{Sr}/86\text{Sr}$  datasets, and help to curtail them by using  $\delta 88\text{Sr}$  to better understand chemical and biological processes that affect exogenic strontium. The interpretation of  $87\text{Sr}/86\text{Sr}$  ratios is based on local stratigraphy and is limited regarding the influence of weathering, sea spray, and soil contamination. This study shows the significance of adding  $\delta 88\text{Sr}$  to available baselines and isotopic maps for a better understanding of the exogenous strontium cycle. This tackles the question of sampling strategies regarding isotope mapping for future studies. This allows a first-principles trace from bedrock to teeth, refining isotope mapping to help discriminate between landscape use, mobility and migration.

$\delta 88\text{Sr}$  can be combined with Sr and Ca concentration measurements to provide further insights into physiological and dietary impacts on tissue Sr. Previous studies have shown that  $\delta 88\text{Sr}$  are linked to changes in trophic levels. Therefore, differences in  $\delta 88\text{Sr}$  may allow for better understanding of paleodietary choices of consumed goods.

## A. DETERMINING THE BEST TECHNIQUE FOR $87\text{Sr}/86\text{Sr}$ ISOTOPE ANALYSIS OF BIOARCHAEOLOGICAL REMAINS

**Abstract author(s):** Rogers, Bryony (Department of Archaeology, Durham University; National Environmental Isotope Facility, British Geological Survey) - Nowell, Geoff (Department of Earth Sciences, Durham University) - Pashley, Vanessa - Horstwood, Matthew (National Environmental Isotope Facility, British Geological Survey)

**Abstract format:** Poster

Strontium (Sr) isotope analysis on archaeological human and animal remains, which can be used to infer mobility, origin, and lifeways (e.g. herding strategies), has become widespread since its initial uses nearly four decades ago. In that time, several sampling and analytical techniques have been developed to determine the  $87\text{Sr}/86\text{Sr}$  isotope ratios recorded in an individual's bones and teeth. Initial Sr isotope studies utilised bulk sampling techniques, but in-situ techniques, such as laser ablation (LA) and micro-drilling, have been developed that are less destructive and provide greater sampling spatial resolution. Each of the main analytical methods: Thermal Ionisation Mass Spectrometry (TIMS), solution-Multicollector-Inductively Coupled Plasma-Mass Spectrometry (solution-MC-ICP-MS) and Laser ablation -Multicollector-Inductively Coupled Plasma -Mass Spectrometry (LA-MC-ICP-MS), have their advantages and disadvantages regarding speed and ease of analysis; precision and accuracy of results; ionisation and transport efficiency; and (perceived) destructiveness. Different research questions require different levels of compositional and/or spatial resolution, dependent on a whole range of factors including sample size; uniqueness of a particular sample; the Sr concentration of the sample; and the degree of variation in the bioavailable  $87\text{Sr}/86\text{Sr}$  values in the relevant biosphere. Furthermore, the availability of facilities can impact what questions can be addressed. There is also ongoing debate in the literature regarding the reliability of some results, specifically about potential interferences during LA-MC-ICP-MS analysis of enamel and the accuracy of  $87\text{Sr}/86\text{Sr}$  measurements in low Sr concentration teeth. Here we present suggested guidelines for establishing which technique(s) might be most appropriate for the Sr isotope analysis of bioarchaeological remains for a variety of scenarios.

## B. WERE THEY ACTUALLY LOCAL? STRONTIUM ISOTOPE ANALYSIS OF INDIVIDUALS FROM THE ROMAN CEMETERY OF LUCUS FERONIAE (ROME, ITALY)

**Abstract author(s):** Farese, Martina (Dipartimento di Biologia Ambientale, Sapienza Università di Roma) - Bernardini, Sara (Aix Marseille Univ, CNRS, Minist Culture, LAMPEA, Aix-en-Provence; Dipartimento di Biologia Ambientale, Sapienza Università di Roma) - Zeppilli, Carlotta - Micarelli, Ileana - Manzi, Giorgio - Tafuri, Mary Anne (Dipartimento di Biologia Ambientale, Sapienza Università di Roma)

**Abstract format:** Poster

The town of Lucus Feroniae (I-III century CE) was inhabited, according to the archaeological record, by local people, war veterans and liberti (freed slaves). The study of this community makes it therefore possible to shed light on individuals whose lives are often not reported by classical literary sources. In particular, to understand from which other parts of the Roman Empire the liberti and veterans came from. In order to answer this question, this research couples skeletal evidence and isotopic analyses. The former has highlighted six individuals from the necropolis of Lucus Feroniae who display skeletal features associated with a harsh quality of life, in particular fractures on the skull and postcranial bones, which in turn might be associated with the consequences of being a slave or a labourer. Strontium isotopic analysis has then been performed on such individuals to explore their geographic origin. Analysing the dental enamel of the first molar, it was possible to gain information about their first decade of life, approximately. A baseline was created to look at the local range of strontium isotopic ratio using bones and teeth of archaeological animals, focusing on animals that lived, supposedly, in confined areas, rather than free-ranging ones. Soil samples have also been collected for this purpose. However, in several instances local strontium ratios are similar among very distant areas. It is therefore difficult to tell whether an individual spent her/his first years of life in Lucus Feroniae or came from further-away areas. Despite the diversified geological background of Italy that might appear promising for strontium isotope analyses, our results hold up as a cautionary tale about the use of these data.

---

## 379 THE ARCHAEOLOGY OF LARGE-SCALE CONFLICTS: THE EMERGENCE OF THE MONGOL EMPIRE AND THE INVASION OF CENTRAL-EUROPE IN ITS EURASIAN CONTEXT

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Laszlovszky, József (Central European University PU, Vienna) - Nagy, Balázs (Eötvös Loránd University, Budapest)

**Format:** Discussion session

The Mongol Invasion of Central Europe in 1241-42, is a crucial episode in European history, and it occupies a position of pan-Eurasian historical significance. It was a decades-long historical process which saw the Mongol Empire occupy Central Asia, defeat the Russian principalities, and drive into the region of Central-Europe. Therefore, it is crucial to offer a reliable reconstruction of the invasion itself, and also the short and long-term impact of it. Thus, we are proposing here is a session aimed at improving our understanding of the invasion and of its broader historical context through a fuller analysis of the most recent archaeological findings and the surviving textual records. The significance of the invasion is evinced by the wide range of written sources, European and non-European. Meanwhile, new finds have been discovered that highlight the growing role of archaeological research on this topic. Publications in the last few years related to ongoing archaeological excavations (from Mongolia to Central Europe, from Russia to the Near East), along with publications on earlier finds, continue to offer new clues which help shed light on the invasion and related events. Therefore, the aim of this session is to bring together specialists from Central-Asia, Russia, Central-Europe and from other regions influenced by the emergence of the Mongol Empire in the thirteenth century, and to share the new archaeological data and interpretations related to this continental-scale process. Various archaeological fields (conflict, environmental, settlement, fortified sites, etc.) are in the focus with their relevant theoretical and methodological issues. They will be discussed in the context of large-scale historical processes: mass migration, climatic change, environmental impact of the invasion, and socio-economic transformation processes.

## ABSTRACTS

### 1 NEW TRENDS IN THE RESEARCH OF THE ARCHAEOLOGY OF THE MONGOL INVASION IN CENTRAL-EUROPE

**Abstract author(s):** Laszlovszky, József (Central European University, Budapest - KEE, CEU PU Vienna)

**Abstract format:** Oral

The Mongol invasion of Central-Europe in 1241-42 and the later attacks in the region (for example in 1285) were described in contemporary written sources. Chronicles and charter evidence can be used to study the sequence of events during these military attacks, or the impact of the invasion. Archaeological research has been carried out to find the traces of these invasions for decades, but significant development can be seen in these investigations during the last twenty years. Development-led archaeology, community archaeology and targeted research projects have

produced significant new results and new archaeological interpretations have emerged in the context of the history of the invasion. This paper will offer an overview on the new methods and approaches of a major research project carried out by several institutions and by a large groups of scholars in Hungary. At the same time, the paper will place the Mongol Invasion of Central-Europe in its Eurasian context. Special attention will be given to conflict archaeology, destroyed settlements and archaeological indicators of the invasion. Archaeological data will be confronted with written documents and conclusions will be drawn on the basis of an interdisciplinary investigation.

## 2 URBANISATION IN THE PERIOD OF LARGE-SCALE CONFLICTS: IMPACT OF THE MONGOL INVASIONS ON THE URBAN NETWORK OF THIRTEENTH-CENTURY HUNGARY

**Abstract author(s):** Nagy, Balázs (Eötvös Loránd University, Budapest)

**Abstract format:** Oral

The Mongol invasions of Hungary in 1241-42 caused the most significant disaster in the medieval history of the country. Although the main events of the military campaigns were reconstructed by the scholarship of the last decades, some details of the events have not been clarified yet. Traditionally it was assumed that the Mongols were not prepared for town sieges, but several examples from their campaigns in the territory of the Kievan Rus' prove their capacity and skills to perform successful sieges.

In Hungary, the siege and devastation of the towns marked the process of the invasion of the country, but there were significant differences in the level and gravity of the devastation. The variances can be explained partly by the geographical conditions of the given settlement, partly by the structure of fortifications and also its strategic significance. The paper will attempt to synthesize the evidence on the effects of the Mongol invasions on the urban network of thirteenth-century Hungary.

## 3 LONGTERM IMPACTS OF THE MONGOL INVASION: TRACES OF STRUCTURAL CHANGES IN THE KINGDOM OF HUNGARY (1241-1332)

**Abstract author(s):** F. Romhányi, Beatrix (Károli Gáspár University of the Reformed Church)

**Abstract format:** Oral

In recent years research focused not only on the direct effects caused by the Mongol Invasion in the early 1240s, but also on the longterm impacts. Several articles published by researchers working on the project "The Mongol Invasion of Hungary in its Eurasian Context" (OTKA K128880) have dealt already with the complex analysis of different features (churches, place names, archaeological findings) connected with the devastation. The present paper's aim is to analyse those indicators, mainly monasteries and churches/parishes, that can be used for to reconstruct the longterm structural changes of the Hungarian Kingdom, including population distribution and areas of economic activity. The latter can be discussed based on a unique source, the papal tithe register, compiled between 1332 and 1337, that not only preserved data about the parish network of the kingdom, but also allows some insight into the economic strength of the rural and urban communities through the tax paid. The emerging late medieval castle network and its correlation with the above will also be addressed.

---

## 380 CAN YOU FUTURE PROOF SKILL DEVELOPMENT WORK IN ARCHAEOLOGY?

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Jones, Cara (Chartered Institute for Archaeologists) - Karl, Raimund (University of Vienna)

**Format:** Round table

Great strides have been made with formalising skill development initiatives for archaeologists, and we are now beginning to see the positive impact of taking a more strategic approach to how we develop and upskill members of our profession. This work is often completed in collaboration with non-heritage focused organisations who are integral to supporting (and at times delivering) these initiatives. These collaborations can also help give focus to future priorities with skill development work and help release much needed funding to support the development work to take place.

One challenge that has been identified is the need to make sure that work is future proof or at least, impervious to outside shocks or changes in priorities or wider strategic directions.

This is roundtable discussion proposes to discuss

1. How can we future proof skills development work?
2. What mechanisms can put in place to mitigate against outside influences which can impact on your skill development work?
3. How can we anticipate what skills archaeologists will need in the future to ensure we are ready to meet outside challenges or demands for our expertise?

This session is delivered by the EAA community for teaching and training in archaeology.

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Sampaio, Hugo Aluai (University of Minho) - Bettencourt, Ana (University of Minho) - Diaz-Guardamino, Marta (Durham University)

**Format:** Regular session

Oceans, rivers, lakes are not motionless entities. Earth Sciences have been studying how coastline fluctuations of seashores and transformation of river flows constantly create new opportunities for human groups, but also how these changes can trigger a wide range of interactions and transformations.

In this session we will focus on approaches that explore a wide array of archaeological evidence of sustained interactions between European human groups and water, from the Neolithic to the Bronze Age. This includes traces of interactions where the cultural and the natural are entangled in the same places: from resources exploitation to sea/river/water use; activities linked to traditions, social organizations, beliefs or ideological meanings; the use as a border, or simply marking a special place; possessing magic properties or simply blessing life; the unfolding of regional or supra-regional contacts or the negotiation of power relations. All these interactions contribute to the creation of waterscapes ("seascapes", "riverscapes", "lakescapes"), which were part of daily perception, interaction and cognition of human life beyond (dry) land.

## ABSTRACTS

### 1 EVIDENCE FOR CULTURAL AND ECONOMIC IMPORTANCE OF WATERSCAPES: NEOLITHIC PATTERNS FROM THE NORTHERN GERMAN LOWLANDS

**Abstract author(s):** Brozio, Jan Piet (Institute of Pre- and Protohistoric Archaeology CAU Kiel) - Feeser, Ingo (Institute of Pre- and Protohistoric Archaeology CAU Kiel)

**Abstract format:** Oral

Water always attracted people. For the Neolithic in the central European lowlands this is attested by the close association of archaeological sites with coasts, lakes and rivers. The reasons for this seem to have been manifold. The exploitation of water-bound resources can be observed in many archaeological records. Likewise, the distribution of sites along within waterscapes speaks to their importance as transport and mobility routes. In this talk, we will present evidence from several Neolithic wetland sites from the Northern German lowlands where combined archaeological and palaeoenvironmental investigations allowed insight to local cultural activities in context of changing hydrological situations.

In contrast to the use and creation of cultural (dry) landscapes, a more dynamic interplay between natural developments of the water landscapes and human activity is obvious. Hereby rising sea levels and groundwater levels have altered both coastal and inland wetlands. Changes that may, on one hand, pose a threat or an end to local human activities. On the other hand it seems that the presence of extensive wetlands or waterscapes could have increased the resilience of regional communities during phases of over-regional economic downturn. Based on a comparative consideration, we aim at identifying the cultural, ritual and/or economic significance of waterscapes for the sites.

### 2 AT THE THRESHOLD TO THE MOUNTAINS: SOCIAL MEANING AND RELEVANCE OF MONUMENTS ALONG COASTAL WATERWAYS IN NEOLITHIC SOUTHEAST NORWAY

**Abstract author(s):** Schülke, Almut (Museum of Cultural History University of Oslo)

**Abstract format:** Oral

The 4th and 3rd millennium BC, the time of the so-called Neolithic period (3900-2350 BC) in Southeast Norway, is a period with a shifting archaeological record, which suggests social complexity and change, oscillating between local hunter-gatherer societies and impulses from full-Neolithic communities in Southern Scandinavia. While farming most likely only was practiced sporadically, hunting and fishing are the main strategies for food provision. The rich biotopes of the coastal areas of the region, with the southern Norwegian skerry coast and the Oslofjord protruding to the North from the Skagerrak, played an important role in people's social, cosmological and economic life. However, these waterways also served as communication routes and not least as gateway to and from the inland and mountain areas. This talk will point out the social importance of these waterways, not least as (strategic) communication routes, in times where encounters with people from the Neolithic world became more increased. The strategic placement of a number of ritual monuments directly at the estuary of the Drammen fjord, at Rødtangen, will be used as a starting point to discuss possible social encounters in these shifting times, which were closely tied to the fjord as coastal waterway and to potential questions of access, overview and negotiation of spatial power.

### 3 **AT THE EDGE OF THE WATERSCAPE: INTERACTION AT THE BOUNDARIES BETWEEN DRAINAGE BASINS IN EARLY PREHISTORIC BRITAIN AND IRELAND**

**Abstract author(s):** Goldberg, Martin (National Museums Scotland)

**Abstract format:** Oral

River catchments and drainage basins are being increasingly used as units of ecological and socio-political organisation. There is also ample evidence in the archaeological record that knowledge of drainage basins was important in the past. This paper will explore a wide array of archaeological evidence that the watershed boundaries of drainage basins were places of sustained interaction and interest for human groups in the past. While the topographic boundaries of drainage basins are often hills and mountains, the vagaries of geo-morphology and the interaction between topography and hydrography mean that sometimes the watershed boundary is in relatively low-lying areas where the topographic separation of river systems is unclear— paradoxically these can be the most important areas for human interaction. These are often referred to in English as passes or gaps and can be both the boundary between separate drainage basins and the most convenient access point at the lowest altitude for communication and movement between regions and human communities. Bogs, marshes, springs and lakes, features of the waterscapes at the extremities of drainage basins were often the sites of artefact/votive deposition in the Bronze Age in Britain and Ireland, but this landscape enculturation can also be explored through other forms of evidence – middens, burnt mounds, burial monuments, rock art, and traced back to Neolithic stone tool production. This perception of space and place, developed over huge amounts of time, challenges both our understanding of ancient geography and the systems of knowledge that contributed to these concepts in the past.

### 4 **OCEAN AHOY! SPATIAL ANALYSIS, SETTLEMENT PATTERNS AND THE LATE PREHISTORY OF THE ATLANTIC COAST OF LISBON PENINSULA**

**Abstract author(s):** Texugo, André - Rendeiro, Luís (UNIARQ - Centro Arqueologia da Universidade de Lisboa; CEG - Centro de Estudos Geográficos da Universidade de Lisboa) - Sousa, Ana (UNIARQ - Centro Arqueologia da Universidade de Lisboa) - Ramos-Pereira, Ana (CEG - Centro de Estudos Geográficos da Universidade de Lisboa)

**Abstract format:** Oral

The 3rd millennium BC Atlantic coast of Lisbon Peninsula has an apparent cultural uniformity when it comes to settlement strategies, types of occupation, architecture, material culture and even regarding the connection to landmarks.

This coast consists of a rocky platform, with well-marked cliffs and regularized features, with successive natural bays at the mouth of small rivers that flow directly into the Atlantic Ocean. Connected to those, settlement clusters were formed, during the 3rd millennium, materializing a connection between the settlement pattern and its relative proximity of the Atlantic coast, especially in the walled enclosures, namely P. Lexim (Mafra), Zambujal (Torres Vedras) or Paço (Peniche).

Nevertheless, it is in the micro-regional analysis where the difference between clusters or even sites is emphasized.

Recent studies carried out for the prehistoric walled enclosure of Paço (visibility patterns, least cost paths and network analysis), show a clear relationship with the ocean in association with an integrated network of settlements.

Therefore, we sought to replicate and test the same approach for Chalcolithic sites in the Atlantic Coast of Lisbon Estremadura in order to analyze patterns of mobility, interconnected settlement strategies and the existence of specific type of settlements directly associated with the seashore.

### 5 **EBB & FLOW: EXPLORING RIVERS IN LATER PREHISTORIC BRITAIN**

**Abstract author(s):** Nimura, Courtney - Schulting, Rick (University of Oxford) - Sturt, Fraser (University of Southampton) - Snoeck, Christophe (Vrije Universiteit Brussel) - Green, Chris - Cooper, Anwen (University of Oxford)

**Abstract format:** Oral

'When the first rains came, the world changed forever' (Lawrence C. Smith, Rivers of Power). In our 2021 EAA paper, we presented interim results from our two-year (2020–2022) Leverhulme-funded project 'Ebb & Flow: Exploring rivers in later prehistoric Britain'. This project focuses on the later prehistory of Europe (c. 2500–400 BC), which was a period of unprecedented pan-European mobility. In this period, water travel increased, and people and objects, and the ideas that they held, circulated widely. Here we encounter a changing world, one in which the centrality of rivers comes to the fore.

Our project revolves around three themes that lead us into many areas of later prehistoric life: rivers have entangled physical and cultural histories, rivers are magnets for people and things, and rivers move people and things. In this paper, we will present a range of project results that address these themes, from strontium isotopes along the River Avon to the distribution of material culture around the Ribble, Great Ouse, and Nene to the new mapping of palaeochannels across our case study catchments. Drawing on a wide range of evidence, we will consider the importance of rivers to prehistoric communities in Britain and the power of these rivers in shaping them.

## 6 THE EXPLOITATION OF MARINE RESOURCES BY COMMUNITIES FROM THE NORTHEAST OF THE IBERIAN PENINSULA IN THE EARLY BRONZE AGE

**Abstract author(s):** Gluitz, Alicia - Estebanz-Sánchez, Ferran (Autonomous University of Barcelona) - Martínez, Laura (University of Barcelona) - Molist, Miquel (Autonomous University of Barcelona)

**Abstract format:** Oral

The prehistoric period of the Barcelona plain has been broadly studied by researchers due to the richness of the archaeological register. Nonetheless, one of the most understudied periods is the Early Bronze Age, whose archaeological register is very poor. Our research focuses on the subsistence economy from the population of Plaça de la Gardunya, which is an Early Bronze Age site located near the Mediterranean Sea. Our aim is to observe if these communities were exploiting marine resources and characterize their dietary habits by doing a buccal microwear analysis from molars and premolars from adult and child individuals.

Once obtained, their microwear patterns have been compared to reference patterns linked to known dietary habits and subsistence economy strategies, as well as to other archaeological communities from the Iberian Peninsula. We have taken into account the archaeological evidence as well to interpret our results, which show differences in dietary habits between age groups and between sexes. Males had a more carnivorous diet than females, and subadults ate harder foods than adults. Plaça de la Gardunya's microwear patterns have similar values to carnivorous diets from anthropological populations. We propose that the community of Plaça de la Gardunya had a soft mixed diet with a high intake of fish, meat and secondary products such as milk or cottage cheese. Agricultural produce was also consumed, mostly by subadult individuals, which was stored in grill plan structures and silos and processed with more refined milling techniques.

## 7 LAKE, WETLAND AND ISLAND: REVEALING THE HUMAN OCCUPATION OVER THE PALAEO LAKE IN BRUSZCZEWO IN CENTRAL GREATER POLAND THROUGH GEOARCHAEOLOGICAL RESEARCH.

**Abstract author(s):** Niebieszczanski, Jakub - Bahyrycz, Cezary - Żurkiewicz, Danuta - Szambelan, Witold (Adam Mickiewicz University in Poznań)

**Abstract format:** Oral

The post-glacial lakelands of Northern Central Europe attracted human habitation since the Late Palaeolithic and Mesolithic times. Some of the previously occupied lakes are currently gone or overgrown due to climate change or human intervention. The remaining peatlands are the last indication of former lakes and wetlands that were the vital point of human interest. The wetland archives offer a great potential in reconstructing the human-environment relations. Often such areas remain unrecognized due to the low accessibility in archaeological surface survey. Geoarchaeological approach combined with archaeological excavations might however bring to light high resolution data to understand the human-environment relations. The following presentation concerns the changing waterscape from the Early Bronze Age up to the Medieval period in Central Greater Poland, on the basis of Bruszczevo site case study. This site comprise of several habitation phases, i.e. the Unetice culture's fortified settlement, Lusitanian Urnfields culture's ritual center and cemetery, Roman Times settlement and Early Medieval stronghold. In the light of geoarchaeological research (drillings and multi-proxy reconstruction supported by 14C dating) it appears that each of settlement episodes was characterized by different sedimentary environment (transformation from deep lake conditions to wetland and river flood plain). Geoarchaeological investigations combined with geophysics and a specific archaeological surface survey approach revealed also the presence of esker in the center of the former lake, which might have been an island.

The presentation aims to share the results of a geoarchaeological works that aimed to reconstruct the connection between different phases of human occupation to the past waterscapes and use of particular morphological features of the area in habitation purposes. The study was funded by the National Science Center, Poland, grant no. 2019/33/N/HS3/00193.

## 8 FLOWING EVERYDAY ROUTINES: INTERRELATING BRONZE AGE HUMAN GROUPS AND WATER COURSES BETWEEN THE RIVERS AVE AND CÁVADO (NORTHWEST OF PORTUGAL)

**Abstract author(s):** Sampaio, Hugo Aluai (Landscape, Heritage and Territory Laboratory - Lab2pt; University of Minho - UM; Centre of Research, Development and Innovation in Tourism - CiTur; Polytechnic Institute of Cávado an Ave - IPCA)

**Abstract format:** Oral

capable of adapting to environmental and cultural changes, human groups dealt with territory according to different needs. The increasingly importance of certain daily routines during the Bronze Age, such as agriculture, metallurgy, or dealing with life and death impelled these groups to move and to occupy the space considering certain prerequisites. In this sense, proximity to (and control of) water gained a crucial and strategic importance: essential life



support resource, imperative to raise crops and shepherding, source of food and alluvial mining ores, water can also detain magical properties, that can metaphorically represent the conduction of the dead to afterlife or contain the ability of honoring supernatural entities or ancestors.

More than the symbolic control over the territory, many daily practices during the Bronze Age seem to flow with water courses: settlement occupation, funerary practices, or offerings of prestige goods are some physical traces that can be mentioned. A vast range of places and (inter)actions connected by a same source, the water, which confers unity to a wider reality, but denounces an apparent socio-cultural complexity during the regional Bronze Age in the Portuguese Northwestern.

## 9 BRONZE AGE CERAMICS FROM ALTO DAS MALHADAS AS AN INDICATOR OF INFLUENCES THAT GO BEYOND REGIONAL AND NATIONAL BOUNDARIES

**Abstract author(s):** Botica, Natalia (Lab2PT; Unidade de Arqueologia da Universidade do Minho) - Luís, Luís (Fundação Côa Parque) - Larrazabal, Javier - Rocha, Bruna (Lab2PT; Fundação para a Ciência e Tecnologia) - Sousa, Rui (Lab2PT; Instituto de Ciências Sociais da Universidade do Minho) - Magalhães, Fernanda (Instituto de Ciências Sociais da Universidade do Minho)

**Abstract format:** Oral

The Côa Valley, inscribed by UNESCO as a World Heritage Site in 1998, has an extensive area with more than 1000 open-air rocks, decorated with rock art from prehistoric to contemporary times. As part of the RARAA project, funded by the Fundação para a Ciência e Tecnologia (FCT) "COA / OVD / 0097 / 2019- Rock Art Open Access Repository", we conducted archaeological excavations, at Alto das Malhadas (Vila Nova de Foz Côa), in order to increase knowledge about the societies that created the artistic representations in the rock art of the Côa valley.

Thus, from these archaeological works resulted a large set of ceramic material, very diverse both in techniques and in shapes and decorations, which led us to seek parallels to understand the influences suffered by the communities. In this paper we will present the methodology for recording, visualizing and cross-referencing data, used to study the materials and the interactions between the regional communities, focused on the communications through the rivers and the Vilariça Valley.

## 10 NEW APPROACHES TO UNDERSTANDING LATE BRONZE AGE SWORD DEPOSITION IN THE TRANSDANUBIAN RIVER SECTION OF THE DANUBE

**Abstract author(s):** Tarbay, János Gábor (Hungarian National Museum, Department of Archaeology) - Soós, Bence (Hungarian National Museum, Department of Archaeology; ELTE University, Institute of Archaeological Sciences)

**Abstract format:** Oral

In the Late Bronze Age (LBA), the Danube River was a borderland where different cultural spheres interacted. It was also an important zone of the LBA ritual landscape where the tradition of sword deposition was practiced by different cultural groups. In the case of Transdanubia, this was done between the periods of 1450 BC and 1000 BC, when numerous rapiers and metal-and-flange hilted swords were surrendered to the Danube River.

We intend to study the pattern of ritual itself more precisely through the deposited objects and attempt to model the origin, cultural connections, and motivation of their owners. 1. The first approach draws conclusions from the metal-work production and use-wear analysis carried out on all LBA swords originating from the Hungarian river section of the Danube. It provides a means to seek out an answer: what kinds of weapons were surrendered to the rivers (used, symbolic, intact or manipulated)? 2. LBA swords are also representative objects, customized for and probably used in combat by a single person whose choice of weapon may reflect a specific area. Swords can be arranged into well-defined style groups that may refer to regional metalworking traditions, which makes them a suitable candidate for the analysis of interaction, movement of individual combatants or larger groups. We are trying to determine who participated in the deposition of swords into the Danube River. In order to propose an answer to this question, we set out to delimit possible zones of provenience of the swords recovered from the Danube River. With the help of these modelled zones, we endeavor to assess how diverse the communities participating in the deposition of swords could have been. In addition, our aim is to look for trends in which regions were involved in the deposition practices throughout different stages of the LBA.

## 11 LATE BRONZE AGE METAL DEPOSITIONS IN THE NORTHWEST IBERIAN PENINSULA IN RIVERSCAPES CONTEXTS: AN ONTOLOGICAL APPROACH

**Abstract author(s):** Bettencourt, Ana (University of Minho; Lab2PT - Landscapes, Heritage and Territory Laboratory)

**Abstract format:** Oral

Deposition of metal artefacts during the Bronze Age is a wider phenomenon attested in Northwestern Iberia, as well as all over Europe. The study of such a phenomenon in that area has been conducted using several approaches, including typological, metallurgical, contextual, and interpretative.

The main goal of this oral communication is to interpret the Late Bronze Age metal depositions in water contexts - mainly those containing axes and swords - considering that they resulted from intentional and structured depositions in the context of the Bronze Age network landscape.

Based on recent research this approach will consider several variables, such as the physical organisation or orientation of the objects' deposition, and the micro and medium contexts of their deposition.

Interpretations related to the importance of certain liminal places, rivers or river banks positioned over natural pathways can be explained by a communal interpretation about the cosmos and in the framework of an increasing amount of autochthonous and non-autochthonous journeys and exchanges that connected peoples during the Late Bronze Age, and fostered encounters between different communities.

## 12 RE-EVALUATING RIVERINE AND MARITIME TRADE IN MIDDLE-LATE BRONZE AGE BRITAIN AND BEYOND

**Abstract author(s):** Roberts, Benjamin (Durham University) - Casaly, Allison (New York University)

**Abstract format:** Oral

This paper will re-evaluate three aspects of riverine and maritime trade in Middle-Late Bronze Age Britain. It will be argued that there has been a consistent underestimation of Bronze Age trade and exchange along the waterways of Britain and beyond. Firstly, the paper will explore the potential scales of the trade involved with a particular focus on the specialist knowledge and logistics of moving people, animals and goods along rivers and across seas. Secondly, it seeks to identify the coastal and riverine locations where trade may have occurred based on the geographical, environmental and archaeological evidence. It will concentrate specifically on evidence from personal ornamentation, hoards and shipwrecks from across Britain. Finally, it will discuss how trade along the waterways of Britain and beyond potentially re-shaped the communities across the landscape. It will conclude on how research integrating settlement, mobility and activities along the rivers and coasts of Britain can be further developed.

## 13 LIVING IN A FLOODPLAIN: LATE BRONZE AGE SERBIAN BANAT COMMUNITIES' ADAPTATION STRATEGIES

**Abstract author(s):** Estanqueiro, Marta (University College Dublin; CEAACP-Universidade de Coimbra)

**Abstract format:** Oral

As the Middle Bronze Age tells of the south-eastern Carpathian Basin were being abandoned, a vast and dense network of flat settlements, some encircled by ramparts and ditches, began to emerge, reaching substantial sizes.

The known number of these Late Bronze Age settlements continues to grow every day, usually detected through satellite images, due to the concentration of subcircular pale soil marks that stand out in the ground. These are believed to represent dwellings, where high concentration of pottery sherds can be found. However, there is still little information about them, as only a few have been researched.

This presentation will focus on the floodplains of the Serbian Banat, a flood-prone area where LBA communities built their settlements, addressing how these spread across the territory, by adapting to the landscape taking advantage of their locations.

It will also discuss how building their settlements in the vicinity of secondary watercourses, they channelled water by digging shallow or more deeper ditches, probably for agricultural purposes, or even as a defence mechanism.

Finally, it will aim at how this area became depopulated around 1200 BC.

## A. OCEAN AND ETERNITY. A BRONZE AGE MEGALITHIC TOMB IN CAPE TRAFALGAR (CÁDIZ, SPAIN)

**Abstract author(s):** Cantillo Duarte, Juan Jesus - Vijande Vila, Eduardo - Becerra Martín, Serafín (Universidad de Cádiz) - Moreno Marquez, Adolfo (Universidad de Almería) - Corona Borrego, José María - Gómez Sánchez, Leticia - Fernández Sánchez, Diego - Carmona Gil, María - Pavón González, Laura - Ramos Muñoz, José (Universidad de Cádiz)

**Abstract format:** Poster

Situated in the far south of the Iberian Peninsula, Cape Trafalgar is a sui generis natural location. In this impressive landscape, land and sea converge to form a landscape loaded with symbolism, a horizon where every evening the sun dies in the ocean. The islet and tombolo of Trafalgar have been witnesses of History. Occupied since prehistory, in the Roman period they hosted the Temple of Juno, and in front of its coast, in 1805, one of the most famous naval battles of the 19th century was fought.

In 2021, a team of archaeologists and prehistorians from Universidad de Cádiz excavated there an intact megalithic burial. The archaeological sequence has provided very valuable evidence concerning the funerary ritual and aspects related to the social status of those interred there.

This contribution presents some preliminary information about the typology of the burial, radiocarbon dates and anthropological studies, as well as addressing the motivations that led this Bronze Age community to choose this impressive location as a space for eternity.

## **B. YOU SHOULD EAT IT WHILE IT'S FRESH – EXPLOITATION OF RIVERS IN NORTHEASTERN EUROPEAN LOWLANDS**

**Abstract author(s):** Nessel, Bianka (Institute for Pre- and Protohistory, Mainz University)

**Abstract format:** Poster

During recent excavations in the Late Bronze and Early Iron Age settlement of Lanke in north-eastern Germany, hundreds of freshwater shells were uncovered in a large settlement pit. The pit was divided in two layers and the shells were tightly packed in the north-western corner of the upper layer. Usually finds like this are assumed to represent simple food waste, no further questions asked. However, the consumption of freshwater mussels does not only have a much more complex meaning, but it is also evidence of constant or at least seasonal interactions between communities and the waterscape. In this particular cultural setting, the exploitation of in this case "riverscapes", is part of a wide phenomenon, which shows not only different preferences of types of shellfish in certain regions, but also imply differences in social and hierarchical status of shellfish consumers within a community. This poster presentation focuses on the first results of the interdisciplinary investigation of the shellfish assemblage from Lanke and the implications of the deposition. We will show that freshwater shellfish can tell much more about contacts and mobility patterns on a microscale level than usually assumed.

---

## **382 TECHNOLOGY, RISK, AND CHANGE**

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Taylor, Timothy (Comenius University in Bratislava; Journal of World Prehistory) - Zubrow, Ezra (Applied Social Systems Laboratory & Anthropology University at Buffalo; McDonald Institute University of Cambridge; SUNY Distinguished Service)

**Format:** Regular session

As technology has been persistently seen as a principal means of adaptation/risk reduction in human societies, past and present, and is intimately implicated in our biological and cultural evolution, archaeology, with its artefact (i.e. material-technology) centred approach appears well placed to contribute to a deepened understanding of some themes which have only fairly recently become a focus of attention. Aaron Wildavsky and co-researchers, in discussing modern economic and social settings, note that "Only by comparisons across types of danger can we learn whether individuals have a general tendency to be risk averse or risk-taking, or whether their perceptions of danger depend upon the meaning they give to objects of potential concern" (Dake & Wildavsky 1991). Risk is not normally associated with diachronic archaeological research and yet it is increasingly clear that prehistoric populations have faced similar challenges to those faced today in relation to disease, demography, environmental degradation, resource management, short- and long-term climate change and, last but not least, changes in and to their own technology, whether chosen, imposed, or entailed/consequent in some way ('drifted into'). Although these challenges can be judged similar from an etic, or external and comparative perspective, emically, in terms of culturally-valorised categories, it is far harder to say how threats ('real' or 'imaginary') were conceptualized, and thus it is difficult to identify the baseline assumptions (to use modern terminology) that underpinned past decision-making. Contributions to this session will critique a range of risk-analysis tools in relation to a variety of archaeological cases.

## **ABSTRACTS**

### **1 RISKS BEYOND THE DITCH**

**Abstract author(s):** Diachenko, Aleksandr (Institute of Archaeology, National Academy of Sciences of Ukraine) - Sobkowiak-Tabaka, Iwona (Faculty of Archaeology, Adam Mickiewicz University in Poznan) - Gerasimenko, Natalia (Taras Shevchenko National University of Kyiv) - Kufel-Diakowska, Bernadeta (Institute of Archaeology, Wrocław University) - Kurawska, Aldona (Institute of Archaeology and Ethnology, Polish Academy of Sciences) - Moskal del-Hoyo, Magdalena (W. Szafer Institute of Botany, Polish Academy of Sciences) - Ridush, Bogdan (Yuriy Fedkovych Chernivtsi National University) - Boltaniuk, Petro (Kamianets-Podilskyi State Historical Museum) - Levinzon, Yevhenii (National University of Kyiv-Mohyla Academy)

**Abstract format:** Oral

How do people react to potential risks of different kinds? A widely known expression, "the satiated does not understand the hungry" often seems to apply well to the archaeological interpretations considering a "risk" for some large-scale threat. Meanwhile, dealing with what we usually call daily needs, people in fact manage small-scale risks attempting to stay alive, healthy etc. The focus on conflict and ideology on the one hand, or adaptation and devel-

opment of technologies on another hand underline different paradigms in the discipline. Both the large-scale and small-scale risks were the cases in prehistory. However, do we always properly distinguish between them analyzing archaeological records?

Based on the recent evidence from the excavations in Kamenets-Podolskiy (Ukraine) and a number of similar features from other sites, our paper contributes to the discussion on the function of ditches in the Neo-Eneolithic of Central and Southeastern Europe. Geomorphological, archaeobotanical, archaeozoological, malacological and use-wear analyses make possible the discussion on understanding ditches as defense systems and features related to the religious practices against the long-term development of technologies, adaptation to local environment, and resource management.

## 2 RECONSIDERING NEOLITHIC DITCHED ENCLOSURES AND RISK MITIGATION ON THE GREAT HUNGARIAN PLAIN

**Abstract author(s):** Salisbury, Roderick (Austrian Archaeological Institute, Austrian Academy of Sciences) - Bácsme-gi, Gábor (Munkácsy Mihály Museum, Békéscsaba)

**Abstract format:** Oral

Ditches around settlements are known from many periods and regions. In Southeast Europe, ditches take several forms, including the formalized Kreisgrabenanlagen of the Lengyel culture, rounded rectilinear forms of the preceding LBK, and oblong ditches enclosing tells and tell-like mounds. Neolithic ditched enclosures have been interpreted as defensive or intended for animal management or flood control. Similar ideas are applied in other areas; Iroquoian palisades have been interpreted as being defensive, snow screens, and for keeping wolves or bears away from stored foods. More recent interpretations have focused on the role of ditches in social memory and community-building. These assorted interpretations share one common attribute: we have little or no material evidence to support them. There are several key aspects of these ditches that remain unresolved, but which could contribute to improving our explanations. These include whether all ditches were in contemporaneous use, and when they were built in relation to tells and surrounding flat settlements. Did the construction sequences of ditches and palisades form a tradition, a regular plan, or did they vary from settlement to settlement? One of our research questions is to what degree these people were willing to commit resources to construction projects to address threats that might well have been partly or wholly imaginary. In this presentation, we discuss ditched enclosures in eastern Hungary as a threat mitigation strategy. Existing data from excavated and surveyed Neolithic sites are compared with evidence from later periods, including Arpad age, and new evidence from the South Békés Landscapes project in the northern Maros fan in Békés County, Hungary.

## 3 HONOR THE PAST AND WELCOME THE FUTURE: ONLY A PERSON WHO RISKS IS FREE

**Abstract author(s):** Zubrow, Ezra (University at Buffalo; University of Cambridge)

**Abstract format:** Oral

This paper discusses how risk changes over long, sequential time periods. In particular, the temporal periods are the Mesolithic, the Mesolithic-Neolithic transition, and the Neolithic in Europe dating from approximately 15000 BC to 5000 BC. It compares risk at an abstract level as innovations in subsistence technology change. The presentation argues that Mesolithic societies exploited a system of updating risk i.e. Bayesian probabilities in their hunting, gathering, fishing, and settlement location strategies. Sustenance and location decisions are made and remade frequently based upon prior probability hypotheses. In the early Neolithic, this system was reformed to frequentist probabilities. The number of decisions is reduced. The testing of the hypothetical outcomes takes place far less frequently and are neither assigned prior probabilities nor updated. The empirical part of the paper has ethnographic and archaeological examples as well as simulations. Factors such as yield variability and the risk of crop failures indeed affect technology adoption decisions in subsistence agriculture. However, Neolithic farmers are reluctant to adopt new innovations because of the enormous downside risk. The broader implications are examined as one considers how and how frequently a person needs to take risks in order to be free as technology changes.

## 4 THE PARAMETERS OF RISK IN UNFOLDING TECHNO-CULTURES

**Abstract author(s):** Taylor, Timothy (Comenius University in Bratislava; Journal of World Prehistory)

**Abstract format:** Oral

This paper attempts to understand how risk may have been perceived in ancient, especially prehistoric, societies where the main source of evidence is archaeology and related disciplines. 'Risk' implies 'benefit'; one of the most (apparently) straightforward ways benefit has previously been calculated is looking at success over time in a cultural community. Success is therefore gauged in terms of demographic/territorial persistence/expansion, over some significant period. In the New Archaeology of the 1960s this was tied to the concept of 'adaptation', considered as a kind of objectively-apprehensible equation between an outside 'environment' and the ability of the human unit (to insulate its members from this environment while extracting benefits. This strand of thinking has developed in a broadly

processualist direction, via such bodies of theory as Optimal Foraging Theory and the canonical model of increasing social complexity embedded in Cultural Evolution theory. A contrasting stream of thought begins, perhaps surprisingly, with V. Gordon Childe, who suggested that 'the environments to which societies are adapted' are, not least, 'worlds of ideas'; similar considerations were foregrounded in the work of Niklas Luhmann. Risks assume very different complexions according to the timeframes we have in mind (short, medium, long-term), so different temporal metaphysics should be associated with different assessments of risk in the face of the 'same' stimuli or challenge. I argue that they will also vary according to the scales of societies and their norms. I want to show how the etic-emic tension has to remain at the core of innovative theorising, and to propose for consideration in archaeology a body of theory developed in economics and social anthropology in the 1980s – Douglas and Wildavsky's 'Grid and Group' – as one way to typologise the emic, making sense of different kinds of quantifiable response to 'risk'.

## 5 MONUMENTS, MAGIC, AND RISK

**Abstract author(s):** Taylor, Timothy (Comenius University in Bratislava; Journal of World Prehistory)

**Abstract format:** Oral

We are all familiar with the sequential events of the Mayan 'collapse' in which temple-building reaches a crescendo just prior to the dramatic dissolution of central authority. One way of understanding this is to consider that the need for collective action in the face of challenges leads to an injection of effort into the appeasement of distal, and physically non-existent, forces – the gods – rather than more practical, proximal, physical action to counter issues such as environmental degradation or buffering climate change. Such an assessment of behaviour is, of course, externalist, and can be slotted neatly into the canonical model of cultural theory (for example). But it begs the question of what kinds of risks and benefits were actually perceived at the time. In this paper I will take a series of case studies, ranging from the double and triple interments of neonates, young adults, and persons with non-standard physiques in the Middle Upper Palaeolithic through to the first truly monumental settings of Middle Neolithic Europe, the Kreisgrabenanlagen, and on to Woodhenge and Stonehenge, to show how, in different periods and settings, similar kinds of 'theatres of violence' were created in order to stimulate social cohesion and guard against perceived chaos. In each case I try to show how anachronistically back-projecting our own calculations of risks obscures the logic of the social investment being made.

## 6 THE END OF PAX ROMANA: HOW ROMAN EMPERORS FACED RISKS AND CHANGES ON COINS

**Abstract author(s):** Glomb, Tomas (Masaryk University)

**Abstract format:** Oral

A range of data testifies that Pax Romana, i.e., the period of the relative stability and prosperity of the Roman Empire (ca 27 BCE-180 CE), was followed by turbulent times eventually resulting in the so-called crisis of the 3rd century CE. Decreasing intensity of Roman mining attested by ice cores from Greenland, the decline in the fineness and weight of silver in the Roman Denarii, or the steep fall of Latin military diplomas are representative proxies for the downward turn in prosperity after the reign of Marcus Aurelius. The question explored in this paper is then how Roman emperors dealt with political instability and socio-environmental issues such as the Antonine Plague on coins. Roman coins represented a suitable medium for conveying ideological messages by Roman Emperors. Quantitative temporal analysis of attributes of specific deities or personified virtues depicted on Roman coins has the potential to reveal iconographic trends that, when compared with the proxies for the development of Roman prosperity, can help us understand what Roman emperors communicated to the population in times of change and crisis. Preliminary results show that iconographic trends on coins connected to values such as peace or security changed after the Pax Romana and reveal the Roman coinage was a relevant tool for mitigating or enhancing specific sentiments in the population.

## 7 BRONZE AGE HOARDS AS A FORM OF RISK MANAGEMENT

**Abstract author(s):** Lane, Dominik (University of Vienna)

**Abstract format:** Oral

Hoards of the Bronze Age have been an important aspect of archaeological research, a focus for interpretations for a long time. Scholars often debate whether profane or cultic backgrounds and intentions should be assumed for their deposition. This contribution aims to show that hoarding can also clearly be seen as a form of risk management/coping with risks, whether those are seen on a rather everyday level or in form of a selective actual threat. Potential risks may have been seen as predominantly 'economic' but also significantly 'metaphysical'. This paper examines what it is to consider bronze was as a valuable material, and a significant form of property. The raw form which could be remelted and used for many purposes but, in object form, the specific artefacts also carried a symbolic and individual value and meaning, involving real or imagined object biographies (or, quite possibly, both). This paper is based around an analysis of the early Urnfield hoard of Attersee I, excavated on Buchberg am Attersee in Austria as part of the BeLaVi-project in 2019. This hoard, and several related hoards, was very likely deposited as a means of protecting

goods in relation to a proximal experience of a 'historical' threat. This paper presents the contents of the hoard and then problematizes and contextualizes the ideas involved.

## 8 NO COUNTRY FOR OLD MEN

**Abstract author(s): Baca, Martin (Department of Archaeology, Comenius University in Bratislava)**

**Abstract format: Oral**

The Central-European Bronze Age stretches for almost one and a half millennia. Certainly, there are vast differences between the Early and Late Bronze Age on almost every level. Still, at least in the area of Central Danube, one can see the slim but strong line of connection between the slow burning society of cattle herders not so much different from their Eneolithic ancestors and vibrant multi-stratified society of Early Urnfield people. The increasingly accelerating dynamics of change are of crucial importance, especially considering the almost exponential growth of population starting at 15/14th century BC. If we are not wrong, and the ever increasing number of multi-proxy data supports that we are not, then this period of time should be of great interest for all prehistoric archaeologists interested in change. In my paper I would like to focus on risk scenarios that had to occur and were most certainly connected to rising number of young people challenging the present as well as the past and putting great pressure on economy and society as a whole.

## 9 COMPLEXITY, MAGIC AND RISK: HOW THE DEFINING CHARACTERISTIC OF INCREASING CIVILIZATIONAL COMPLEXITY BLINDS US TO ITS INHERENT RISKS

**Abstract author(s): Scannell, Patrick (Independent researcher)**

**Abstract format: Oral**

Human systems today are characterized by increasingly accelerating complexity. A complex system is recognized primarily by attributes of highly differentiated and specialised structure and functions within a system, and also by a lack of ability to know, understand, and predict the outcomes of that system, and thus unable to anticipate endemic risks, some that could lead toward system collapse. This paper reflects a non-archaeological view, looking back at the ancient past from the perspective of an expertise in decision making policy in 5G and AI. I will argue that the contemporary phenomenon of our shrinking ability to understand the techno-ecological niche we have created for ourselves (what I term 'the return of magic') is one of the inherent risks of the complexity but may not be a wholly novel phenomenon. I suggest ways to leverage the work of prehistoric archaeologists to inform the modern construct, including some areas for future research for those scholars, along with an understanding of the fundamental limits of using the past to forecast complex future systems.

## 10 RISK AND REWARD IN ATHENIAN MARITIME TRADE (4TH CENTURY BCE)

**Abstract author(s): Cohen, Edward (-)**

**Abstract format: Oral**

Throughout classical antiquity the sea was the principal channel of wholesale trade. Maritime commerce accordingly was of enormous importance to fourth-century Athens: hundreds of ship cargoes were required annually to satisfy Attika's enormous need for food and other items. Numerous other cargoes were trans-shipped through Athens, attracted by its dominant position as an entrepôt for the eastern Mediterranean, and by the Athenian commercial maritime courts (*dikai emporikai*) whose expedited procedures and rigorous enforcement processes were available only to ventures involving a written contract providing for trade through the port of Athens. Virtually all these ships and cargoes generated revenue for Athens and required financing, often with high leverage that could vastly magnify entrepreneurs' potential gains, offering lenders the potential for startlingly high yields.

But the possible windfall returns came with substantial risk of calamitous losses. Lenders were generally entitled to recover principal and yield only if the security underlying a loan — vessel or cargo — survived the journey. In a world in which "insurance" had not yet been invented, and the possibility of ship-wrecks were terrifying, the high yields on maritime lending and venturing are best understood as compensation for the enormous hazards inherent in sea finance, and as a reflection of the high skills required to deal with the extraordinary complexity of overseas trade and finance in the fourth century BCE.

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Milek, Karen (Durham University, Department of Archaeology) - Armstrong-Oma, Kristin (University of Stavanger, Museum of Archaeology)

**Format:** Discussion session

Archaeological science is constantly pushing the boundaries of how we understand past human-animal and human-animal-environment relations. The emergence of new techniques in bioarchaeology and environmental archaeology, including lipid biomarkers, environmental DNA, proteomics, isotopic analyses, GIS, and statistics, are providing opportunities to collect new types of data and generate more precise, nuanced interpretations about how humans and animals lived with each other and their environment. But archaeological scientists face a challenge: the expertise and time required to develop new and improved analytical techniques and generate complex datasets means that they often work on and publish single case studies at a time. Amid accusations of not seeing the forest for the trees, what are the most effective ways for scientists to look up, scale up, and integrate their results with big-picture narratives of how humans and animals have interacted with each other and their environment? Such larger-scale narratives are crucial for our broader understanding of past multi-species societies, their resilience (or lack of resilience) in the face of environmental change, and our modelling of sustainable and unsustainable practices. This session invites speakers involved with scaling up and integrating archaeological science so that it contributes to a broader understanding of human-animal relations at national or continental scales, and/or through deep time, or in relation to written sources. Examples of best practice from collaborative interdisciplinary teams, multi-national teams, and big data projects involving published and unpublished archives are particularly welcomed.

## ABSTRACTS

### 1 FISH FOR FOOD? NOT AT ALL! FISH AS PRESTIGE OBJECTS IN ANCIENT ROME

**Abstract author(s):** Schmölcke, Ulrich (Centre for Baltic and Scandinavian Archaeology - ZBSA)

**Abstract format:** Oral

In the course of the last pre-Christian century in Roman Italy, first individuals and then more and more members of the nobility began to keep fish - not as food, but for ornamentation. Conservative contemporaries criticized them severely for this, even defamed them, and - since these conservative contemporaries are also most of the authors of the surviving written sources - this caricature has persisted to this day: fish keeping e.g. of moray eels as a prime example of Roman decadence.

In this lecture we will try to look behind this caricature with archaeological and zoological methods. The picture that emerges is that of enthusiasts who spare no effort to make the tanks as animal-friendly and species-appropriate as possible, who decorate their animals as pets are decorated today, who cry when an old fish dies. It also shows how the hobby of a few aquarists soon became a fad that hardly anyone in the nobility could escape.

### 2 THE BIG PIG PICTURE: SUID-HUMAN RELATIONSHIPS AND MANAGEMENT PRACTICES IN THE NEOLITHIC AND CHALCOLITHIC OF SOUTH-EASTERN EUROPE AND BEYOND

**Abstract author(s):** Blanz, Magdalena (Vienna Institute for Archaeological Science - VIAS, University of Vienna, Austria; Human Evolution and Archaeological Sciences - HEAS, University of Vienna) - Balasse, Marie (UMR7209 'Archéozoologie, Archéobotanique: Sociétés, Pratiques, Environnements', CNRS/MNHN) - Gál, Erika (Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Research Network) - Gorczyk, John (Dept. Anthropology, Cornell University) - Bălăşescu, Adrian (Institute of Archaeology, Romanian Academy) - Radu, Valentin (National History Museum of Romania, Bucharest) - Fiorillo, Denis (UMR7209 'Archéozoologie, Archéobotanique: Sociétés, Pratiques, Environnements', CNRS/MNHN) - Ivanova, Maria (Vienna Institute for Archaeological Science - VIAS, University of Vienna, Austria; Human Evolution and Archaeological Sciences - HEAS, University of Vienna)

**Abstract format:** Oral

In the Early Neolithic of South-eastern Europe, wild and domestic pigs were well-represented in coastal Mediterranean areas, but appear to have been much rarer in the more northerly interior areas. As highly adaptable omnivores, pigs are able to thrive in many different contexts and to develop various kinds of relationships with people. So, the decrease in the relative amount of suids in the faunal assemblages leads to questions of what the place of wild and domestic pigs was in these early Neolithic subsistence systems. Were domestic pigs kept intensively in villages in small numbers, or kept extensively in the surrounding area? To what extent did pig-human relationships and the relationships of pigs with their surrounding environments vary in space?

These questions can be addressed by studying past pig diets (via stable isotope ratios) and mortality profiles, and placing these in the context of human-animal relationships more widely (i.e. comparison to diets of domestic and wild herbivores and carnivores and the relative amounts of each species), while also incorporating existing knowledge about the local environmental and cultural settings at each site.

In this study, we present new bone collagen stable isotope ratio data ( $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ ) for domesticated and wild pigs, cattle, sheep, dogs and wild herbivores from four early Neolithic sites in Hungary and Bulgaria, and compare these to data from later sites where pigs are more numerous, including a new dataset from Poduri, and published data from Vitănești-Măgurice, Bordusani-Popină and Hârșova-tell (all Chalcolithic Romania). A wide range of different pig husbandry strategies is apparent from the data: A large degree of overlap in isotope ratios for most domesticated and wild herbivores and pigs at some of the sites suggests pigs were not kept intensively, whereas significantly elevated  $\delta^{15}\text{N}$  values indicates a large degree of pig diet supplementation at others.

### 3 INTEGRATING STABLE ISOTOPE AND ZOOARCHAEOLOGICAL EVIDENCE TO UNDERSTAND HUMAN-ANIMAL-ENVIRONMENT RELATIONS DURING THE LATE PLEISTOCENE

**Abstract author(s):** Jones, Jennifer (University of Central Lancashire) - Marín-Arroyo, Ana (Grupo de I+D+i EVOADAP-TA - Evolución Humana y Adaptaciones Económicas y Ecológicas durante la Prehistoria, Dpto. Ciencias Históricas, Universidad de Cantabria)

**Abstract format:** Oral

Climatic changes, and environmental shifts had a dramatic impact on humans and animal populations in the past. Being able to characterise the impact of these climatic changes on humans, animals and the ecosystems that they occupied, is integral in determining how they were able to survive during times of climatic fluctuation.

Stable isotope analysis of animal bone remains can be an invaluable tool for both reconstructing environmental changes on a regional and local level and for exploring changing faunal palaeoecologies during periods of climatic turbulence. When combined with wider environmental proxies and zooarchaeological evidence it is possible to determine how human hunting strategies were adapted in response to periods of climatic change.

This paper focusses on the Late Glacial Refugium of the Cantabrian Region in Northern Spain to understand how human and animal populations coped with the changing conditions associated with the Last Glacial Maximum and the subsequent climatic recovery. The Cantabrian Region was repeatedly occupied by hunter-gatherer groups throughout the Solutrean and Magdalenian despite this period of climatic instability. Stable isotope evidence from 500+ faunal specimens from sites with long chronologies was compared to other environmental and proxies available and demonstrated that large scale environmental shifts was observable across each site, showing the value of regional scale analyses. It was evident that individual animal species altered their niches and behaviour differently depending on the local microenvironments available. Zooarchaeological data complemented these studies showing increased resource pressure when environmental conditions improved, and humans adapted their hunting strategies, often widening their resource bases to exploit a larger range of ecological zones, and travelled larger distances to procure prey. This provides insights into how human and animal populations were able to survive in Southern Europe when other parts of the continent were inhospitable.

---

### 384 WOMEN'S STATUS AND AGENCY IN THE NEOLITHIC AND METAL AGES OF CENTRAL EUROPE [AGE]

**Theme:** 3. The Carpathian Basin: Integration, Mobility and Diversity

**Organisers:** Jaeger, Mateusz (Adam Mickiewicz University in Poznań, Institute of European Culture) - Kulcsár, Gabriella (Institute of Archaeology Research Centre for the Humanities) - Strózyk, Mateusz (Poznań Archaeological Museum) - Rebay-Salisbury, Katharina (Austrian Archaeological Institute, Austrian Academy of Sciences) - Melis, Eszter (Institute of Archaeology Research Centre for the Humanities)

**Format:** Regular session

Along with age, gender has been, and continues to be, an important category structuring societies all over the world, affecting access to resources, activities and the division of labour, as well as the social roles of individuals. However, the extent to which gender impacts upon opportunities for decision-making, self-determination and building one's own social and economic position is neither uniform in the modern world nor in the past. A number of factors, including the level of political, economic, as well as ideological and religious organization of particular communities, intersect with gender and influence the lives of individuals. Whereas the discussion of gender in Bronze Age archaeology has a long history and has produced specific results, both in the form of publications and targeted research projects, the study of sex and gender in the Neolithic is still in its infancy. Comparative studies that address the issue of sex and gender over a substantial period of time in order to capture specific changes, rather than simply observe their effects, are still lacking. Within the framework of the proposed session, we would like to discuss both the sources



and interpretations of women's agency in the context of economic, social, and ritual activities of Neolithic and Metal Age communities in Central Europe.

The session will address the following research questions:

- Do the archaeological sources indicate specific activities carried out exclusively by members of one sex?
- Has the history of archaeology in particular countries influenced the perception of gender roles in prehistory in a specific way?
- Do the archaeological sources confirm or contradict a binary gender concept in the prehistory of Central Europe?
- How can we situate female agency in the context of exogamous marriage practices and other interpretations of female mobility?

## ABSTRACTS

### 1 THE WOMEN OF THE GUMELNIȚA SITE (ROMANIA, 5TH MILLENNIUM BC): FARMERS, HUNTRESSES, PASTORALISTS? A STUDY ON STABLE ISOTOPES

**Abstract author(s):** García-Vázquez, Ana (ArchaeoSciences Division, Research Institute of the University of Bucharest - ICUB, University of Bucharest) - Balasescu, Adrian - Vasile, Gabriel - Golea, Mihaela ("Vasile Pârvan" Institute of Archaeology, Romanian Academy, Bucharest) - Radu, Valentin (ArchaeoSciences Division, Research Institute of the University of Bucharest - ICUB, University of Bucharest; National Museum of Romanian History, Bucharest) - Lazar, Catalin (ArchaeoSciences Division, Research Institute of the University of Bucharest - ICUB, University of Bucharest)

**Abstract format:** Oral

The Kodjadermen-Gumelnița-Karanovo VI civilization occupied the Balkan area in the second half of 5th millennium BC. The Gumelnița site (also known as "Măgura Gumelnița" or "Măgura Calomfirescu") is probably the biggest tell settlement north of the Danube and is located in the northern area of the Balkan region, in the southeast of Romania, on the left bank of the Danube River floodplain, immediately south of the confluence area of the Argeș River. The site consists of a tell-settlement and an adjacent cemetery area where 10 skeletons were excavated in the 60s and 14 tombs were found in the archaeological campaigns from 2017 to 2019, with radiocarbon dates ranging from  $4448 \pm 10$  to  $4360 \pm 42$  Cal BC.

For this study, we analysed isotopically ( $\delta^{13}C$ ,  $\delta^{15}N$ ,  $\delta^{18}O$ ) 16 humans from the 14 tombs excavated in the 2017-2019 campaigns plus domestic and wild animals of the site. The results of  $\delta^{13}C$ ,  $\delta^{15}N$  show that all these humans had a very similar diet based mainly on domestic plants and animals, but among adults there are two clusters, one consisting of women (and an adolescent of unknown sex) with a slightly lower  $\delta^{15}N$ . Also this paleodiet cluster corresponds to the  $\delta^{18}O$  cluster of local individuals, which seems to indicate that while some individuals (of both sexes) spend part of the year elsewhere with sheep and dogs, these women remain in the settlement protecting it and working in the crops, taking care of the domestic animals and maybe also hunting. Furthermore, in some of the graves (both male and female), flints have been found, which could indicate that both sexes were related somehow with the use or production of flint tools.

### 2 TEMPORALITY AND GENDER RELATIONS DURING THE EARLY NEOLITHIC IN CENTRAL EUROPE: THE CASE OF "SCHWETZINGEN" CEMETERY (SOUTH-WESTERN GERMANY)

**Abstract author(s):** Masclans, Alba (Consejo Superior de Investigaciones Científicas – CSIC Institución Milà i Fontanals – IMF) - Bickle, Penny (University of York, Department of Archaeology) - Díaz-Zorita Bonilla, Marta (University of Tübingen, Institut für Ur- und Frühgeschichte und Archäologie des Mittelalters) - Francken, Michael (Landesamt für Denkmalpflege) - Morell, Berta (Consejo Superior de Investigaciones Científicas – CSIC Institución Milà i Fontanals – IMF)

**Abstract format:** Oral

In this presentation, we will explore gender during the Early Neolithic in Central Europe by analysing one of the largest Linearbandkeramik funerary contexts: the Schwetzingen cemetery (south-western Germany). The site has previously been subjected to detailed anthropological, isotopic and grave good analysis in the framework of interdisciplinary studies, producing hints at variation between the genders and possibly other categories of identity. However, as only 6% of the 178 graves have been dated, whether these differences represent different identity classes or change over time remains uncertain. Here, we present the results from a new set of  $^{14}C$  dates, interpreted within a Bayesian framework, to assess a more robust and complete sequence for the cemetery. This new chronological model allows for a reassessment of the variations found in burial practices, diet ( $\delta^{13}C$  &  $\delta^{15}N$ ) and mobility ( $^{87}Sr/^{86}Sr$ ). Multiple correspondence analysis will be applied to explore dynamics in burial practices, social organization and gender relations.

### 3 GENDER ON THE MOVE: CHRONOLOGY AND EXOGAMIC PRACTICES AT THE BEGINNING OF FARMING. THE CASE OF NORTH CARPATHIAN BASIN

**Abstract author(s):** Morell, Berta (Milà i Fontanals Institution-Spanish National Research Council - IMF-CSIC) - Díaz-Zorita Bonilla, Marta (Institut für Ur- und Frühgeschichte und Archäologie des Mittelalters. University of Tübingen) - Bickle, Penny (Department of Archaeology. University of York) - Tvrđý, Zdeněk (Anthropos Institute. Moravian Museum) - Mascians, Alba (Milà i Fontanals Institution-Spanish National Research Council - IMF-CSIC)

**Abstract format:** Oral

Patrilocality, suggested by both strontium isotope analysis and aDNA studies, has become the accepted and dominant kinship model for the Early Neolithic in Central Europe. Such exogamic practices are often implicitly linked to strongly gender-differentiated demographic and dietary patterns, a sexual division of labour, and interpersonal violence, leading to assumptions about women's status and male dominance. In this presentation, we will explore the presence of patrilocality, its possible consequences for women's quality of life and the construction of the female gender within the first farming communities of the North Carpathian Basin (Moravia, Czech Republic, and Slovakia). Specifically, we will present new strontium isotope and stable isotope data, to consider differences between the sexes, and how these may inform on gendered experiences. These data are analysed within the framework of a new chronology, based on Bayesian modelling of new <sup>14</sup>C dates produced in the course of the project. This allows us to assess whether variations seen in the osteological, funerary and isotopic data illustrate trends through time, or differences which shaped social organization and kinship amongst these early farmers. Overall, we suggest that although some general patterns can be identified, gendered identities were dynamic cautioning against assuming a uniform experience of gender and kinship during this time period.

### 4 IS IT A MAN'S WORLD? WOMEN BURIALS IN WESTERNMOST YAMNAYA REGIONS

**Abstract author(s):** Preda-Balanica, Bianca (University of Helsinki)

**Abstract format:** Oral

The Yamnaya migration to the west, in the first half of the 3rd millennium BC, has been in the past years one of the most hotly debated topics in archaeological and genetic research. The focus lies on the driving forces behind this event, its genetic, cultural, and even linguistic implications, as well as long-term consequences for the European continent. It is a general consensus that it brought along a shift in burial practices, the emergence of a warrior class, innovations in metallurgy, and for a while the theory of a dramatic increase in violence was very appealing, although the latter idea has been contested lately. Furthermore, it is now widely accepted among scholars that the migration was male driven for several generations, and a bias of 5 to 14 men for every migrating woman was advanced. The role of women in the initial migration process as well as their presence in the westernmost Yamnaya distribution regions is understudied. Yamnaya graves cover half a millennium at the western end of the Great Steppe, on the current territories of Romania, Bulgaria, Serbia and Hungary, and overall, women are largely invisible in current literature studying them. However, this invisibility does not derive from their actual absence from the archaeological record, but rather from the predominance of a specific focus in the interpretation of data. Taking as a starting point the burial practices related to women: funerary structures built for them, how their bodies were treated and laid inside the pit, what grave goods accompanied them, but also information from bio-anthropology about their health and activity patterns, this presentation is an exploration of their status and role in Yamnaya communities.

### 5 GENDER INTENSITY AT EARLY BRONZE AGE CEMETERIES IN AUSTRIA

**Abstract author(s):** Rebay-Salisbury, Katharina (Austrian Academy of Sciences)

**Abstract format:** Oral

In the Early Bronze Age, some Central European communities buried their dead in a gender-specific way, on different body sides and with differing orientation and grave good selections for men and women. Whereas cemeteries in Lower Austria south of the Danube are characterized by a high gender intensity, north of the Danube, the differences in the funerary ritual are less pronounced.

Advances of the third science revolution in archaeology brought unprecedented opportunities to investigate human remains in more depth. The analysis of sex-specific gene segments and sex-specific protein fragments in dental enamel have recently contributed to the accuracy of identifying the genetic sex of buried persons.

In this paper, I will use these findings to compare the gender intensity of cemeteries such as Franzhausen, Gemeinlebarn, Unterhautzenthal and Schleinbach, and investigate cases in which sex and gender expressed in the funerary ritual do not match. Exceptions to the otherwise strictly binary gender system will inform us about the scope of Bronze Age persons' actions and individual opportunities to transgress gender boundaries.

## 6 WOMEN'S IDENTITY AND STATUS WITHIN THE EARLY AND MIDDLE BRONZE AGE INHUMATION BURIALS FROM WESTERN HUNGARY

**Abstract author(s):** Melis, Eszter (Institute of Archaeology, Research Centre for the Humanities, ELRN)

**Abstract format:** Oral

The virtue of investigating burials signifies the multilevel archaeological examination of gender identities and their status. However, it raises several questions: on which level is the gender identity represented or its reflections to be ignored, and what conclusions could be drawn in relation to the deceased's status in the prehistoric community. Based on the simple statistical and correspondence analysis on more than 160 inhumation burials of ten Gáta-Wieselburg cemeteries dating on the turn of Early and Middle Bronze Age (2100/2000–1600/1500 BC) in Hungary the sharp distinction of male and female graves cannot be observed, after all, several patterns of gender differentiation in funerary practice could be suggested. There are no strict rules in body placement and orientation among the examined graves. Comparing the orientation and position of the analysed burials with the tendencies in the Central European Early Bronze Age cemeteries, the combination of burial traditions in the meeting zone of Únětice-, Nitra-, and Unterwölbling communities could be assumed. The representation of gender status could be established mostly on the level of grave furniture. Although the human remains under this study are relatively fragmentary, complex analysis of anthropological and archaeological results of the burials in Gáta-Wieselburg culture has not been investigated so far. In the future stable isotope and aDNA analyses on the osteological remains of several sampled burials included in this study may reveal the role of geographical descent and biological lineage in the burial tradition.

## 7 GENDER ROLES IN PREHISTORIC AGRICULTURE? – HARVESTING DURING THE BRONZE AGE IN CENTRAL EUROPE

**Abstract author(s):** Fejer, Eszter (Eötvös Loránd University)

**Abstract format:** Oral

Gender-based division of labour in prehistoric societies has long been presumed by scientific research on the basis of modern perceptions projected onto the past. Classical gender roles in agriculture vary by regions, but they usually implicate men participating in the heavy physical and productive activities on the field, while women assisting and/or processing of men's achievements. In case of harvesting activities, the harvesting technique, the crops to be harvested as well as the applied implements are generally thought to determine the gender of the person performing the activity. For instance, harvesting cereals with sickles in Europe is stereotypically associated with women's work, while using scythes for the same task is considered to be men's job.

This paper focuses on the issue of gender roles in Bronze Age agriculture by studying the evidence on Bronze Age harvest in Central Europe. The best-known agricultural implements of the period are the sickles which have been preserved in large quantities in the metal hoards of the Late Bronze Age, but they also appear in burials, albeit in much smaller proportions. Although grave goods may not reflect directly the everyday activities of the deceased, they can be useful tools for the investigation of hypothetical gender-based division in harvesting. Placing sickles in burials is not a general phenomenon in Bronze Age Central Europe: they were found sporadically in the area of the Tumulus and Urnfield cultures, and although more frequent, still only in a small number of the burials of the Píliny-Kyjatice and the Lausitz cultures. The paper evaluates the available archaeological data on these harvesting tools placed in graves and discuss whether they could have been associated with female or male agency. The results will be compared with historical and anthropological data on documented changes in gendered division of harvesting tasks.

## 8 A WOMAN AS THE REFLECTION OF HER MAN? TESTIMONY OF THE EARLY BRONZE AGE CEMETERIES IN KOLÍN AND MIKULOVICE (BOHEMIA)

**Abstract author(s):** Langova, Michaela - Papac, Luka - Šumberová, Radka - Brzobohatá, Hana - Ernée, Michal (Institute of Archaeology of the Academy of Sciences of the Czech Republic, Prague)

**Abstract format:** Oral

The question of women's role(s) in prehistoric societies has recently received increasingly more attention. The Early Bronze Age inhumation cemeteries in Central Europe offer a great source of data which directly link artefacts to a concrete person. Moreover, newly excavated cemeteries offer a valuable data source for scientific analyses which are shedding ever more light on the complexities of prehistoric societies.

This contribution focusses on two recently excavated Early Bronze Age Únětice cemeteries located in Kolín and Mikulovice, Bohemia. The large number of inhumations (103 skeletons from Mikulovice and 80 skeletons from Kolín) allowed for the direct comparison of female graves to one another and to male graves. The genetic sex determination of skeletons facilitated the observation of potential differences in grave goods starting already in the youngest individuals. Apparent links between sex/gender and specific artefacts or sets of artefacts were noticed in both sites as well as an obvious inequality between richly equipped female graves and poorer male graves. The comparison of

funerary treatment between two contemporaneous communities contributes to an understanding of social role and position of women within the wider Únětice Culture.

## 9 MEN MAKE THE WORLD GO ROUND? THE STATUS OF WOMEN IN THE LIGHT OF ANALYSES OF EBA CEMETERIES IN SLOVAKIA

**Abstract author(s):** Jaeger, Mateusz (Adam Mickiewicz University in Poznań) - Strózyk, Mateusz (Poznań Archaeological Museum) - Olexa, Ladislav (Institute of Archaeology Slovak Academy of Sciences)

**Abstract format:** Oral

The concept of warriors on the move presented by Kristiansen and Larsson has become a key element in the discussion of long-distance contacts and social development in Early Bronze Age Central Europe. According to the concept, male aristocratic warriors were to play a leading role in the communities that formed the extensive networks that encircled Bronze Age Europe. The figure of the man-warrior was closely associated with the spread of ideas, social institutions and elements of material culture across the vast expanses of the continent. The history of the development of Bronze Age societies thus presented leaves little room for consideration of the status and role of women. Meanwhile, in recent years detailed case studies have revealed a more complex picture. Studies supported by isotopic and genetic analysis have indicated that in addition to the rarely questioned model of the spread of innovations through male warriors, concepts in which women played an important role should also be considered.

In the course of detailed research on selected Early Bronze Age cemeteries, on the basis of statistical analyses of grave furnishings and using absolute chronology data, it was possible to establish regularities in the distribution of burials and their furnishing with grave gifts. The results of the analysis allow us to look at the dominant male-oriented narrative in a more nuanced way.

## 10 FEMALE MOBILITY IN A CHANGING BRONZE AGE WORLD: INVESTIGATING THE CONNECTIONS BETWEEN MOBILITY OF PEOPLE AND SHIFTING TRADING NETWORKS 1300BC

**Abstract author(s):** Noergaard, Heide (Moesgaard Museum, Department of Archaeology)

**Abstract format:** Oral

In recent years, isotope-related research has changed our view of the Bronze Age. Strontium isotopes have proven a great amount of mobility and lead isotopic investigation of metal artefacts revealed that Southern Scandinavia was not exploiting its copper sources; instead, it was importing metal via large-scale exchange networks from the establishment of the Bronze Age at 2000BC. Nevertheless, little is known concerning the organisation of these contact networks and the importance of females within.

This presentation wants to present the results of a project that applied a mixed-method approach, using qualitative classificatory mobility markers as quantitative data (LIA, Sr-isotopes) in a comparative and combined manner with scientifically detected mobility data (mainly of females), markers of social hierarchy and archaeological evidence of mobility (foreign costumes, styles, and techniques) to discuss the role of females in exchange networks. Based on southern Scandinavian case-studies, this presentation aims to suggest a future oriented way of investigating female mobility and the role of females in exchange networks by combining archaeological and scientific data. Further, this presentation wants to suggest a theoretical frame for future studies based on spheres of interaction, kinship relations and *evia* for determining the motivation behind female mobility in the middle Bronze Age.

## 11 BRONZE AGE 'PRINCESS' OF SÜKÖSD: CASE STUDY ON WOMEN'S STATUS AND AGENCY IN TUMULUS CULTURE IN THE CARPATHIAN BASIN

**Abstract author(s):** Pap, Evelin - Csuvár-Andrási, Réka - Pásztor, Emília (Türr István Múzeum és Bácskai Művelődési Központ)

**Abstract format:** Oral

When archaeologists find a special grave full of jewellery, they inadvertently place the deceased at the top of the social hierarchy. Is this really the case? Whether it is in fact the most prominent or 'just' a case of over-representation, a more comprehensive, comparative study over a larger area can only provide information.

A unique Bronze Age grave with rich goods belonging to the Tumulus culture was discovered in the outskirts of Sükösd at the end of 2020. The C14 analysis dated the grave between 1540 and 1430 BC. The deceased was presumably a prominent member of the community, however the social stratification of the Tumulus culture in the Carpathian-basin still needs research. It is difficult to determine woman status in a local society, which may be economic, social or spiritual. The grave at Sükösd can provide important details on these.

Artefacts indicating everyday activities were missing therefore the grave goods were not intended to emphasise everyday life. The 22-25 year old woman wore ceremonial or funerary attire.

No grave with similarly rich furnishings has been discovered in the cemetery. The precious jewellery, especially the amber from a far region, attest prominent status. Possession of such object indicates exceptional status. The presence

of special grave goods such as pierced seashells, snails, a stone egg, an amber pendant with solar symbol also reveals the social status of the deceased woman and her spiritual role in the community.

A woman's costume can provide information such as:

- regional groupings recognised in the costumes
- differentiation not only between gender and social position but also between age and social status
- movements and intermarriage among different geographical areas and cultural groups

Comparative analysis of the artefacts will add new details on the status and social role of women in the period.

## 12 THE ROLE(S) OF WOMEN IN SITULA ART

**Abstract author(s): Schaller, Clara (Ludwig-Maximilians-Universität Munich)**

**Abstract format: Oral**

The so-called "Situla Art" can be found from the 7th to 4th century BC in Northern Italy, Austria, Slovenia and Croatia. Its narrative style not only shows plants and animals but also humans at varying activities. In most cases they can clearly be identified as either women or men. Situla Art thus seems to be a great source for an analysis of gender roles and labour division. A lot of activities seem to be gender specific and women, in addition to being depicted less often than men, appear to have a smaller variety of activities attributed to them. The presentation will therefore take a closer look at the roles offered to women in Situla Art and furthermore investigate the regional and chronological differences among them across their area of distribution. It can also be shown that Situla Art does not in fact paint an objective picture of Iron Age daily life, as the style on the one hand is heavily influenced by Mediterranean depictions and on the other hand is used only by elite groups and even in this context only shows a limited scope of women's activities so that a merely idealized depiction of elite life seems plausible.

---

## 385 PLACE NAME AND ARCHAEOLOGY – NEW INTERDISCIPLINARY APPROACHES IN EUROPE

**Theme: 2. [Re]integration**

**Organisers: Ødegaard, Marie (Museum of Archaeology, University of Stavanger) - Albris, Laurine (National Museum of Denmark) - Heinonen, Tuuli (University of Helsinki)**

**Format: Regular session**

This session explores the potentials of place names in archeology, focusing on the methods of inter-disciplinary enquiry, how they are viewed and used in various countries, research environments and within different prehistoric and historic periods. The interdisciplinary use of place name studies and archaeology have long traditions in many countries. However, the preconditions of this type of research have been changing in later decades with new methods in archaeological surveying and natural sciences and with fast developments in metal detecting and archaeological excavations. Where do we stand today and how can we improve and renew our views on toponymy and on the methodological challenges we face when combining these linguistic remains with the material record?

Place names can offer unique insights into past peoples' perceptions of land and sense of place and thereby provide access to emic categories otherwise unavailable to archaeologists. Names are active elements in ongoing discourses about the landscape and there may be intimate connections between places, names and populations. Toponymy can reflect or invoke feelings on both individual and collective levels. Distributions of place names across Europe further remind us that the languages of the past did not follow modern day national borders.

The session aims to bring together scholars working on onomastics and archaeology in different parts of Europe to provide a forum for exchange of ideas and discussions on possibilities, perspectives and limitations of the use of place names. We particularly welcome case studies showing the use of place names as a resource in archaeological landscape studies and how this type of interdisciplinary work can contribute to our understanding of the roles of names in the landscape e.g. as links to the past, in creation of identities and in the organisation of settlement and society.

## ABSTRACTS

### 1 THE NAME OF THE PELOPONNESE AND RELATED ISLAND NAMES IN ANTIQUITY

**Abstract author(s): Patay-Horváth, András (Research Centre for the Humanities)**

**Abstract format: Oral**

All the extant ancient sources agree that the name of the Peloponnese was taken to mean the island of Pelops, a mythical ancestor of the Atréids. The problem is, however, that island names with a similar structure (noun + nesos) never contain the name of an important mythical person, but very often that of an animal.

Starting from this observation, it is argued that Pelops originally denoted an animal, the aurochs or wild ox, which became extinct already during the Early Iron Age. This idea is also corroborated by the comparative analysis of the

mythical tales concerning the human Pelops and by the archaeological finds from Olympia, the most important cult centre of Pelops.

An overview of ancient toponyms, especially those of Greek islands is also offered and some related personal names ending in -ops are also discussed. Special attention is paid to Merops and his island (Cos), but some medieval and modern parallels are also considered.

## 2 FINDING OLD SETTLEMENTS IN NEW WAYS? PLACE NAMES, DESERTED MEDIEVAL VILLAGES AND LIDAR

**Abstract author(s):** Heinonen, Tuuli (University of Helsinki)

**Abstract format:** Oral

In Finnish archaeology, deserted medieval settlement sites are typically located by studying historical maps in order to find place names or other indications of disappeared villages and farms. Although many of the settlements have left little traces on other historical sources like tax books, their names still often appear on the maps, making it possible to trace their location. So far, mapping the exact location of these sites has been based on fieldwork, and therefore many of the potential sites have not been surveyed because of the lack of fieldwork resources. However, the improving remote sensing methods may offer a solution for this in the future. In Finland, laser imaging data has already proven to be useful for locating new sites, and currently, more detailed lidar data is being produced enabling archaeologists to identify an increasing number of sites based on the new data. In this paper, I discuss the possibilities that combining lidar data with place names and historical maps may offer for the study of deserted medieval settlements with the help of examples from southern Finland.

## 3 DID THE URNE FAMILY CLEAR THE WOODS? WHAT DO THE PLACENAMES SAY?

**Abstract author(s):** Hartvig, Anders (Museum Sønderjylland)

**Abstract format:** Oral

During the last few years, the Museum Sønderjylland has excavated the remains of a now deserted village dating to the Early Middle Ages. The village lies south of the tribunal of Urnehoved. We know from written sources that the noble family Urne played a significant role in the area during the Early Middle Ages. The Urnehoved Forest or the Urne Forest used to cover the area. At some stage, the forest was cleared, and farms and settlements were established here. But who was behind the colonisation, and when did it take place? As late as 1543, the village of Torp, situated on the edge of the old forest, is referred to as Urnetorp. Whether the village is named after the forest or the Urne family is unknown, but there are indications that the Urne family established the village in an unsettled area during the Early Middle Ages. A number of villages with the suffix -bøl are known from the area. This suffix is usually related to a settlement or farms established in the outfield during the Viking and Early Middle Ages. Most of these -bøl settlements have a personal name as a prefix. Could this concentration of -bøl settlements indicate the clearance of the forest? Could the personal name refer to the person whom the Urne family had sent out to establish a new settlement? It is argued here that the recently excavated settlement should be related to the Urne family's colonisation of the area.

## 4 ARCHAEOLOGICAL-TOPONOMASTIC RESEARCH AND SPATIAL ANALYSIS OF EARLY MEDIEVAL BAVARIA

**Abstract author(s):** Janovská, Viktorie (Charles University)

**Abstract format:** Oral

Contact zones are attractive areas for the study of socio-cultural changes in the early Middle Ages. One of the best European examples is today's north-eastern Bavaria in Germany, where Slavic and Germanic-speaking populations lived side by side on the eastern border of the Frankish Empire.

A combination of archaeology and linguistics, using the tools of modern data sciences and statistical analysis, has revealed new opportunities for research in this area. The identification of spatial differences between place names of Slavic or Germanic origin and archaeological sources can illustrate various socio-cultural changes.

The evidence indicates that Bavaria was integrated into Frankish power structures gradually, a process that is reflected in the presence there of Carolingian-Ottonian cemeteries. This spatially restricted variable was chosen for our analysis because the Carolingian-Ottonian cemeteries are the only locally reliable archaeological diagnostic for tracing the development of and trends in settlement progression in the early Middle Ages.

Our toponomastic dataset consists of place names known through historical linguistic analysis to be of Slavic origin in comparison to German and Early Germanic place names. These place names help us to understand which populations lived in the study region and how the medieval settlement process took place there.

The landscape of Bavaria is diverse and, therefore, we focus on the question of how the distribution of toponymy and archaeological sites is related to the natural environment, altitude and climatic conditions. This poster presents the results of point pattern analysis involving a linear model and kernel density.

This study was supported by a project of the Grant Schemes at Charles University, reg. no. CZ.02.2.69/0.0/0.0/19\_073/0016935 – “Interlinking language and material culture – a study of European populations in time and space” (4EU+).

## 5 THE RELATIONSHIP BETWEEN ARCHAEOLOGY, PLACE NAMES AND ORAL TRADITION, IN PORTUGAL – AN INTERDISCIPLINARY APPROACH

**Abstract author(s):** Vieira, Alexandra (CITCEM - Transdisciplinary Research Centre «Culture, Space and Memory»; Instituto Politécnico de Bragança)

**Abstract format:** Oral

Our main goal is to analyze a set of data related to the place names associated with archaeological sites in Portugal, namely in the north of the country. The place names (toponyms) are used, in many cases, as names of the archaeological sites. Place names can be a good indicator of the presence of archaeological remains in a given place, but the Archaeology-Toponymy relationship should not be limited only to this point. The study of a toponym associated with a particular archaeological site can be quite significant for its analysis and interpretation, namely when we try to study the ways local communities explain certain archaeological remains. That is, the importance and pertinence of the study of Toponymy is here demonstrated as an element of interpretation and decoding of the Social Memory of a given community, based on Archaeology, in a process of continuous interdisciplinarity.

Toponyms may have “fixed” oral expressions, which have lasted through time by a process of “crystallization”. The process of decoding toponyms helps us to recover the memory of a place or an archaeological site. Basically, we would like to demonstrate that popular beliefs associated with archaeological remains may have persisted over time in a given geographic space, reaching out to us by the place name itself. There are several examples of the association between archaeological remains and the creation of myths and legends, which are perpetuated through place names, since communities have been, over time, interpreting the landscape that surrounds them. For example, the architectures of megalithic tombs were often interpreted as “houses” and “ovens”. But beyond that, it wasn't just any house, it was the “House of the Moorish” (Casa da Moira), the “Oven of the Moor” (Forno do Moiro), or the “Rock of the Moors” (Pedra dos Mouros).

## 6 PLACE NAMES AND PRE-CHRISTIAN RITUAL SITES IN SCANDINAVIA - HOW NEW ARCHAEOLOGICAL FINDS PUSH OUR VIEWS ON TERMINOLOGY

**Abstract author(s):** Albris, Sofie Laurine (National Museum of Denmark)

**Abstract format:** Oral

Place names were long the main source to understanding how pre-Christian Iron and Viking Age religion in Scandinavia was anchored in the landscape. However, it was not certain whether sacral place names referred to cult sites and sanctuaries or places connected with beliefs with no attached activities. Not much was known about the physical appearance of cult sites and concrete practices ritual. In the last 30 years, multiple types of sites have appeared in Scandinavia that in various ways seem to reflect religious organisation and practices. A growing number of sites are linked topographically to known sacral place names. Through archaeology, we begin to see a diversity of religious sites, even between those sites that we link with similar types of place names. We are now confronted with new questions. The challenge is to gain an overview of the types of ritual sites, their differences and similarities. This paper will particularly address how cult place terminology known from place names and Old Norse texts can be reflected in the material reality.

Pre-Christian religion may not have been so uniform as we could assume. What types of word related to what kind of site may have varied between regions and/or changed over time. Sacral place names could denote places with hardly any human activity or with centuries of continued sacrifices or other rituals.

Language and terminology changed over time, which means that intentions behind name giving could shift. For example, many topographical terms eventually became words for ritual places. Relating identified ritual activities in time to the coining of a place name may therefore provide important clues. Further, we need to understand the biography of places in a long-time perspective.

## 7 BEACONS AND MILITARY COMMUNICATION IN THE VIKING AGE. PLACE NAMES OF CIVIL DEFENCE IN WESTERN NORWAY

**Abstract author(s):** Ødegaard, Marie (Museum of Archaeology, University of Stavanger)

**Abstract format:** Oral

What can place names reveal of systems of civil defence in the Viking Age? Beacons, located at prominent positions in the landscape, were part of a warning system and ignited at the risk of attack and war. As such, beacons played a crucial role in alerting populations and mobilising military responses. A range of written, archaeological, and toponymical evidence confirms the importance of beacons and lookouts to the networks of local and regional communications that existed during the Viking Age in Scandinavia.

When beacons were lit, the population had to mobilise. However, little is known about how people from local and regional communities took part in the civil defence and mobilisation when facing attacks. How did this system function? Who took part and in what way? The aim of this paper is to discuss the local systems of communication and military organisation in the landscape of western Norway in the Viking Age through an analysis of several case studies. Documents, place names and landscape archaeology make it possible to reconstruct elements of the signalling and sighting systems and to define the spatial extents of these military networks. Of particular interest are place names of mobilisation that supported beacon systems, including mustering sites, and the territorial organisation of military units.

## 8 CAN'T SEE THE MONKS FOR THE TREES - TOPONYMS IN THE SERVICE OF PAULINE MONASTIC LANDSCAPE STUDIES

**Abstract author(s):** Peto, Zsuzsa (Hungarian National Museum / Magyar Nemzeti Múzeum; Central European University, Medieval Studies Doctoral Program)

**Abstract format:** Oral

Place names have complex historical and linguistic backgrounds in the Carpathian Basin, especially in present-day Hungary. Throughout the centuries, several ethnicities regarded the region as their home whilst they spoke different languages (Hungarian, Slav, and German names are usual); therefore a specific locality may have had two or three names, and frequently, even a detailed local historical study is not adequate enough to judge, which was the original name. In this complex space only a few attempts, usually regional collections and analyses were conducted by archaeologists and medievalists; therefore it is time to review these studies from methodological aspects, highlighting general and specific practices. Based on these studies, my first aim is to outline a methodological proposal for medievalists. But the proof of the pudding is in the eating.

The past attempts already revealed that besides medieval settlement studies, ecclesial topography and monastic landscape researches seem to be those areas, where toponyms represent the base for further studies (from localization to land-management studies).

In the past years, I studied the history and landscape archaeology of a specific monastic group, the Order of Saint Paul the First Hermit, which was founded in Hungary (mid-13th century) and until the fall of the medieval Kingdom (1526/41) were present in most mid-hilly areas of the country. Based on the written and archaeological data, ca. 60 monasteries operated in the territory of Hungary, and ca. 5000 charters survived that contain possible spatial data (medieval toponyms), regarding the Pauline properties. (Charmingly, sometimes modern stories of "the mysterious white friars" affected the toponyms.) In the second part of my paper, by applying (my hopefully) best practice, I attempt to localize some unknown monasteries, reconstruct past Pauline monastic areas, and identify properties.

## 9 PLACE NAMES AND THE LANDSCAPE OF THE NORDIC BEACON SYSTEM IN THE MEDIEVAL AND POST MEDIEVAL PERIOD

**Abstract author(s):** Nyttun, Arve (Møre og Romsdal county)

**Abstract format:** Oral

Place names have been an important part of the Scandinavian research on beacon sites since the late 19th century. Linguistics studies have identified three main categories of place names that most likely represent norwegian, danish and swedish systems that can be traced back in time, at least to the early medieval period.

This paper explores the potentials of an interdisciplinary collaboration, where archeology, place name studies and history is focusing on the methods on how to identify and investigate sites related to the coastal defence systems. I will focus on the norwegian beacon systems, and show how new methods in archaeology like geofysics, lidar data and GIS together with conventional archaeological excavations can provide new knowledge about the systems, the organisation of the coastal defence, and even identify times of war. What challenges does the use of place name provide, and how can we identify locations that dosent have a place name related to the function. What other place names, and futures related to the leavy system can be identified in the same way as beacons?

Place names offer insights into past peoples' perceptions of land and can reveal locations of interest, but through archaeological excavations and registration of these sites, material culture can give more information to change our perception of the place name also.



**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Verhagen, Philip (Faculty of Humanities, Vrije Universiteit Amsterdam) - Daems, Dries (Institute of Social Sciences, Middle East Technical University, Ankara) - Romanowska, Iza (Aarhus Institute of Advanced Studies) - Hinz, Martin (Institut für Archäologische Wissenschaften, Universität Bern)

**Format:** Round table

Archaeologists are increasingly relying on computer simulations to reconstruct and understand past societies. They are successfully building and running simulations of agrarian production, trade, settlement development and movement, to name a few. The current state of the field, however, is characterised by idiosyncrasy and limited communication and integration of the community, hampering the ability of modellers to cumulatively build on each other's work. This is predominantly due to the lack of appropriate tools and platforms enabling closer integration.

To remedy this situation, the NAS2A project (Network for Agent-based modelling of Socio-ecological Systems in Archaeology) is developing an open library of model algorithms and code for modelling of socio-ecological systems in archaeology. It aims to redefine current practices in collaboration and synergy in modelling communities by developing an openly available and functional models library, offering a host of elements (modules, techniques, algorithms, how-to's/wikis etc.) as modular building blocks for elaborate and case-driven models and research questions.

In this first roundtable of the (proposed) EAA Community "Computational Modelling of Social-Ecological Systems (COMS)", we will present the results of the project's first results towards developing the necessary infrastructure and standards, and invite feedback from experts and the roundtable audience. In particular, we want to address the following questions:

- how can we ensure that model elements can be used for a wide range of research questions?
- how can we facilitate interaction, comparison and testing of models across platforms and programming languages?
- how can we achieve a sustainable infrastructure for this?
- and what more is needed to make simulation modelling accessible to a wider community of archaeologists?

Confirmed discussants:

- Felix Riede (Aarhus University)
- Maja Gori (Ruhr-Universität Bochum)

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Mitnik, Alissa (Department of Human Evolutionary Biology, Harvard University, Cambridge MA; Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology, Leipzig) - Kroonen, Guus (Leiden University Centre for Linguistics) - Saupé, Tina (Estonian Biocentre, Institute of Genomics, University of Tartu) - Cavazzuti, Claudio (Alma Mater Studiorum, Università degli Studi di Bologna, Dipartimento di Scienze Umanistiche) - Molloy, Barry (UCD School of Archaeology, University College Dublin)

**Format:** Regular session

The ongoing Third Science Revolution in Archaeology brought with it a resurgence of migratory models of culture and inquiry into language changes in the past. This led to calls for a holistic integration of archaeological disciplines with the natural sciences and for a responsible formulation of interpretations harnessing the parallel growth of theoretical frameworks, from network modelling to post-colonial thinking, to exceed simplistic narratives of mass migrations and population replacements.

The Mediterranean region is rich in archaeological evidence for diverse interconnected cultures, settlement systems, and socio-political aggregations. The wide-ranging historical record attests to the presence of numerous languages and language families. The region has been relatively inaccessible to genetic research due to less favorable conditions for DNA preservation, however, recent methodological advances are bringing a wealth of new data. As with other, more thoroughly analysed regions of Europe, these data point to widespread changes in the genetic landscapes, associated with the Neolithic Revolution and, later on, the dispersion of ancestry related to pastoralists from the Eurasian steppes, which is commonly linked to the spread of Indo-European languages. Research on material culture and isotopes have revealed wide-ranging networks of interaction along maritime and land routes involving Europe, the Levant, North Africa, and regions beyond.

These developments promise to help identify many of the mechanisms that drove the formation of the Mediterranean linguistic landscape. Biomolecular evidence can be utilized to evaluate existing and formulate new hypotheses on the movements, interactions and social organizations of linguistically defined, past groups.

In this session, we invite participants from the disciplines of archaeology, genetics and linguistics to present research from pre-historic or early historic Mediterranean case studies, regional-scale theoretical frameworks for individual mobility, or methodological innovations for measuring who or what was mobile. We seek interdisciplinary contributions that engage with and lend inspiration to other disciplines.

## ABSTRACTS

### 1 THE TRANSFORMATION OF THE GENOMIC LANDSCAPE IN COPPER AND BRONZE AGE CAMPANIA

**Abstract author(s):** Mitnik, Alissa (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology, Leipzig; Department of Human Evolutionary Biology, Harvard University, Cambridge) - Cavazzuti, Claudio (Università degli Studi di Bologna, Dipartimento di Storia Culture Civiltà) - Coppa, Alfredo (Department of Environmental Biology, Sapienza University of Rome; Department of Genetics, Harvard Medical School, Boston; Department of Evolutionary Anthropology, University of Vienna) - Petrone, Pier Paolo (Dipartimento di Scienze Biomediche Avanzate, Università di Napoli Federico II) - Bondioli, Luca (Bioarchaeology Service, Museum of Civilization, Rome; Department of Cultural Heritage, University of Padua) - Catalano, Giulio (Dipartimento di Scienze e Tecnologie Biologiche Chimiche e Farmaceutiche, Università di Palermo) - Sperduti, Alessandra (Bioarchaeology Service, Museum of Civilization, Rome; Dept. Asia, Africa e Mediterraneo, University of Naples "L'Orientale") - Caramelli, David (Department of Biology, University of Florence) - Pinhasi, Ron (Department of Evolutionary Anthropology, Human Evolution and Archaeological Sciences - HEAS, University of Vienna) - Reich, David (Department of Human Evolutionary Biology, Harvard University, Cambridge; Howard Hughes Medical Institute, Harvard Medical School, Boston; Broad Institute of Harvard and MIT, Cambridge)

**Abstract format:** Oral

The expansion of different groups carrying genetic ancestry components originating in the European Steppe and in the Eastern Mediterranean and their admixture with local populations from the Copper Age onward has been well described for Central Europe and the western Mediterranean, but data from the Italian peninsula is still sparse, and samples from the Copper and Bronze Age southern Italian mainland are so far completely lacking.

Here, we present genome-wide data from 71 individuals from the southern Italian region of Campania on Italy's Tyrrhenian coast, dated to the Copper and Bronze Ages, ca. 3500-1000 BCE. Campania's central location facilitates maritime contacts to other parts of the Mediterranean, as well as exchange across the peninsula and beyond over land or coastal routes. It is therefore of special interest in addressing questions about the timing and persistence of cultural contacts and population movements. Furthermore, the region has also been subject to unique periods of depopulation and resettlement due to major volcanic activity, leading to 27 eruptions between 3600 and 1200 BCE.

We observe the first appearance of individuals carrying Steppe-related ancestry in the Early Bronze Age, 1900-1700 BCE, around two centuries after it is first attested in Northern Italy and Sicily. From this period onward, Steppe-related ancestry is ubiquitous in the population, and there is no evidence of recent admixture with or persistence of populations that remain genetically continuous with the preceding Copper Age. Contrary to the development in Sicily in the Bronze Age, Campanian populations do not experience major gene flow from an eastern Mediterranean source.

We describe changes in the Campanian genetic landscape and discuss them in relation to the complex population dynamics and cultural transformations in other regions of Italy and the Mediterranean.

### 2 MOBILITY OF PEOPLE, THINGS, IDEAS BETWEEN THE AEGEAN AND THE ITALIAN PENINSULA AT THE TIME OF CREMATION (LATE BRONZE AGE)

**Abstract author(s):** Cavazzuti, Claudio (Alma Mater Studiorum, Università degli Studi di Bologna; University of Durham) - Arena, Alberta - De Benedetto, Giuseppe (Università del Salento) - Pamela, Fragnoli - Jung, Reinhard (Austrian Archaeological Institute, Austrian Academy of Sciences) - Scarano, Teodoro (Università del Salento)

**Abstract format:** Oral

The Late Bronze Age is a crucial period for the dynamics that brought to ethnic formations and colonization processes of the 1st millennium BCE. In absence of linguistic evidence and considering the wide diffusion of cremation, which prevents population-scale biomolecular analyses, it is fundamental to explore economic and geopolitical relations, as well as cultural influences, by using an integrated and more complex approach.

Our contribution focuses on the maritime corridor between the Italian peninsula and the Aegean, along which tangible and intangible goods flew with unprecedented intensity during the period between the 16th and the 11th century BCE. The progressive increase of contacts between Mycenaean and the Italic communities along the Western

Adriatic coasts (up to the Po River delta) since Late-Helladic IIA is clearly indicated by the distribution of the (mostly) Mycenaean-type pottery; at the same time, copper imported from the Eastern Alps and several Italian-type objects (e.g. swords, ornaments) have been identified in Mycenaean contexts.

The last centuries of the 2nd millennium also saw the spread of the 'urnfield model' southward. In this regard, the freshly discovered cremation cemetery at Torre Guaceto (Brindisi) represents a keystone for analysing north-south, as well as west-east movements, not at a population level, but at the scale of individuals/small groups who played a prominent role in determining decisive cultural and social transformations.

### 3 THE GENETIC ORIGIN OF DAUNIANS AND THE PAN-MEDITERRANEAN SOUTHERN ITALIAN IRON AGE CONTEXT

**Abstract author(s):** Saupe, Tina (Estonian Biocentre, Institute of Genomics, University of Tartu) - Aneli, Serena (Department of Biology, University of Padua) - Montinaro, Francesco (Estonian Biocentre, Institute of Genomics, University of Tartu; Department of Biology-Genetics, University of Bari) - Scaggion, Cinzia (Department of Geosciences, University of Padua) - Carrara, Nicola (Anthropology Museum, University of Padova) - Kivisild, Toomas (Estonian Biocentre, Institute of Genomics, University of Tartu; Department of Human Genetics, KU Leuven) - Metspalu, Mait (Estonian Biocentre, Institute of Genomics, University of Tartu) - Scheib, Christiana (Estonian Biocentre, Institute of Genomics, University of Tartu; St John's College) - Pagani, Luca (Estonian Biocentre, Institute of Genomics, University of Tartu; Department of Biology, University of Padua)

**Abstract format:** Oral

The geographical location and shape of Apulia, a narrow land stretching out in the sea at the South of Italy, made this region a Mediterranean crossroads connecting Western Europe and the Balkans. Such movements culminated at the beginning of the Iron Age with the lapygian civilization which consisted of three cultures leaving their marks on the cultural heritage: Peuceceans, Messapians, and Daunians (first mentioned in 7-6th century BCE). However, their genetic origin has been lost to time and their genetic impact on the present-day gene pool is uncertain.

Therefore here, we present genome-wide data (average human coverage: 0.031 - 0.995x) of 16 ancient individuals collected from three archaeological sites geographically located in northern Apulia (Ortona, Salapia, San Giovanni Rotondo) and historically/archaeologically associated with the Daunian culture. We extracted DNA from human skeletal remains at the dedicated ancient DNA laboratory at the Institute of Genomics, Tartu (Estonia) and chose ten individuals based on their genetic proximity for radiocarbon dating to further identify their genetic ancestry influences (estimation between 1157 - 275 calBCE and 670 - 1156 calCE).

To investigate the impact of the ancient individuals dated to the pre-Roman times, we merged the genome-wide data with modern individuals from Italy, in particular from Apulia, and found that our newly generated individuals are still genetically distant from the genetic variability of present-day Apulian. Instead, we found a high genetic heterogeneity between the ancient individuals despite the close distance between the sites and suggesting a strong geopolitical contingency.

Besides the genetic heterogeneity, we used a multidisciplinary approach combining the osteological profile, radiocarbon dating and genetic relatedness to study the kinship between the ancient individuals. Interestingly, we found a possible 1st-degree relationship between two female individuals with different genetic ancestries confirming the genetic heterogeneity in Iron Age Southern Italian Peninsula.

### 4 INSIGHTS INTO THE GENETIC LANDSCAPE AND MOBILITY PATTERNS OF THE BRONZE AGE - IRON AGE TRANSITION IN SOUTHEAST EUROPE

**Abstract author(s):** Iraeta Orbegozo, Miren (Globe Institute, University of Copenhagen; UCD School of Archaeology, University College Dublin) - Fibiger, Linda (School of History, Classics & Archaeology, University of Edinburgh) - Mylopotamitaki, Dorothea (Globe Institute, University of Copenhagen) - Makarewicz, Cheryl (Institute of Prehistoric and Protohistoric Archaeology, University of Kiel) - Laffoon, Jason (Department of Archaeological Science, Leiden University) - Molloy, Barry (UCD School of Archaeology, University College Dublin) - Schroeder, Hannes (Globe Institute, University of Copenhagen)

**Abstract format:** Oral

The Late Bronze Age was a period of exceptionally high connectivity in Southeast Europe, both between lands surrounding the sea and their nearby inland neighbours. A much debated collapse of complex economic networks ca. 1200 BC was followed by several centuries during which regional connectivity declined yet internal reorganisation of societies was acute. If the Aegean is seen as a driving force in networks linking the East Mediterranean and Europe during Late Bronze Age, then the Carpathian Basin was a primary hub through which ideas and people flowed. Contemporary to the collapse of Mycenaean palatial society and the Terramare groups of the Po Valley, a horizon of massive fortified sites that had characterised the Late Bronze Age in the south Carpathian Basin was abandoned. In the Early Iron Age smaller and less centralised settlement networks emerged there. As societies throughout this wider

region became networked again in the earlier second millennium BC, cross-regional mobility played an important role.

This paper aims to explore changes in the south Carpathian Basin at this time of changing networks within the context of the Mediterranean communities they were engaged with. Specifically, we aim to shed light on the genetic landscape and patterns of individual mobility that can inform us about the spatial and temporal networks of these people. We present preliminary results of ongoing multidisciplinary analyses, including genome-wide data for 51 individuals ranging from Late Bronze Age to Early Iron Age from eight sites. Our study focuses on the mass-grave at Gomolava, including ancestry and relatedness among the analyzed individuals. Coupled analysis of new dietary and mobility isotope data, we provide a uniquely rich 'snapshot in time' of a community during this transitional period set within their regional genetic and social context.

## 5 MALARIA AS A SELECTIVE FORCE IN THE PREHISTORY OF THE MEDITERRANEAN BASIN

**Abstract author(s):** Gonzalez Fortes, Gloria (Universita di Ferrara) - Mira, Stefania - Perretti, Silvia - Antonica, Bianca (Università degli studi di Ferrara) - Trucchi, Emiliano (Università di Ancona) - Barbujani, Guido (Università degli studi di Ferrara)

**Abstract format:** Oral

Malaria is thought to have been a main selective force in human evolution. Indeed, it is still one of the main causes of mortality in developing countries in tropical areas.

It's caused by a protozoan Plasmodium, which is transmitted through the mosquito Anopheles. Its presence in the Mediterranean has been dated to ~10,000 yBP, following the agriculture expansion around the Neolithic.

The selective effect of malaria is associated to the persistence of deleterious alleles, which in turn confer resistance against the parasite. One of the best-known examples is the prevalence of thalassemia and sickle cell variants in malaria endemic regions.

But when did this selection start? And how strong was it in the Mediterranean basin? These questions have been object of intense research, with most of the studies being based on the observation of correlations between the distribution of the parasite and the resistant variants.

Here we present a direct approach, based on the analysis of DNA from ancient humans. We analysed the genomes of more than 300 ancient individuals from Italy and Central Europe, in a time transect of 12000 years (from UP to Medieval times). We studied the changes of allele frequency at loci related to malaria resistance in both datasets, to understand when and to what extent the malaria was an evolutionary force in Europe.

Unlike Central Europe, we found an important increase of malaria resistant alleles in Italy around the Bronze Age, especially in Sardinia. What's more, our analysis showed that the nature and prevalence of protective variants in the beta-globin gene in prehistoric Italy differed from those found in the current populations. Following the times and origins of the different trends in selection towards different resistant alleles, we are reconstructing the times and dynamics of malaria expansion in Italy and the southwest Europe.

## 6 THE SPICE THAT CAME IN FROM THE EAST: SAFFRON AND THE CHRONOLOGY OF LINEAR B TABLETS FROM KNOSSOS

**Abstract author(s):** Pierini, Rachele (University of Copenhagen)

**Abstract format:** Oral

The Linear B script encodes Mycenaean, the earliest written evidence of the Greek language. In particular, Linear B tablets from Knossos provide the earliest evidence for the Mycenaean language since the Palace of Knossos underwent several destructions: the tablets from the Room of the Chariot Tablets (RCT) date around 1400 BCE, the tablets from the North Entrance Passage (NEP) are later than RCT tablets but earliest than the tablets from the other deposits, and the tablets from the rest of archives belong to the final destruction (ca. 1200 BCE), thus being contemporary to the majority of tablets from the other main sites. Also, RCT tablets provide the closest similarities with Linear A tablets.

Saffron (*crocus sativa*) is a spice and a yellow-dyeing agent. It is etymologically identical with the Semitic word for 'saffron' but these Semitic words could be loans themselves. Saffron is a central motif in Minoan art and appears abundantly on RCT tablets but not on tablets from later deposits. However, later Knossos tablets record safflower (*carthamus tinctorius*), a yellow-dyeing agent not appearing on RCT tablets. Also, a broader analysis of the Knossos textile terminology highlights two elements: these terms do not have an Indo-European etymology, and there is a relationship between chronology and specific textile types.

This paper argues for a relationship between chronology and yellow dyes, too. Also, it explores hypotheses on the origins of saffron, its route to the Aegean area, its use by Minoans and Myceneans, and potential causes of its abandonment after 1400 BCE.

## 7 ISOTOPIC MOBILITY RESEARCH: LET US PAUSE AND REFLECT

**Abstract author(s):** Nafplioti, Argyro (Ancient DNA Lab, Institute of Molecular Biology & Biotechnology - IMBB, Foundation for Research and Technology - Hellas - FORTH)

**Abstract format:** Oral

Provenance, residential mobility and migration are recurrent themes in archaeological research. Since the 1980s, isotope analysis of archaeological skeletal remains has revolutionized research in this field. However, although more recent advances in research methodology and theoretical background have improved our ability to identify both short- and long-term residential mobility, and enabled us to move beyond the simple dichotomous classification of past individuals as either local or nonlocal, there are still shortcomings we need to overcome, particularly with regard to research planning, sampling, data analysis and interpretation.

In response to a surge of isotope studies on mobility, a critical review of the data in hand is ever so timely. This paper discusses the potential and limitations of isotope research. Taking into consideration shortcomings in recent published work, this paper identifies potential pitfalls and gives recommendations for most effective practices for research planning, sampling and data analysis, and for framing archaeological interpretation of past mobility and migrations.

Aiming at more effectively characterising past mobility and migration with a view to better understanding the complexity of these processes, the motivations and consequences to the people moving, the receiving communities and those staying behind, we need to combine a methodologically sound research with a theoretically informed social bioarchaeology of migration. The way forward is to move beyond a mere fingerprinting of migration or relocation episodes, towards an investigation of these themes through a different paradigm, wherein the individual is central and migration and mobility are studied themselves as multi-layered processes and socio-cultural phenomena.

## 8 EATING AND MOVING IN ANCIENT VERONA FROM LATE PREHISTORY TO MIDDLE AGES

**Abstract author(s):** Varalli, Alessandra (CaSEs Research Group, Department of Humanities, Universitat Pompeu Fabra, Barcelona) - Dori, Irene (Soprintendenza Archeologia, Belle Arti e Paesaggio per le province di Verona, Rovigo e Vicenza) - Mongillo, Jessica - Vescovo, Giulia (Department of Environmental and Prevention Sciences, University of Ferrara) - Lo Iacono, Ambra - Basso, Patrizia (Department of Cultures and Civilisations, University of Verona)

**Abstract format:** Oral

Since late Prehistory, the communities living in the Po Plain played a significant role in the development of the Southern European economic networks thanks to their strategic position in northern Italy. Particularly, the town of Verona and the surrounding areas were pivotal for the evolution of new trade, the exchange of raw material and the spreading of prestige objects. The aim of our study was to assess changes in subsistence strategies and to detect mobility events of the societies living in this area. We used multi-proxy biochemical investigations to explore how new people and different cultural traditions integrated and how the socio-economic systems of the local communities evolved over time.

We analysed anthropological, archaeological and isotopic data from 11 sites in Verona and surrounding areas dating to the period of pile-dwellings (early 2nd millennium BC), the Romanisation period (2nd-1st century BCE), the end of the Roman Empire (4th-6th century CE) and the Middle Ages (the 9th-11th century CE), to shed light on dietary choices, residential mobility and social practices from late Prehistory to the Medieval time.

Carbon, nitrogen and sulphur stable isotope analysis on bone collagen was conducted on 79 humans of different age and sex and 21 domesticated animals (pigs, cows, sheep, horses). These preliminary results show a wide variability in carbon and nitrogen values suggesting varying C3 and C4 plant consumption and diverse animal protein intake by humans. Three main outcomes are highlighted: 1) the consumption of C4 plants is well attested in all the periods analysed; 2) individuals of protohistoric and Roman times show higher mobility than the ones from the Middle Ages; 3) individuals from the urban and plain areas show higher mobility than the ones from the hills/mountains. Moreover, individual mobility seems more significant for women than men.

## 9 UNDERSTANDING THE PROCESS OF SKIN LIGHTENING IN EUROPEANS: A MIX OF SELECTION AND MIGRATION FACTORS

**Abstract author(s):** Gonzalez Fortes, Gloria (Universita di Ferrara) - Perretti, Silvia - Barbujani, Guido (Università degli studi di Ferrara)

**Abstract format:** Oral

As Homo sapiens spread out of Africa, it faced the challenge to adapt to new environments. One of the best-known adaptive features is the variation of skin pigmentation. Populations from equatorial regions have darker skin than those from higher latitudes, which is explained as an adaptation to different levels of UV radiation. In high UVR regions, a high melanin content is protective against the photolysis of folate, while in lower exposed regions, the loss of melanin was favoured to facilitate the synthesis of vitamin D.

However, to reconstruct the evolutionary process behind the observed pattern is not simple. The skin pigmentation is a complex trait influenced by genes involved in several aspects of melanin production, storage and transportation. From the analysis of modern populations, it seems that variants involved in skin lightening appeared at different times and geographic areas, but the combination of selective and migration processes that led to the current geographical distribution is not yet clear.

Ancient DNA studies have shown that only 10,000 years ago human populations living as high north as the British islands had dark skin, and the first genetic signals of lightening did not appear until the spread of Neolithic farmers, almost 3,000 years later. However, neither the pioneering farmers, nor the later Bronze Age migrants, showed the pale skin phenotype that nowadays is widespread in Europe.

Here we present an innovative approach based on the reconstruction of DNA haplotypes around the main variants involved in skin pigmentation. We are comparing the genetic information between modern populations and key ancient individuals, which are representative of the major prehistoric migrations into Europe. Based on the combination of state-of-art bioarchaeological approaches (aDNA, 14C dates and cultural information), we are tracking back the events that shaped the current distribution of human skin pigmentation.

## 10 HOW CAN ADNA BE YOUR FRIEND: PREDICTIVE CASE STUDIES FROM THE PREHISTORIC AEGEAN

**Abstract author(s): Ozturk, Huseyin (College Year in Athens; American School of Classical Studies at Athens)**

**Abstract format: Oral**

In the last decade, linguistics, genetics, and archaeology have had an increasingly fruitful yet equally troublesome relationship. The troubles are partially caused by the very dissimilar pasts of these disciplines: they have different scholarly conventions, they come from different worlds. Occasionally, multi-disciplinary efforts to fill in the chasms between them with theoretical substance give the impression of three hearing-impaired people trying to communicate using three different sign languages.

A big part of the issue seems to be the following: for many archaeologists, trying to figure out (pre)historical movements or the ethnogeneses of ethno-linguistic population groups is not a fundamental question at all, a relic of the culture-historical past, perhaps even considered unappealing. And, to many of them, it looks like that is exactly what archaeogenetics and comparative paleolinguistics are trying to achieve.

Archaeology's main aim, however, is, ultimately, understanding the human condition, and social change -of which language change remains an integral part- is undeniably a legitimate scholarly question. Rather than chasing grand narratives, establishing more small-scale, well-defined, high-resolution, testable hypotheses can help with the uneasiness felt by many. The solution may well lie in an archaeological predictive modeling, if you will, postulating what type of future aDNA and other biomolecular results can weigh in and hopefully illuminate such archaeological questions about social change detected in the material record, with the help of historical linguistics when relevant.

In this paper, I will try and create such testable hypotheses about case studies from the Bronze and Iron Age Aegean, on both sides of the pond. Studies on ethno-linguistic groups of the past and movements of population groups and their questionable archaeological traces do not need to be Kossinna-style culture-historical or serving any national agenda, there might be yet another way. After all, these questions are part of the human condition.

### A. A GENETIC HISTORY OF MOBILITY IN THE IRON AGE CENTRAL MEDITERRANEAN

**Abstract author(s): Moots, Hannah (University of Chicago) - Antonio, Margaret (Stanford University) - Sawyer, Susanna (University of Vienna) - Lucci, Michaela (Sapienza University) - Cherifi, Mehdi (Benyoucef Benkhedda University) - Gao, Ziyue (University of Pennsylvania) - Fantar, Mounir (Institut National du Patrimoine Tunisie) - Coppa, Alfredo (Sapienza University) - Pritchard, Jonathan (Stanford University) - Pinhasi, Ron (University of Vienna)**

**Abstract format: Poster**

The Iron Age saw the expansion of Phoenician and Greek colonies across the Mediterranean and the rise of Carthage as the major maritime power of the region. These events were facilitated by the ease of long-distance travel following major advances in seafaring. From the archaeological record, we know that trade goods and materials were moving across great distances in unprecedented quantities, but it is unclear how these patterns correlate with human mobility. To investigate population mobility and interactions directly, we sequenced the genomes of 30 ancient individuals from Carthaginian and Etruscan port cities around the central Mediterranean, in Tunisia, Sardinia, and central Italy. At all three locations, there is a meaningful contribution of autochthonous populations (from Bronze Age North Africa, Sardinia, and Italy, respectively), as well as highly heterogeneous ancestry including many individuals with ancestry from other parts of the Mediterranean region. These results highlight both the role of autochthonous populations and the extensive interconnectedness of populations in the Iron Age Mediterranean. By studying these trans-Mediterranean neighbors together, we explore the complex interplay between local continuity and mobility that shaped the Iron Age societies of the central Mediterranean.

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Baragona, Anthony (Freelance Conservation Scientist; University of Applied Arts Vienna) - Rodler, Alexandra (Austrian Archaeological Institute, Austrian Academy of Sciences; Department of Lithospheric Research, University of Vienna) - Tehrani, Rebecca (Dresden University of Fine Arts)

**Format:** Regular session

Four walls make a room, but what happens to them afterwards is what makes them “home”. During the Roman empire decorating wall-spaces was an integral part of ancient life and great effort, both technical and (often) financial, were made to transform a structural necessity into something that could uplift the spirit as well as communicate power and prestige through elaborate motifs and the use of expensive materials. Often this took the form of wall paintings, but decorative plaster, moldings, and tiles were used as well. Technological choices in ancient products and the provenance of resources are interesting meeting points for discussing cultural change and trade interactions in human history. Moreover, although it is a building-related art, the information we take from wall decorations is not always preserved in situ. Often, archaeological fragments are the only accessible resources, collections of which provide valuable information about their excavation, storage, conservation, and presentation history in addition to their archeological meaning.

An interdisciplinary dialogue between archaeologists, natural scientists, conservators, and curators is required to address the challenges of collection management and those related to the analysis of archaeological materials. We invite contributions that inspire this dialogue, and discuss their work on, e.g., the development of analytical instruments and techniques for cultural heritage research, production technology and provenance of materials used for wall paintings and other architectural elements. We also welcome contributions that address issues related to the conservation/restoration of wall paintings, representative and ethical sample selection, and storage, past and current display, and modern reconstruction of decorated wall surfaces.

## ABSTRACTS

### 1 FRAUD ON ROMAN PAINTED WALLS?

**Abstract author(s):** Becker, Hilary (Binghamton University, SUNY)

**Abstract format:** Oral

Occasionally, a mixture of pigments detected on a Roman wall painting, such as a cinnabar mixed with red ochre, is said to be adulterated. However, detecting that fraud happened in a particular instance on the walls is not possible. Being able to pinpoint the economic transactions behind the use of pigments used in a particular painting—and proving that fraud occurred in purchasing the pigments (and not a desire to save a denarius or to formulate a desired color blend) is not possible.

But such concerns raise a series of questions about the quality of pigments and whether pigments were adulterated in the Roman period. Fraud, adulteration, and substitution certainly did occur in the trade and sale of pigments and this paper will survey the evidence for such practices. At the same time, there were institutions in place that helped to safeguard patrons from being unwitting victims and purchasing poor materials.

### 2 TWO PHASES OF SECOND STYLE ADORNING THE DOMUS DEI BUCRANI (OSTIA ANTICA): THE TECHNICAL STUDY

**Abstract author(s):** Souris, Magali (University of Liège; Fonds de la Recherche Scientifique - FNRS) - Morard, Thomas - Defeyt, Catherine (University of Liège) - Frère, Géraldine (University of Namur) - Girard, Thibault - Herens, Élodie - Moffa, Lucie - Strivay, David (University of Liège)

**Abstract format:** Oral

The excavation and study led since 2010 by the University of Liège on the Domus dei Bucrani, a late Republican house situated on the parcel of the Schola del Traiano at Ostia Antica, delivered a very large amount of Second Style wall paintings found in situ and in a fragmentary state, both in excellent conditions of conservation. The stratigraphy of the site, the architectural context and archaeological artefacts make it possible to distinguish two decorating phases with an accurate chronology: a first phase dating from 60-50 B.C.E. was found in four rooms and a second one dating from 40-30 B.C.E. was adorning two other rooms. The stylistic study confirms clear differences between the two pictorial phases. The problematic which now has to be addressed is to determine whether distinctions also appear in the composition of the materials and in the pictorial techniques used for the production of the two groups of wall paintings. The technical study, initiated since the uncovering of the wall paintings in collaboration with the Parco Archeologico di Ostia Antica and currently being pursued within a doctoral thesis supported by the F.R.S.-FNRS, aims

to answer this question. The technological approach includes a thorough microscope examination and non-invasive archaeometric analyses such as punctual Raman and FT-IR spectroscopy, as well as punctual and mapping X-ray fluorescence spectroscopy.

The present contribution will describe the methodology and equipment developed to highlight the technical particularities of the pictorial production of the Domus dei Bucrani. It will discuss the features to consider in order to discriminate the two phases of Second Style and will present the preliminary results of the study.

### 3 INVESTIGATION OF THE EXTENT OF THE ROMAN WALL PAINTINGS IN THE AMBIENTE N. 40 OF VILLA ARIANNA (STABIAE)

**Abstract author(s):** Leitner, Simon Elio (Dresden University of Fine Arts)

**Abstract format:** Oral

This contribution concerns the investigation of the Ambiente n. 40 of the Villa Arianna at the archaeological site of Castellammare di Stabia, Italy. The villa dates from the Republican-Imperial Roman period (II-I Century B.C.), the room of concern was mainly used as a passageway to connect the representational part of the villa with the part reserved for servants. Nevertheless, the room was decorated with wall paintings in the IV style, of which the painting and plaster as well as later added conservation materials were studied. In addition to the material analysis, this contribution presents insights into the building history of the room as well new insights into the composition of the intonachino plasters and plastering technique.

Besides non-invasive optical investigations, micro-samples from selected areas were taken to both investigate the stratigraphy and characterise the intonachino plasters and its components, and thus better understand the historic painting technology. Polished cross-sections were microscopically investigated and SEM-EDS for qualitative analyses were applied. It was observed that the finishing plasters were given a specific colouring to enhance the saturation of certain colours, depending on the design of the wall paintings. The painting technique, also described in literature, was analytically verified. Besides the classical composition for white intonachino plaster, used in Vesuvian areas, generally prepared with crushed sparite and marble and pozzolanitic aggregates. An unfired ceramic aggregate was also added for an additional reddish intonachino plaster colour, which could be proven by scientific analyses (SEM-EDS) There is a presumption that the Romans deliberately used a reddish clay aggregate to exploit its technical properties.

Furthermore, the painting technique and the image representations in the room are detailed in the article, as well as the treatment of the archaeological architectural cultural property since its excavation is discussed.

### 4 BENEATH THE PICTURES, BEYOND THE BRICKS. USING WALL-PAINTING PLASTER AND MORTAR STRATIGRAPHY IN ARCHAEOLOGICAL INTERPRETATION

**Abstract author(s):** Baragona, Anthony (University of Applied Arts, Vienna)

**Abstract format:** Oral

Many tools can be used to establish the chronological development of an ancient building. However, the study of the plasters on which wall paintings are applied and the mortar from which walls are built is often overlooked. Dating a wall by the style of painting it bears is not without its risks – paintings can be touched-up, repainted or even completely removed and reattached. Likewise, bricks and ashlar that make up a wall are often recycled, and the reuse of these materials brings into question chronologies based on dating them. However, the mortars used in building a wall give a good idea of the latest date that the wall was assembled, and this information can be used to establish the chronological development of a building, how it changed over time.

This contribution discusses using the image-based methods of light microscopy, SEM/EDX and imaging FTIR, combined with digital image analysis, as applied to stratigraphic (transverse), polished petrographic thin sections of mortar samples from two structures at Ostia Antica: the Case a Giardino (painted plaster) and Taberne Finestrate (wall bedding mortar). In the case of the Taberne Finestrate, mortar analysis could be tied to several phases of development from the Hadrianic to Late Antique periods, while in the case of the Case a Giardino, building and rebuilding within the Hadrianic timeframe could be established.

This research made possible by and in collaboration with the project: "Archaeological context and virtual archaeology of a large roman housing complex – the Case a Giardino at Ostia Antica" (FWF P 31438-G 25) (FWF-Austria/ P. Ruggendorfer, ÖAI) and with Centro Studi Pittura Romana Ostiense (CeSPRo) (Ministero per i Beni e le Attività Culturali - Italy/ P. Tomassini).



## 5 BLUE WALLS: ON THE PROVENANCE OF EGYPTIAN BLUE PIGMENTS FROM ROMAN NORICUM

**Abstract author(s):** Rodler, Alexandra (Research Group Object Itineraries, Department Historical Archaeology, Austrian Archaeological Institute, Austrian Academy of Sciences; Department of Lithospheric Research, University of Vienna) - Arioli, Gilberto (Department of Geosciences, University of Padua) - Jansen, Moritz (Deutsches Bergbau-Museum Bochum) - Klein, Sabine (Deutsches Bergbau-Museum Bochum; Ruhr-Universität Bochum, Institut für Archäologische Wissenschaften) - Koeberl, Christian (Department of Lithospheric Research, University of Vienna) - Tepe, Nathalie - Hofmann, Thilo (Centre for Microbiology and Environmental Systems Science, Department for Environmental Geosciences, University of Vienna) - Fragnoli, Pamela (Research Group Object Itineraries, Department Historical Archaeology, Austrian Archaeological Institute, Austrian Academy of Sciences) - Dolenz, Heimo (Provincial Roman Archaeology & Field Research, Landesmuseum Kärnten) - Krajšek, Jure (Regional Museum of Celje)

**Abstract format:** Oral

Egyptian blue is a complex silica-calcite-copper multi-component material and indicator of both cross-craft interaction between pigment-, glass- and metal production technologies as well as an indicator of trade. This material was widely used as pigment for wall paintings throughout the Roman Empire – yet we know little about its production- and trade networks as only a few production workshops are known today.

Here, we investigate the provenance of copper that was used for producing Egyptian blue pigments sampled from Roman wall painting fragments. These fragments are from four sites in the peripheral province Noricum, which became part of the Roman Empire in the 1st century CE. New trace element and Pb-isotope data of Egyptian blue samples from the oldest Roman settlement at Magdalensberg (Carinthia) are similar to those from Pompeian wall painting fragments. Noric samples from later periods (2nd – 3rd c. CE) and the sites of Teurnia (Carinthia), Flavia Solva (Styria) and Celeia (Celje, Slovenia) form a slightly separated group. However, all match Hercynian-age deposits, for example, of the Southern Alps, Tuscany, Swiss and Slovakia.

An Egyptian blue production hub was established in the Bay of Naples in the 1st c. BCE that could have supplied Noricum with Egyptian blue. In turn, copper from various areas could have supplied this production hub. Large Egyptian blue finds at important trading cities in Noricum and without association to production workshops also attest to the role that this pigment had in trade. This work contributes to reconstructing economic networks that existed between Roman provinces.

## 6 SEEING RED WITHOUT FEELING BLUE: THE WALL PAINTING TECHNOLOGY OF ROMAN NORICUM

**Abstract author(s):** Baragona, Anthony (University of Applied Arts, Vienna) - Rodler, Alexandra (Austrian Academy of Sciences, Austrian Archaeological Institute; Department of Lithospheric Research, University of Vienna)

**Abstract format:** Oral

Most of today's Austria (as well as parts of Slovenia and Bavaria) was part of the alpine province of Noricum, formally incorporated into the Roman Empire in the first century C.E. This part of the Alps contained great mineral wealth and controlled many important mountain-passes; as trade flourished the area was quickly Romanized. This is reflected by surviving wall paintings exhibiting high proficiency in plastering technique and the typical pigments found throughout the Empire.

This contribution examines the differences that can be found in roughly contemporaneous Roman wall paintings from the Province of Noricum (e.g., Celeia (Celje, Slovenia) and Flavia Solva (southern Styria), Iuvavum (Salzburg) and Teurnia (western Carinthia)) and compares them to fragments found from more central parts of the Empire, e.g., Pompeii and Ephesus. Cross sections of painting fragments were examined by light microscopy, SEM/EDX and digital image analysis, while the chemical profile of the top paint layers was determined using in-situ, semi-quantitative elemental analysis by portable XRF. The sample fragments analysed used either Egyptian Blue, an artificial pigment that could be produced locally, or expensive Cinnabar/Vermillion (red), the ore of which is found in only a few places in the Mediterranean basin and therefore was extensively traded.

These methods were able to reveal the technical differences in how wall paintings were prepared, from arriccio to final paint application, e.g., differing methods of paint layer build-up. Areas painted with (widely traded) red cinnabar showed greater similarity in terms of plastering and paint layer build-up than those of (locally produced) Egyptian Blue, which tended to show more regional variation. This suggests a coupling of trade with technique, perhaps brought by the artisans themselves and are reflective of trade routes in the Alpine area.

## 7 FROM STORAGE TO EXHIBITION: CONSERVATION RESEARCH GIVES CENTRE STAGE TO 500 WALL PAINTING FRAGMENTS FROM A PROVINCIAL ROMAN STAGE THEATRE

**Abstract author(s):** Tehrani, Rebecca - Emprechtinger, Mara - Santner, Markus (Dresden University of Fine Arts)

**Abstract format:** Oral

Over 500 exceptionally well-preserved wall painting and stucco fragments can be assigned to the only known stage theatre (2nd century CE) in the Roman Province Noricum, in the Municipium Claudium Virunum. Once they decorat-

ed walls with various ornamental and figurative painting designs of high artistic and technical quality, comparable to the ones known from Pompeii.

After their excavation 150 years ago by the Carinthian Art Society, only some selected fragments were put on display in the 19th century but rejoined the others in storage after WWII.

Notwithstanding its archaeological significance, the former rich building decoration was thus kept withheld from the public display, until recently.

A bilateral research project, preparatory to the reopening of the Landesmuseum für Kärnten (LMK) now offers the chance to bring to centre stage the 500 wall painting fragments from Virunum. Since 2019 the collection has been investigated and conserved at the Dresden University of Fine Arts informing the fragments' display at the LMK in September 2022.

Through archival research, non-invasive optical, microscopic and multispectral investigations as well as various portable and analytical methods the painting technique was characterised, the fragments' condition surveyed, and altered conservation materials were detected. Thus, sister samples were identified, respective areas digitally reconstructed and an overall conservation approach with presentation concept developed and implemented.

This concept provides for the public display of most of the fragments demonstrating the complexity of the archaeological find in its fragmentary character. For its realisation a magnetic mounting system was developed and will be supplemented by digital resources to convey different stages in the fragments' life cycle. The contribution highlights the outcomes of the conservation research characterising the Roman painting technique and presents the conservation and mounting system. It further reflects on the handling of fragments and the selection for representative sampling, analysis and presentation.

## 8 THE HOUSE OF MEDUSA - EXCAVATION, INVESTIGATION, CONSERVATION AND PRESENTATION OF WALL PAINTING FRAGMENTS OF A LATE ROMAN VILLA

**Abstract author(s): Linke, Robert (Federal Monuments Authority) - Santner, Markus (Hochschule für bildende Künste Dresden) - Pintér, Farkas (Universität für Angewandte Kunst)**

**Abstract format: Oral**

Archaeological rescue excavations carried out by the Federal Monuments Authority Austria in Enns (Upper Austria) revealed remains of a Roman villa from the 3rd cent. A.D. which particularly were salvaged en bloc. In total, the find contained more than 2000 fragments of plaster, mainly covered with mural paintings from four different periods. Finally, an interdisciplinary project, which involved more than 25 archaeologists, conservators, scientists, art historians, curators and five different institutions gave interesting insights into cultural, social as well as technological and artistic aspects of that period. Finally, the project was presented in a special exhibition at the Kunsthistorisches Museum Vienna, which involved also the question of presenting mural paintings from different time periods and with joined layers.

This presentation focuses on the construction technique of the building as well as on the art technology of the mural decor. Microscopic analyses of the mortar show a sophisticated system of a combination of loam and lime binders. Further investigations identified pigments such as ochre, green earth, umbra and carbon black, which were applied in secco technique. For economic reasons, more expensive pigments, such as cinnabar and Egyptian blue, were used with a red base coat or with an organic binder. Comparisons with murals from Carnuntum and other archaeological sites in Austria emphasize the high artistic quality of the paintings and widen the knowledge on painting technology of that time.

## A. REDISCOVERING ROMAN ART TECHNIQUES: THE STUDY OF A PROVINCIAL ROMAN WALL PAINTING FRAGMENT FROM THE ANCIENT CITY OF VIRUNUM, AUSTRIA

**Abstract author(s): Stöcker, Eike (Dresden University of Fine Arts)**

**Abstract format: Poster**

In the 19th century more than 500 Roman wall painting and stucco fragments were excavated at the Municipium Claudium Virunum (Carinthia, Austria). One of the most convincing theories argues that these multifarious fragments belong of the only known provincial stage theatre in the ancient province Noricum.

In the scope of a multidisciplinary research and restoration project between the state museum of Carinthia called Landesmuseum für Kärnten (LMK) and the Dresden University of Fine Arts a diploma thesis contributed to the investigation and technical study of the Roman painting and stucco technique.

Due to its significance within the collection the inventoried wall painting fragment with stucco application, Object 41-1, from 2nd century CE was selected for the diploma in-depth study. It is one of only three examples of figural stucco designs preserved at the archaeological find of the stage theatre from Virunum. The Roman stucco half relief shows a woman dancing and holding an ancient musical instrument in her left hand. Her body is covered with a silk green blue garment contrasting the yellow ochre background. Shortly after its excavation, the fragment drew interest. Thus, in the 19th century Object 41-1 has been preserved, displayed, and a watercolour sketch was drawn. Therefore, the

fragment stands out today not only due to its filigree stucco relief but also because of its wooden frame, a testimony to the conservation and presentation practice in the 19th century.

This contribution focuses on the non-invasive multispectral investigations and analyses of micro samples which were used to investigate the material structure of the fragment. This process was supported by a photogrammetric survey and 3D printing of the figural stucco and allowed an authentic technical study and replication.

## **B. STUDY OF A SAMPLE OF EGYPTIAN BLUE FROM THE TOMB OF NEFERTARI (13TH CENTURY BC)**

**Abstract author(s):** Martín, Antonio - Martín, Alejandro (Universidad Internacional de La Rioja) - Ferré, Ivana (Universidad Nacional de Educación a Distancia)

**Abstract format:** Poster

Egyptian blue was the first colour pigment synthesised by mankind. It is a calcium copper phyllosilicate (CaCu-Si<sub>4</sub>O<sub>10</sub>), which in its natural form is the very rare mineral cuprorivaite. It is highly resistant to atmospheric agents and environmental pollutants including acids and alkalis. Hence, it has been used from Ancient Egypt and Mesopotamia, around 3000 BC, until the end of the Roman Empire.

The sample studied belongs to the tomb of Queen Nefertari-Meriemut, 19th Dynasty (13th century BC). The piece was embedded in resin, conventionally ground, and finally polished with  $\alpha$ -alumina (0.3  $\mu$ m). Without chemical attack, they were conveniently dried in a heat source at 35 °C for two hours. The samples were analysed by Optical Microscopy, and Scanning Electron Microscopy with EDX analysis. The identification of the pigments, and of the other compounds present in the binder and mortar support, was carried out by X-Ray Diffraction and EDSEDX analysis.

In the paint layer, we find quartz crystals, complex silicates of sodium, aluminium and calcium carbonates with magnesium as a minority. The presence of calcium carbonate is intended to give luminosity to the Egyptian blue pigment. The binder used was gum arabic, dissolved in water and added egg white.

The mortar layer is a stucco layer consisting basically of gypsum, with portions of lime and sand to give the background a greater consistency and luminosity.

The excavated limestone rock wall is a micro-fossiliferous limestone formed by the skeletons of coccoliths of the *Gephyrocapsa Oceanica* type.

## **C. EGYPTIAN BLUE FROM THE PALACE OF APRIES: ON THE PROVENANCE OF THE COPPER COMPONENT**

**Abstract author(s):** Rodler, Alexandra (Research Group Object Itineraries, Department Historical Archaeology, Austrian Archaeological Institute, Austrian Academy of Sciences; Department of Lithospheric Research, University of Vienna) - Brøns, Cecilie (Ny Carlsberg Glyptotek) - Tepe, Nathalie - Hofmann, Thilo (Centre for Microbiology and Environmental Systems Science, Department for Environmental Geosciences, University of Vienna) - Koeberl, Christian (Department of Lithospheric Research, University of Vienna) - Frei, Robert (Department of Geosciences and Natural Resource Management, University of Copenhagen) - Artioli, Gilberto (Department of Geosciences, University of Padua)

**Abstract format:** Poster

Recently, the geochemical provenance analysis of ancient colorants has opened new avenues in cultural heritage research and adds a new and important dimension to the analysis of ancient polychromy. In this study, we test a sampling method adopted from metal provenance studies. This is used for the provenance analysis of the copper compound of Egyptian blue pigments from a fragment of a painted relief from the Palace of Apries in Memphis, Egypt (26th Dynasty, ca. 589-568 BCE), which is part of the collection of the Ny Carlsberg Glyptotek, Denmark (inv. no. ÆIN 1052). Egyptian blue samples were collected and analyzed for their trace element- and Pb-isotope compositions. The rare earth element patterns suggest the use of similar raw materials for the analyzed Egyptian blue samples of this artifact. Based on Pb-isotope analysis, we propose that copper from the Arabian Shield might have been used for these pigments. Previous works have indicated the use of distant copper (Aegean) at an Egyptian blue production hub in Memphis, Egypt, as well as a similar copper source for Egyptian blue pigments from Bronze Age contexts from Egypt. This case study contributes to our growing understanding of trade in pigments and the organization of pigment production in the past.

## **D. MULTI-ANALYTICAL CHARACTERIZATION OF WALL-PAINTINGS FROM THE LATE ANTIQUE VILLA OF NEGRAR (VERONA, ITALY)**

**Abstract author(s):** Stella Mosimann, Federica - Dilaria, Simone (University of Padova, Department of Cultural Heritage)

**Abstract format:** Poster

The poster offers a preliminary characterization of mortars and pigments used in the making of wall-paintings of a 4th century AD Roman villa recently unburied near Negrar (Verona, Italy). In the course of the excavations, three pictorial

nucleii, originally constituting the ceilings and the wall revetments of the villa, have been uncovered. On the basis of their stylistic features and on stratigraphical relationships, the collapsed wall-paintings were credited to the original 4th century phase of the building.

Centimetre-sized samples were collected from representative portions of the painted nucleii, in order to get an adequate parameter of the number and thickness of the preparatory layers constituting the tectorium. Further micro-samplings were carried out on crucial areas (i.e. overpainted zones) of the decorations, in order to define the palette of the pigments, their microstratigraphy and the application technique (buon fresco, secco).

The analytical methods we adopted are those traditionally employed for the characterization of historical mortars and pigments: we used petrographic optical microscopy in transmitted light on thin sections to define the texture and the provenance of raw materials employed in the production of the mortars. This technique was corroborated by SEM-EDS semiquantitative analysis for the investigation of the chemistry of the binders.

Reflected light microscopy was useful to determine the microstratigraphy of pictorial patinas, whereas the mineralogical composition of the pigments was determined by X-Ray Powder Diffraction (XRPD) analysis, by mechanically scraping and analysing each pigment of the palette individually.

The multi-analytical approach we adopted for characterizing the materials and methods of production of the wall-paintings of the Roman villa of Negrar aims to constitute a new impulse for the knowledge of the Late Antique painting techniques, which were just marginally considered in the field of Roman Painting if compared with the traditional Four Pompeian styles so far.

---

## 392 THE ANTI-HABI TOOLKIT: PRACTICAL SOLUTIONS AND MEASURES FOR PREVENTING AND ADDRESSING HARASSMENT, ASSAULT, BULLYING AND INTIMIDATION IN ARCHAEOLOGY [AGE]

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Coltofean-Arizancu, Laura (Archaeology and Gender in Europe - AGE - Community of the EAA) - Gaydarska, Bisserka (Durham University; Archaeology and Gender in Europe - AGE - Community of the EAA) - Hlad, Marta (Vrije Universiteit Brussel; Université Libre de Bruxelles; Archaeology and Gender in Europe - AGE - Community of the EAA)

**Format:** Discussion session

Recent research has shown that harassment, assault, bullying and intimidation (HABI) in archaeology can happen to anybody regardless of gender and age, in any archaeological setting and country. It has also shown that the spectrum of oppressive behaviours to which victims are subjected to is very broad and that, besides sexual harassment and assault, it also includes various other and even more frequently occurring forms of HABI, such as psychological harassment, power harassment, intimidation, gender- and age-based harassment, among others. This discussion session derives from the results of the 2020 and 2021 surveys on HABI in European archaeology, carried out by members of the Archaeology and Gender in Europe Community of the EAA and the Paye ta Truelle Collective. The session aims to take a step forward and bring together archaeologists, sociologists, anthropologists, psychologists, doctors, officers for equality, diversity and inclusion, as well as legal experts and social workers, among others, to discuss practical solutions for preventing and addressing HABI in archaeology. We welcome papers that examine various anti-HABI measures and actions that have been successfully or unsuccessfully implemented in various archaeological settings (e.g. fieldwork, universities, laboratories, museums, firms, conferences, etc.), as well as in other disciplines and non-archaeological institutions and organizations, both private and public. The session will end with a discussion in which the contributors' diverse expertise and multiple experiences will be put together in order to create an anti-HABI toolkit with basic safety principles and actions which archaeology students and practitioners can apply to prevent and address HABI regardless of the archaeological setting and country where they are.

## ABSTRACTS

### 1 POWER, PATRIMONY AND THE PRECARIAT IN ACADEMIC ARCHAEOLOGY: A CASE STUDY FROM IRELAND

**Abstract author(s):** Whitefield, Andrew (National University of Ireland, Galway)

**Abstract format:** Oral

This paper examines the impact of precarious employment on academic archaeology. It is argued that early (and some not so early) career academic archaeologists are especially vulnerable to discrimination and exploitation due to the huge power differentials that casualisation reinforces and maintains between colleagues. The wider archaeological profession is beset by low-pay and insecure employment, which may leave academic archaeologists more accepting of exploitative working conditions. Archaeology is a small and typically conservative discipline. Healthy academic debate and pluralistic research cannot flourish where a two-tier system leaves so many junior academics beholden to the patronage of the small cohort of tenured colleagues.

Remuneration in the academic 'gig' economy is often by the hour, and rarely recognises time spent preparing teaching materials or administrative and pastoral work, let alone training and career development. Women are disproportionately affected. The lack of women in senior academic roles inevitably restricts the availability of female role models and mentors. The predominantly male gatekeepers to the few secure junior academic positions are more likely to have followed a traditional career trajectory, and expect the same of junior colleagues. Caring responsibilities that typically coincide with career stages from post-doctoral work to tenure limit many women's (and some men's) capacity to follow uninterrupted career paths. Women that successfully navigate these obstacles, alongside colleagues that submit to precarious employment conditions, are likely to shoulder a disproportionate load of 'women's work'—teaching, pastoral and administrative duties. In either case, the volume of research outputs (the crucial metric in the male success model) will be compromised. How have such practises been contested, and what has been the outcome? Limited, though well-publicised, initiatives to increase the proportion of senior female academics perhaps offer some hope for the future. But what else can be done to stem the tide of casualisation?

## 2 #EXCAVATIONINPROGRESS – PRACTICAL EXAMPLES FROM THE SWEDISH MOVEMENT AGAINST SEXUAL HARASSMENT AND GENDER INEQUALITY

**Abstract author(s):** Bergerbrant, Sophie (Department of Historical Studies, Gothenburg University) - Aldén Rudd, Petra (Río Göteborg) - Berg, Ingrid (Centre for Integrated Research on Culture and Society - CIRCUS, Uppsala University)

**Abstract format:** Oral

As in many countries the #metoo-movement exploded in Sweden during the Autumn of 2017. Archaeologists gathered under the hashtag #excavationinprogress to protest against a historically situated culture of sexual harassment and discrimination at archaeological workplaces around the country. The paper aims to present the work done in Sweden over these past 5 years. The #metoo movement highlighted the need to actively work against both sexual harassment but also other types of bullying. We will highlight the importance of dealing with HABI when it occurs at workplaces, the work that has been done within the sector, and its outcomes. In order to do this we will bring up examples that worked and those that were less successful. We will show examples from different types of archaeological employers, from universities to contract archaeology. This in order to discuss the different needs and challenges facing the various branches of the diverse archaeological sector but also those that are the same.

## 3 WHERE DO WE DRAW THE LINE? LESSONS FROM WORKPLACE ANTI-HARASSMENT INTERVENTIONS

**Abstract author(s):** Hawkins, Kayt (Kathryn) (Institute of Archaeology, University College London) - Siddall, Ruth (University College London)

**Abstract format:** Oral

One of the best ways of preventing unacceptable behaviour is for people to know that they can report it when they experience or witness it, that their concerns will be heeded, and that they can find support and advice when it is needed. This paper looks at various initiatives undertaken in both academic and professional spaces by a single organisation. The institute of Archaeology at UCL has a world renowned academic archaeology department and also a very successful commercial archaeology section, Archaeology South-East. In 2018 the Dignity at Work scheme, which provides training alongside a suite of support measures to tackle unwanted behaviours became mandatory training for UCL staff. In addition to these measures, the Paye ta Truelle/Archeo-Sexism exhibition will be hosted at UCL in 2022, alongside a series of student-led seminars involving staff, students and archaeologists employed in commercial archaeology to explore the issues raised. How successful have these interventions been within both university and fieldwork settings? What lessons have been learnt? How can we further improve safety and ensure a safe, respectful work environment? These questions and more will be explored in this paper.

## 4 CHALLENGES FOR FOSTERING EQUALITY AND INTERSECTIONALITY AT THE UNIVERSITY OF BARCELONA: THE CASE OF THE INSTITUTE OF ARCHAEOLOGY (IAUB)

**Abstract author(s):** Pastor Pérez, Ana (Institute of Archaeology of the University of Barcelona - IAUB; Norwegian Institute for Cultural Heritage Research - NIKU; Research Group on Cultural Heritage Management of the Complutense University of Madrid - UCM.; Grup d'Arqueologia Pública i Patrimoni - GAPP) - Mas Florit, Catalina - Pecci, Alessandra - Plaza Conesa, Paula (Equip de Recerca Arqueològica i Arqueomètrica de la Universitat de Barcelona - ERAAUB; Institut d'Arqueologia de la Universitat de Barcelona - IAUB) - Zarzuela Gutiérrez, Paloma (Grup d'Arqueologia Pública i Patrimoni - GAPP; Institut d'Arqueologia de la Universitat de Barcelona - IAUB)

**Abstract format:** Oral

Archaeological practice, both commercial and academic, in Spain and Catalonia, as in other countries, is embedded in patriarchy. Furthermore, the academic sphere is subject to a series of structural inequalities derived from tensions of power. This scenario limits the academic progression due to a number of gender or social class distinctions. In addition, more than ever, we are aware that verbal and sexual abuses of dominance are present in our ecosystem

(Voss 2021). From the recently formed Commission for Equality and Intersectionality of the Institute of Archaeology of the University of Barcelona (CII-IAUB) we work to generate safe spaces, both inside and outside the walls of our university.

In recent years, Catalan and Spanish universities and research institutes are activating harassment protocols and equality commissions. Their scope is the prevention of HABI and sexist attitudes (targeting women, gender dissenters, and members of LGBTQI+), but also pursuing some other claims including labour rights, parenthood, social kinship policies and wage gaps. The University of Barcelona is no exception, but its actions are limited by a lack of resources and skilled staff which means that there is no long-term sustainable investment. In contrast, our experiences show that non-institutional feminist associations are much more effective when it comes to preventing and acting against these situations. Our challenges as the Commission for Equality and Intersectionality (CII-IAUB) are focused on how and where to prioritise our actions, networking with other similar associations and assessing how effective official institutions are. In this paper we will try to present and discuss the roadmap and the tasks we have carried out to make this commission move forward and what are our challenges for the future.

Voss, B. L. (2021) 'Disrupting Cultures of Harassment in Archaeology: Social-Environmental and Trauma-Informed Approaches to Disciplinary Transformation'. *American Antiquity*, 3, 447-464. <https://doi.org/10.1017/aaq.2021.19>

## 5 WELFARE AND WELLBEING IN ARCHAEOLOGY – WHO IS RESPONSIBLE AND HOW CHANGE CAN BE GENERATED?

**Abstract author(s):** Coltofean-Arizancu, Laura - Gaydarska, Bisserka - Hlad, Marta (Archaeology and Gender in Europe - AGE - Community of the EAA)

**Abstract format:** Oral

Welfare and wellbeing are often used interchangeably, although they are not the same and have different understanding across disciplines and various parts of the world. Archaeology is not an exception and most often than not welfare means job security, fair pay and adequate working conditions. Wellbeing is more difficult to pinpoint but it is unquestionable that harassment-free studying and working environments would be a top priority. Yet, not only harassment, assault, bullying and intimidation (HABI) practices are widely spread but it is very unclear who is responsible for the uprooting of such practices.

This paper will share the difficulties of organizing a session aimed at practical solutions that can be offered to combat HABI practices. It hopes to open a discussion of who is responsible for the wellbeing of archaeologists and who has the power to bring structural changes if serious flaws in the wellbeing of students and professional archaeologists have been documented in various archaeological settings.

---

394

## SO MANY SETTLEMENTS SO FEW GRAVES? NEOLITHIC AND CHALCOLITHIC PRACTICES WITH THE DEAD IN CIRCUM PONTIC REGION AND SOUTHEASTERN EUROPE

**Theme:** 3. The Carpathian Basin: Integration, Mobility and Diversity

**Organisers:** Shatilo, Liudmyla (Institute of Archaeology NASU; Kiel University, Institute of Prehistoric and Protohistoric Archaeology) - Hofmann, Robert (Kiel University, Institute of Prehistoric and Protohistoric Archaeology; CRC 1266: "Scales of Transformation - Human-Environmental Interaction in Prehistoric and Archaic Societies") - Naumov, Goce (Goce Delcev University of Štip, Institute of History and Archaeology)

**Format:** Regular session

During the spread of the Neolithic and subsequent consolidation, adaptation, and further expansion of Neolithic and Chalcolithic communities into diverse landscapes of Anatolia, the Caucasus, Southeastern and Eastern Europe an extraordinary variety of practices related with death such as intramural depositions, kurgan graves, cemeteries, etc. can be observed. Some of these traditions, e.g. deposits in ditches or early burial mounds, create large distribution zones that usually extend far across the boundaries of 'archaeological cultures'. Many societies in this vast area are characterised by the absence of systematic burials and discoveries of 'practices' are rather an exception than a rule. Various explanations for this situation have been proposed which include the archaeologically invisible burial practices, or the use of other objects to build individual and collective identities. In addition, as recent discoveries suggest, this picture is partly the result of selective archaeological practice.

As session research questions, we would like to consider

- Types of burials and other practices with the dead, their spatial range (local, 'archaeological culture'-specific, trans-regional), their relationship to material culture and their qualitative and quantitative relation with the settlement record and total population.
- New discoveries in the study region in connection with the treatment of the dead; Are burials still under-recognised features?
- Methodological problems, new approaches and theoretical models that could explain better burials and practices associated with them.

- Modes of treatments of the deceased: Where and how the majority of population were buried and are there possible additional modes of treatment.
- How are the multiple practices with the death in general and the increasing frequency of regular burials (cemeteries, burial mounds) in particular connected to the historical processes of expansion, adaptation, and transformation; what role might the treatment of the dead have played in constructing group ideologies e.g. manifestation of identity?

## ABSTRACTS

### 1 NOT JUST ANOTHER BURIAL GROUND: THE EARLY NEOLITHIC DITCH BURIALS AT NOVA NADEZHDA IN UPPER THRACE

**Abstract author(s):** Bacvarov, Krum - Nikolova, Nikolina - Katsarov, Georgi - Tsurev, Atanas (National Institute of Archaeology & Museum, Bulgarian Academy of Sciences) - McSweeney, Kathleen (School of History, Classics and Archaeology, University of Edinburgh)

**Abstract format:** Oral

Eighteen early Neolithic burial contexts containing the remains of 24 individuals were found at the prehistoric site of Nova Nadezhda in Bulgarian Thrace. The burial pits had been dug either in the fill of an enclosure ditch or along its inner edge or were directly associated with the intentional filling of the ditch. As this is the largest burial sample recovered from an early sixth millennium BC site in an area characterized by the absence of formal burial grounds and a scarceness of mortuary deposits, its analysis provides important insights into the social practices of the early farming communities.

This presentation will discuss the relevant contextual evidence from the site and will argue that the burials at Nova Nadezhda were part of a complex system of recurrent practices that seem to have been used by the local community to maintain social order and reproduction during a later phase of the settlement's life. Even though enclosure ditches and the practices related to them were integrated into the communal ideology on a regional and supra-regional scale, the evidence from Nova Nadezhda demonstrates a localized development which could also help to explain the patchiness of the early Neolithic burial record in the Balkans.

### 2 THE ABSENCE OF INTRAMURAL BURIALS IN NEOLITHIC PELAGONIA

**Abstract author(s):** Naumov, Goce (Center for Prehistoric Research; Museum of Macedonia)

**Abstract format:** Oral

Rituals associated with death are evident on various Neolithic sites in the Balkans. Burials of dead individuals are found inside settlements and rarely in organized necropolises while sometimes their remains, most frequently particular parts of the body, were deposited in various areas of the villages. Not rarely complete bodies or their parts were buried below house floors or very close to the buildings, but in several cases corporal relics were deposited in vessels exposed or dug within domestic space. The memorization of the dead was also accompanied by the production of human representations considering the principles of the embodiment and symbolic bodily hybridism. This variety of ritual practices and images associated with death indicate that the first farming societies in the Balkans essentially incorporated the idea of afterlife in their understanding of the world.

On other hand, there are regions in the Balkans where such demonstration of the ideas of death are not evident, at least in terms of burial practices. One of them is Pelagonia, a large elongated valley where first farming societies established hundreds of tells in various stages of the Neolithic. There are approximately 20 tells excavated so far and besides the impressive material culture and architecture there is total absence of burials. Although some of the tells were elaborately explored there was no evidence for any human remains or indications for deposition of body parts. Considering the number of funerary rituals in the Balkans such absence of burials on Pelagonian tells is surprising and therefore requires explanation in regard to material culture produced in these Neolithic villages. Also the environment of Pelagonia should be considered and particularly the funerary practices in later periods in order to understand better the notion of death among agricultural societies.

### 3 SO FEW GRAVES SO MANY SETTLEMENTS! THE CURIOUS CASE OF CHALCOLITHIC PEOPLE FROM SOUTHEASTERN ROMANIA (C. 5200-3900 BCE)

**Abstract author(s):** Covataru, Cristina - Toma, Andreea - Popescu, Gabriel - Petrache, Noria - Lazar, Catalin (ArchaeoSciences Division, ICUB, University of Bucharest)

**Abstract format:** Oral

The 5th millennium BC was the most flourishing period for the Chalcolithic civilization from Southeastern Europe, and it is known as the 'golden 5th millennium' because of the substantial progress made by human communities. However,

this development boom is probably due to a slow migration process of different human groups with a common origin in Southwestern Anatolia.

The current paper focuses on the cemeteries documented in Southeastern Romania between 5200-3900 cal. BC. The target area selected has been very populated in prehistory, with more than 200 settlements but less than 100 cemeteries documented.

This situation is curious, and various explanations have been given over time. However, over the past 15 years, our efforts have shown that the curious situation reflects only a lack of archaeological research, not a historical reality.

Consequently, we will focus on quantifying data related to graves and cemeteries in correlation to the indexed settlements to identify the actual dimension of the studied prehistoric populations. The funerary findings belonging to the Boian, Hamangia, Gumelnita and Salcuta "cultures" will be analyzed. The different types of data (e.g., cemeteries location, mortuary treatment, grave orientation, age/sex classes, genetic background, dietary models, natives vs newcomers, etc.) accumulated so far will be integrated, and different particular cases (e.g., Sultana, Gumelnița, Cernavoda, etc.) will be analyzed in detail.

This work was supported by a grant from the Ministry of Research, Innovation, and Digitisation, contract number 41PFE/30.12.2021, within PNCDI III.12.2021, within PNCDI III.

#### 4 DEATH IN FIRE? RECONSIDERING HUMAN REMAINS FROM THE TRIPOLYE SETTLEMENT KOSENIVKA, UKRAINE

**Abstract author(s):** Shatilo, Liudmyla (Institute of Archaeology of the National Academy of Science of Ukraine) - Fuchs, Katharina (Kiel University, Institute of Clinical Molecular Biology) - Hofmann, Robert (Kiel University, CRC 1266: "Scales of Transformation - Human-Environmental Interaction in Prehistoric and Archaic Societies")

**Abstract format:** Oral

In 2004, during excavations of a burned house structure in the Tripolye mega-settlement of Kosenivka (mid-4th millennium BC, near the modern city of Uman, central Ukraine), scattered remains of at least seven human individuals were discovered. This case is very important for Tripolye research, since only very few finds of human remains are known in this cultural complex. In Kosenivka, fragments of human bones lay in various places and showed different states of conservation: Bone fragments that were found within the house structure were calcined or burnt and those found in its immediate surroundings did not show traces of fire. The different locations and conditions of the bones led the excavators to the conclusion that these people had died during the burning of the house. Fifteen years after this discovery, our team re-examined the human remains based on an interdisciplinary approach including absolute dating, re-determination of sex, age and pathologies, stable isotope measurements and interpretation. In this paper we focus on the interpretation of the human deposits in the wider context of other Neolithic and Chalcolithic human deposits and communities in Southeast Europe.

#### 5 FUNERAL RITES AND RITUALS IN CUCUTENI CULTURE

**Abstract author(s):** Preoteasa, Constantin (Neamț National Museum Complex)

**Abstract format:** Oral

Usually famous by the quantity, quality and diversity of its remains, the Cucuteni culture is also distinguished by two other peculiarities: the burning of the buildings within the settlements and the lack of necropolises (cemeteries). This last aspect, corroborated with the high number of settlements and dwellings, raises a legitimate question: what happened to such a large population that lasted for ca. 1500 years on a territory of about 150,000 s.km?

Certainly, the few Cucuteni archaeological contexts with human bones cannot provide a satisfactory answer to this question.

Archaeological excavations carried out in the Cucuteni settlements (unfortunately sometimes lacking methodological accuracy) have led to the discovery of a very small number of human skeletons, parts of skeletons or bones (whole or fragmentary), intentionally buried, accidentally disposed or disparate, on which specialists have formulated various hypotheses, more or less credible, regarding the funeral rites and rituals.

Some of the burials, carried out exclusively within the settlements, were related to the sacralization of space (foundation rites), sacrificial burials to protect the community members, skull cult, ritual anthropophagy or having a symbolic commemorative role (cenotaph-graves, with generally rich inventory).

There are also skeletons with traces of medical procedures (trepanations) or the associations of human bones with deposits of ornaments and cult objects (the hoards of Cărbuna and Hăbășești, for example).

However, given the special importance of fire (through its purifying role) for the Cucuteni communities, we cannot exclude the possibility that the bodies of the dead may have been cremated and the ashes may have been spread in the field or in water, as an expression of humans beings communion with nature. We believe that such a hypothesis could explain in a more credible way both the absence of archaeological evidence on burial practices and the „disappearance" of the Cucuteni communities.



## GHOSTS AND ANCESTORS, PITS AND HOUSES: DIFFERENT APPROACHES OF THE RITE DE PASSAGE IN NEOLITHIC AND CHALCOLITHIC SOCIETIES

**Abstract author(s):** Mueller, Johannes (Institut fuer Ur- und Fruehgeschichte Kiel)

**Abstract format:** Oral

The difference between formal burials and missing graves is rooted in different ritual practices. They depend on the notion of death, which is linked to different socio-environmental approaches of past societies. As in domestic remains the difference between for instance permanently installed architecture and loose rubbish pits mark differences in domestic practices, presence and absence of Neolithic and Chalcolithic burial remains are of similar importance. Recently outlined difference between ghost and ancestor-approaches may play a role, which may be related to the basic economic conditions of societies. Thus, different aspects of transformation in ritual landscapes are visible.

These differences can be recognised exemplarily both in the Northern Pontic region and in South-Eastern Europe. A cyclical change in the worlds of imagination is certainly tied to different social transformation processes, the effects of which it indicates. Thus, structurally certain aspects of environmental development, demography, economy and technological change can be recognised with changes in settlement and burial behaviour. This might be linked to the interrelation between material worlds, landscapes and the human mind.

395

## MEDIEVAL STONE MONUMENTS: REUSE AND (RE)INTEGRATION

**Theme:** 2. [Re]integration

**Organisers:** Caval, Saša (University of Reading) - Busset, Anouk (Université de Lausanne)

**Format:** Regular session

Historical and artistic monuments made from stone are the most durable objects of our cultural heritage. Thus, the ideas of reintegration and reuse are truly relevant when it comes to carved stones – both from prehistoric stones reused or carved during the early medieval period and /or medieval carved stones built in religious and public buildings. These stone monuments relate to people's embodied experience and cognitive processing of their living environments. They materialize human mental representation of the past and promote respect for those who lived in prior times and different traditions. In that sense, carved stones participate in the formation of social memory.

For this session, in keeping with the general conference theme, we invite contributions about reintegration strategies, protocols and rituals, the reuse of stone monuments within landscapes and social environments, such as fortified settlements, roads and other infrastructure, and adaptive reuse in a historic urban landscape and further on.

### ABSTRACTS

1

## LOST, FOUND, AND REMADE: THE REINTEGRATION OF EARLY MEDIEVAL STONE MONUMENTS AS LOCAL HERITAGE ON INISHARK ISLAND, IRELAND

**Abstract author(s):** Lash, Ryan (University College Dublin)

**Abstract format:** Oral

As durable fragments of a valorized past, stone monuments from the early medieval period (c. 400-1100 CE) act as vital media for the commemoration and contextualization of ritual heritage in Ireland. Stone churches, huts, basins, grave-stones, eccentric pebbles, and variety of stone sculpture featured prominently in post-medieval pilgrimage traditions (18th-20th centuries) and in some cases still remain focal points of devotion and local identity. This paper examines how islanders of Inishark, off the west coast of Ireland, reintegrated the stone remnants of an early medieval monastery into local ritual and dwelling practices from c. 1650 – 1960 CE. These findings offer inspiration for contemporary heritage engagement strategies that focus on embodied experience and experimental archaeology.

Excavation of an early medieval stone hut, Clochán Leo, offers an exceptionally rich chronology of periodic re-engagement with a pilgrimage monument from the early medieval period until the 20th century. Post-medieval deposits in Clochán Leo provide evidence for the curation (and eventual loss) of carved cross-slabs, wall carvings, temporary hearths, and picnicking events within the hut. Adopting a sensory approach, this paper will argue that islanders gathered distinct ensembles of humans, stones, food items, and atmospheric conditions to create memorable and commemorative experiences that framed the present in relation to the past. Although Inishark was evacuated in 1960, the neighboring island of Inishbofin remains home to a vibrant community with a growing heritage tourism market. Inspired by findings at Clochán Leo, emerging research explores how heritage walking tours and experimental replication of carved stone objects offer means of exploring the sensory and commemorative dynamics of stone monuments in the past and in the future.

## 2 BUILDING WITH THE PAST. THE REUSE OF CARVED STONES IN EARLY MEDIEVAL GALICIA

**Abstract author(s):** Sanchez-Pardo, Jose Carlos (University of Santiago de Compostela)

**Abstract format:** Oral

This presentation will explore the different contexts for the intentional reuse of stone material in buildings (mainly churches) in Galicia (NW Spain) during the early middle ages. For doing this, we will base our work on an exhaustive revision of the archaeology of dozens of early medieval architectural remains in this region that we have conducted in the last 8 years. This has led us to a better knowledge of the chronology and productive process of many carved pieces. In a first part, we will focus on the practical reasons for the reuse of stone materials in this period in relation to the economic and technical context. Then, we will discuss the use of "spolia" (mainly roman stonework and reliefs) as a mechanism of social and political legitimization in churches. The final objective of this short presentation is to offer a first synthetic picture of the reuse of the past in early medieval Galicia in order to promote enriching comparisons and to debate it into the wider european scenario.

## 3 REDUCE, RE-USE, RECYCLE: THE MANY FATES OF MEDIEVAL STONE CROSSES ON THE ISLE OF MAN

**Abstract author(s):** Johnson, Andrew (Manx National Heritage)

**Abstract format:** Oral

The organisers' previous sessions have offered the opportunity to consider the carved medieval cross-slabs of the Isle of Man from a variety of perspectives, exploring both their geological sources and the landmark contribution of larger, intact stone monuments to the creation of special places – for instance the centres of later parishes.

By far the majority of the 200 stones so far found and identified are fragmentary however, and subsequent to their initial use as grave-markers and altar-fronts, have experienced a variety of fates which appear sometimes less glamorous than those which befell their more statuesque companions.

Cross-slabs have now been found in a range of secondary ecclesiastical contexts, including graves, shrines, chapels, churches, cathedrals and graveyard walls. Away from religious sites, they have been found put to use as secular landmarks and incorporated in the masonry of domestic and agricultural buildings.

The locations at which these monuments have been discovered, the circumstances of their re-use, and the degree to which they have been broken up and adapted for this have not been studied in great detail until now. The research that will be presented allows new interpretation both of the range of secondary uses to which the stones have been put, and implicit with these, the degree of respect that was accorded these objects, and how this has varied through time, down to the present day, when they are now objects of immense national pride and value.

## 4 THE HISTORY BEHIND THE STONES OF "OUR LADY

**Abstract author(s):** Hoxha, Zana (Institute of Albanology)

**Abstract format:** Oral

The medieval church "Our Lady of Ljevis" also known as "St. Friday" is a world heritage site. The history of the building can be divided into five main fazes. The first faze is the early Christian church of the 6th century. There stood a beautiful three nave basilica whose traces are still visible in the garden of the today's monument but also in the building itself. The second phase of this building is the church of King Milutin of the 13th century. The final architectural faze is the today's monument that still stand proud. The building was transformed into a mosque during the ottoman reign where a minaret was added but not altering the plan. In 1912, the church was brought back to its initial function. The reuse of the land and the materials serves as an evidence of the social life since late antiquity. This paper will give a detailed analysis of the building with an emphasis to the transformations that the building went through. Concluding, it will give an overview of the today's condition of the building and its usage.

## 5 THE CULTURAL AND RELIGIOUS RECYCLING OF STEĆCI

**Abstract author(s):** Caval, Saša (Scientific-research center of the SAZU)

**Abstract format:** Oral

The medieval funerary monuments known as stećci were raised in various parts of the Western Balkans between the 12th and 16th centuries. We can see them in Croatia, Montenegro, Serbia and particularly in Bosnia and Herzegovina. They are not attributed to any ethnic or religious group and have always been considered enigmatic, lacking a clear, explicit belonging. Their unique blending of traditions, religions, artistic and aesthetic expressions, as well as languages, characterizes a particular funerary phenomenon.

Over time, when communities lost their direct knowledge and practice of the stećci traditions, these tombstones were reused in many diverse ways outside of their original function. The present paper will address stećci in their secondary use: as architectural elements of the medieval and early modern roman-catholic, orthodox churches, as

well as in Islamic mosques and Jewish synagogues, and as supporters and communicators of folk beliefs, developed apart from the institutionalized religions in the area.

## 6 LOST AND FOUND, THE HISTORY OF EPITAPH SCULPTURES FROM THE CHURCH IN KONTOP, POLAND

**Abstract author(s):** Jasiak, Krzysztof - Gawroński, Jakub (Nicolaus Copernicus University in Toruń)

**Abstract format:** Oral

From the 16th century, the owners of Konotop (Lubuskie Voivodship) were the Dyrhem family, who were also founders of the local St. Anna's church. After their death, they were buried in brick crypts, and epitaphs with figures of the deceased were placed in the church. These epitaphs were the size of altars. Unfortunately, the events of the Second World War led to quite large changes in the interior of the church, including the aforementioned epitaphs. For a long time, it seemed that out of the two epitaphs 4 full-figure sculptures were lost. However, archaeological research of the outer northern crypt has revealed two of them. The fate of the others is still unknown. A kneeling figure of a woman in an adoring position was placed on the floor of the crypt, while the figure of a kneeling man in armor was thrown into a stone sarcophagus in which there was an earlier burial from around 1777. The discovered sandstone sculptures confirm the high craftsmanship of artists working in the Lubuskie region during the Renaissance. All elements of the man's armor were reproduced with great care. The spouse is depicted in a period dress with lots of haberdashery and a diadem on her head. After the excavation, the figures were secured and disinfected and then placed inside the church. Reintegration of the figures will be possible after the full conservation works of the sculptures along with the epitaph itself.

## 7 THE REUSE AND REVITALIZATION OF FORTIFICATIONS IN KOSOVO (CASE STUDY: THE FORTRESS OF PRIZREN AND THE FORTRESS OF VUSHTRRI)

**Abstract author(s):** Rama, Zana (Archaeological Institute of Kosovo)

**Abstract format:** Oral

One of the main characteristics of the late antique period in Kosovo, which in ancient times was known as Dardania, is the construction of fortifications. Those fortifications were located mainly on hills, with a dominant position, generally built on the remains of earlier settlements, from prehistory. These series of constructions came as a necessity for protection from the different tribe invasions and after a powerful earthquake in 518, which hit the region and destroyed 24 fortifications only in Dardania. Based on the descriptions of the scholar Procopius of Caesarea who left us the best data for the time, in his written "De Aedificiis" (On buildings), only during the rule of the emperor Justinian the Great, 8 fortifications were built and 61 others were rebuilt. A number of these fortifications have been rebuilt and used also during the Medieval Period or even later.

This paper presents the phases and the changes that occurred during the different periods of time in the Fortress of Prizren and the Fortress of Vushtrri, by giving a focus on the last conservation works and the revitalization and the reuse of the site and its architectural remains and structures for contemporary needs.

---

## 396 REENACTMENT AND LIVING MUSEUM – MAKE HISTORY ACCESSIBLE

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Abonyi, Zsannett (Budapest History Museum - Aquincum Museum) - Lenár, Vilmos György (Colonia Rosztallo Kulturális és Hadtörténeti Alapítvány; Eötvös Loránd University) - Burandt, Boris (State Office for Archaeological Heritage Protection, Rhineland)

**Format:** Regular session

Many museums today, while thoughtfully seeking after expanding the diversity and inclusivity of their interpretation, are often limited as object-dependent institutions with wonderful artifacts demonstrated in static displays. Instead of brooding over the lack of material culture to inform comprehensive interpretation, a people-centered approach can help to offer a more diverse exploration of the past. Giving a literal voice to historical events, rather than seeing only the museum items as things from a distant time is a strength of the living history approach from which museums of all kinds can learn.

Living history is an effective way to engage the public audience, while allowing for an interactive education which intrigues the minds of the audience both young and old. The interpretation of the past is not as simple as "emotional journeying" or "illusion". In fact it is embroiled in issues that museums and the wider field of archaeology also face — those of authenticity, authority, and reflexivity. Because historical reenactors are largely outside of the academic sphere, however, their responses to these issues provide a unique perspective. For most practitioners, there are two essential elements to living history: the pursuit of what is referred to as authenticity and the claim to make history accessible.

The historical reenactors and interpreters of historic sites receive the most mindful understanding of the past. They provide hands-on experiences and are also responsible for answering the public's questions, which at times can be very challenging. The professional field and reenactors have a lot to learn from one another, which contributes to reaching out the broader public with our cultural heritage and values of a higher standard.

## ABSTRACTS

### 1 BETTER TOGETHER - WAYS AND PATHS, HOW SCIENTIFIC APPROACH AND HISTORICAL REENACTMENT CAN GO HAND-IN-HAND

**Abstract author(s):** Abonyi, Zsanett (Budapesti Történeli Múzeum/ Budapest History Museum)

**Abstract format:** Oral

While at their beginning as cultural institutions the role of museums was to raise the public's level of education and culture, nowadays their role has become more diversified. To interpret material culture is more effectively, usually at a living museum; to test an archaeological thesis or to participate in an enjoyable activity that is also a learning experience. Learning about the past has increasingly come to include more engaging and multi-faceted activities. Historic interpreters can develop programming that gives the visitors a new and thought-provoking experience. The tangible elements, as well as the expert knowledge that reenactors provide, allow visitors to witness something truly unique and cannot be experienced anywhere else.

Many archaeological and historical museums choose to interpret history using the method of living history, or reenactments. For the visitor to have an informative and enjoyable experience, the historic interpreters need to make the information accessible, understandable, and be able to connect them to the historic site. With this in mind professional forum takes place as a regular event at the Aquincum Museum, which is a good opportunity for archaeologists and collection curators to present the reenactors such original artefacts and knowledge, which they can put to use later on. In return the reenactors can share their hands-on experience with museum professionals. The aim of the workshops is to create a personal platform for archaeologists in our and other institutions, as well as reenactors and museum education specialists.

This paper investigates aspects of opportunities for cooperation and presents its benefits.

### 2 REENACTMENT AS A PROJECT OF PARTICIPATION

**Abstract author(s):** Toulouse, Catherine - Lengyel, Dominik (BTU Brandenburg University of Technology Cottbus-Senftenberg)

**Abstract format:** Oral

Reenactment is often used with so-called reconstructions to convey archaeology in an emotionally appealing way. Accessibility takes precedence over authenticity. For architectural hypotheses, we have developed the method of visualisation of uncertainty, which through the design of abstraction allows archaeology to be communicated in a way that is both close to science and at the same time vivid. Thus we have visualised cultural heritage in close cooperation with archaeologists and cultural institutions, such as – for the German Archaeological Institute DAI – Pergamon, the Palatine, the baths in Pompeii and an Umayyad garden near Cordoba, for the Egyptian museums in Berlin and Munich the royal city of Naga, and for Cologne Cathedral its building history since Roman times. Reenactment is a special challenge here, since it involves the act of real people. In our actual research project we are dealing with an amphitheatre that requires considerable imagination and meaningful visualisations. Since it is located in a cultural area whose current cultural and political focus is precisely not on the Greco-Roman past, the claim of our people-centred approach to making history accessible is not only that of authenticity. A separate project funding by a private foundation for historical humanities serves to engage the public. Local workshops are to produce physical models of architecture as well as antique clothing, which are to serve as a means of communicating the ancient world. Instead of static displays, the local museum as an object-dependant institution will enable schoolchildren of the next generation to explore the past – via reenactment. Through interactive education, they should get to know architecture and clothing as a reflection of ancient society, in order to learn that there are alternative ways of life to their own: cultural heritage as a value of a higher standard.

### 3 REENACTMENT AND ACADEMIA - A RELATIONSHIP WITH OBSTACLES

**Abstract author(s):** Burandt, Boris (Archaeological Museum Burg Linn, Krefeld)

**Abstract format:** Oral

Since many years, reenactment enjoys increasing popularity and just like the number of events in museums or archaeological parks, also the number of groups dedicated to the representation of certain periods of time has grown continuously. In addition to TV documentaries, popular science publications and museums, reenactors are now decisively shaping the perception of a particular epoch in the general public. However, the responsibility that arises

from this is rarely seen in academia. And so is the massive potential of reenactment as a tool to impart archaeological and historic knowledge low-threshold. This rejection on the part of the professional world in turn causes various problems on the part of the reenactors. Mistrust and a still missing handout between reenactment and archeology stand in the way of the necessary professionalization of the community and solid quality management. The proposed contribution will focus on the different and difficult aspects of symbiotic potential of reenactment and academic archaeology, whereby the author can draw on his experience as a professional archaeologist and his now twenty years as a re-enactor.

#### **4 NEW POSSIBILITIES OF RECONSTRUCTIONIST APPROACH IN REENACTMENT AND MUSEUM PRESENTATIONS**

**Abstract author(s):** Lenár, Vilmos (Colonia Rostallo Kulturális és Hadtörténelmi Alapítvány; Eötvös Loránd University)

**Abstract format:** Oral

In reenactment, and more promptly in roman military reenactment there is a trend to use a broad periodization to describe what we see on display by a group or individual. With these big time intervals, the groups might give a false impression of roman equipment or clothing tradition. Choosing strict time periods and not whole centuries with focusing on one region (in our case for example a provincial), a lot of opportunities arise in displaying the evolution of romanitas (in terms of looks or fashion trends) or comparing different regions of the Empire, how the people of given provinces dressed. My opinion and experiences are, that if a group really tries a professional and thought out approach, it can represent the typical outlook of a roman civilian or military personnel of the principate in the time period of an emperor (or 20-30 years) with only small compromises or using a hypothesis regarding pieces of equipment. This strategy however seems still new and needs a lot more discussion to really take its footing in Hungary. The Colonia Rostallo Cultural and Military History Foundation is trying to advertise this approach (choosing the late-Flavian period in Pannonia provincia as the aim of the representation) working closely with the Aquincum Museum to create a living history experience, where the visitors of museum events can give themselves in to the immersion of a living, breathing environment in a specific moment in the past, where the details are also as authentic as possible due to close working relationship with the museum, archaeologists and reenactors.

#### **5 PROFESSIONALISING LIVING HISTORY: THE ROCKY ROAD TO RECOGNITION OF INHERENT EXPERTISE**

**Abstract author(s):** Frank, Geza (Living History)

**Abstract format:** Oral

As living history events and museums with reconstructed historic infrastructure steadily gain popularity with local and international audiences, we witness a parallel professionalisation of living history. This professionalisation is expressed not only through a rising number of specialised craftsmen and companies that provide historic replicas to a growing market, but also through the rise of specific methodology and expertise. Though this expertise is increasingly in demand in the fields of museology, experimental archaeology and heritage protection, primarily as means of outreach, there are inherent trust issues at the core of most relationships between living history initiatives and academic surroundings. More often than not these issues lead to mutual frustrations. In order to illustrate the inherent nature of these frustrations, three examples of cooperation between living history and museums, universities and project consortia will be analysed. The "Living-History Guidelines" of the Interreg DTP Project "Living Danube Limes" will serve as a starting point for an analysis of possible ways to formalise the interaction between living history insiders and outsider in order to understand and forestall systematic frustrations. The key to unlock the vast potential of passion and laymen driven living history for outreach and heritage preservation, lies with the recognition of its specific expertise and the understanding of the scope of current possibilities in regards to creating congruent and immersive experiences.

#### **6 THE HISTORICAL REENACTMENT IN HUNGARY**

**Abstract author(s):** Simó, Márton (ethnographer; museologist)

**Abstract format:** Oral

The Hungarian military tradition-preserving / historical replay/reenactment groups have a high social embeddedness both in Hungary and internationally. Among the Hungarians in the Carpathian Basin, the topic of preserving traditions is closely connected with the issue of national identity, a trend that can be observed from the first half of the 20th century to the present day. The phenomenon of historical repetition (reenacting, reenactment), which I present in more depth in my dissertation, began to unfold in the 1960s and 1970s, and today seems to be coming to an end. Everything that can be observed during the historical replay dates back thousands, hundreds of years, so the authentic reconstruction is based on archeological finds, historical data, art historical and ethnographic heritage. My dissertation aims to carry out a summary and overview study of the military tradition preservation / replay groups in the Carpathian Basin. With the aim of highlighting the real social role of the movement and the fact that historical replay is a subculture rather than a weekend hobby for the participants.

During the course of my research, I relied on Hungarian articles published abroad on the topic, mainly dealing with museum interpretation and experience theater. The source material of my work is provided by my personal experience, the data obtained during the participant observation, as well as the information of the questionnaire developed by me and filled out by one hundred and sixty people and several in-depth interviews.

My paper is also my dissertation written at the Institute of Ethnography of Eötvös Loránd University and successfully defended in 2021.

## 7 DANUVINA ALACRIS - MAKING HISTORY ACCESSIBLE THROUGH A ROMAN RECONSTRUCTED SHIP

**Abstract author(s):** Pálóczi, Réka (Kulturális Örökség Menedzserek Egyesülete)

**Abstract format:** Oral

How can a wider public, history enthusiasts, archaeologists, cultural institutions, touristic bodies, scientists, artists, and other stakeholders benefit from the presence of a rebuilt archaeological ship?

The Interreg project "Living Danube Limes" aims to further develop and enhance the connecting aspects of the Roman heritage sites along the Danube and to combine the tangible and intangible heritage by stressing the common history. As project partner, KÖME- Association of Cultural Heritage Managers is mainly involved in organizing activities in order to disseminate the universal value of Roman heritage through a reconstructed Roman lusoria ship, called Danuvina Alacris. The ship will be cruising along the Danube from Germany all the way to the Black Sea and each pilot site (in Hungary the auxiliary castellum of Matrica) and the whole country can benefit from the presence of this unique living historical object. The ship arrives in Hungarian territory at the beginning of August, 2022 and leaves the country at the end of the month. This lusoria ship is an opportunity to combine experimental archaeology, scientific research and social involvement, and to practically promote the values and accessibility of our common Roman heritage. In our presentation, we share our practical experiences, we show the benefits, unexpected results and possible obstacles as well of the organization of such an unparalleled cruise ship and event series to encourage the audience and similar initiatives to grow.

## 8 FAST OR SLOW FASHION APPROACH IN LIVING ARCHAEOLOGICAL INTERPRETATIONS AND NARRATIVES? A FROM-DATA-TO-INTERPRETATION EXPERIENCE WITH ROMAN TEXTILE-REFURBISHING WORKSHOPS

**Abstract author(s):** Pásztfókai-Szeoke, Judit (freelance archaeologist)

**Abstract format:** Oral

During their usage, garments get dirty and damaged. Every information concerning their cleansing, darning, mending or in one word: their refurbishing is extremely helpful in shedding light to their individual (hi)story or biography.

Two textile refurbishing workshops in Roman Pannonia (Savaria and Siscia) yielded an abundant corpus of textile tools and inscribed commercial lead tags. Tools in general are a very useful source for the textile technologies applied locally by the workers. The tags were used as ID-labels for valuable garments entrusted by clients to the care of these workshops for refurbishing them.

The archaeological finds from these workshops allow us a slow-fashioned interdisciplinary, from-excavation-to-experiential-archaeology approach to study the materiality of clothes, clothing; the everyday dress practices of the local wardrobes and to understand the everyday consumption of clothing in Pannonia. Under everyday consumption of clothing, beyond its acquisition and maintenance, cleanliness and disposal are also understood.

Beyond these archaeological wardrobe studies, our research also has an embedded humanistic approach to explore experimentally e.g. the tacit knowledge and work experience of the Roman craftsmen, the most probable chaîne opératoire and the sensory landscape (e.g. smellscape) of the textile refurbishing processes, etc.

This proposed paper would also argue the benefits of more sustainable, although slow-fashioned living Roman archaeology in Hungarian museums, besides spinning tales from patchy information sometimes creatively pinned together.

## 9 PRESENTING ROMAN GLASS VESSELS FROM THE AQUINCUM CIVIL TOWN

**Abstract author(s):** Kelemen, Zsófia (Budapest History Museum)

**Abstract format:** Oral

Although archaeological research has been taking place at the Aquincum Museum for more than a century, little attention has been paid to the presence of items made of glass. The only paper written specifically about the glass vessels in our collection was published in 1958. Since then, glass vessels have only been discussed from burial context, and only a few unique findings have been published. With the analysis of the glass fragments from the North-eastern quarter, it became possible to examine the use of glass in urban setting in the Roman era Aquincum for the first time. The surprisingly large quantity of vessel forms and everyday objects made from glass yielded a much needed insight

not only into the economical and commercial relations of the inhabitants of the city, but the important role glass played in the roman way of living.

In my presentation I would like to discuss not merely the results of my research but the opportunities it could bring forth in presenting roman glass to the wider audiences.

## 10 THE WAYS OF HISTORICAL RECONSTRUCTION IN THE XXITH CENTURY

**Abstract author(s):** Mestellér, János (Foedus Orientalis Cultural Association; Kazár Bazár)

**Abstract format:** Oral

During the past decade connection between the institutional scene (Archeological Institutes, Museums, various researchers) and the reenactor/living historian community strengthened. This is visible not only in Hungary, but countries all over Europe. A new committed society emerged from the reenactor world, who are generally well-trained in certain fields, has up-to-date information and deep knowledge in certain literature what is connected to their research field. In certain cases such individuals or groups could be great help to an institute not only propagating museum or institute activities for the public in certain events, but also in the field during excavations, find identification and reconstruction procedures, and bring in new ideas and approach to a certain field.

My presentation is about to demonstrate a few successful cooperations from the past few years when the reenactor community could successfully and effectively cooperate with institutes and achieve spectacular projects what results were viewed by thousands. Such as mannequin reconstructions for the World of Hunting and Nature Exhibition or Museums, or archeological item reconstructions like the making of the Zemplén cup or new ways of publishing significant objects, such as the documentation and 3D scanning of the Pécs helmet.

## 11 PERFORMING ETHNICISM? EARLY MEDIEVAL RE-ENACTMENT AS PART OF RADICAL RIGHT-WING SUBCULTURE IN CENTRAL EUROPE

**Abstract author(s):** Reichenbach, Karin (Leibniz-Institute for the History and Culture of Eastern Europe - GWZO)

**Abstract format:** Oral

The Festival of Slavs and Vikings at Wolin has been repeatedly discussed as being not only an annual re-enactment festival of international scale but also a meeting point for radical right-wing enthusiasts of the Pagan past. Thus, the paper aims to focus on the intersections of ethno-nationalist Neopaganism and related radical music scenes with the right-wing fringe of re-enactment culture. Based on examples from Germany, Poland and Hungary, it will draw attention to a problematic side of historical re-enactment when it does not serve as a means of history education, but rather as a performance of identity discourse and politics in front of a large audience. With different levels of official authorisation through institutional integration and governmental financial support, reflection and critical assessment of the potential and limits of re-enactment as an approach to the past is necessary. Even more important seems a discussion about authenticity concepts and societal ideas which in performances of Vikings, Slaves and Germanic tribes seems especially often related to essentialist concepts of culture and ethnicity or even racism. The paper will address these questions and provide a detailed insight into the darker dimensions of popular history culture.

## 12 FROM AN ARCHAEOLOGICAL SITE TO A NOBLE FEAST – HISTORICAL AND EXPERIMENTAL COOKING PRACTICE IN HUNGARY

**Abstract author(s):** Zay, Orsolya (Dobó István Vármúzeum)

**Abstract format:** Oral

There is no doubt eating is one of the most important and interesting topic in every culture. Everybody can easily talk about dining, and everybody has its own idea how, when and what to eat to be healthy or feel delighted. In Hungary the epochs before the 19th century have a stronger tone in the last few years among the researchers. Besides historical sources archaeology can help us to recreate food of the ancient times. Experimental archaeology completed our knowledge and dragged more information from other professional disciplines such as ethnology, botany, archaeozoology, pottery making or modern cuisine. Summarizing our experiences we gain better insight to the daily and ceremonial dining of past ages with written and visual sources, archaeological findings and historical tests.

I deal with the gastronomy of the 15-17th centuries in Europe and the Carpathian basin. We made menus and tried technical methods of this period during the last 10 years with researchers and volunteers at smaller historical festivals and at two major museum sites, the Mátyás király Museum in Visegrád and the Rákóczi Múzeum in Sárospatak. Both of these institutions are connected to the Hungarian National Museum and provided us historically correct locations for experimental cooking tests. The projects were timed to historical festivals, where both historical reenactors and museum visitors came to these cultural sites. In this way we were able to test a historically accurate process of cooking, arrange an authentic medieval feast and make a living history program for visitors.

**Abstract author(s):** Sebo, Béla (No)

**Abstract format:** Oral

Is there a chance that history, archaeology and social sciences can get a place on the market? Is there a chance that human science can produce profit? We see some examples here and there, but is there a rule, a system, what could be used to make education partly or fully profitable?

These were my questions, when i started my research. The first step was, to find a slice of the cake of education, which has no real representation on the market until now. I choose historical reenactment. I started to research the social and economic background of these groups and individuals. I started to map the resources and the behaviour on the market, and the different, alternative application possibilities of the special skill set of the reenactor.

I can show possibilities to make historical education profitable. The market areas, which can be open to use history, archaeology, social sciences to produce new possibilities to the world of reenactment.

### ARCHAEOLOGICAL PROSPECTION AND FIELD EVALUATION PRACTICE FROM BOLOGNA PROCESS TO CONVENTION OF LA VALETTA. DO WE PRACTICE WHAT WE PREACH? [ARCHAEOLOGICAL PROSPECTION]

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Verhegge, Jeroen (Ghent University-Department of Archaeology; Ghent University-Department of Environment) - De Smedt, Philippe (Ghent University-Department of Environment; Ghent University-Department of Archaeology) - Sarris, Apostolos (University of Cyprus-Department of History and Archaeology) - Simon, François-Xavier (Institut national de recherches archéologiques préventives, Direction Scientifique et Technique; Laboratoire Chrono-environnement – CNRS – UFC - UMR 6249)

**Format:** Regular session

Over the past decades, prospection approaches using well-established techniques have been complemented by less invasive technologies according to the Valetta recommendations. Nowadays, integrating various complementary prospection methods are applied in academic research projects and often taught as such to archaeology students. However, the application of these methods in development-led archaeology is often challenging due to the differing finality. Development-led archaeology is usually required to investigate all archaeology of a place due to the threat of destruction, while academic archeological prospection or unthreatened archaeological resource management aims to resolve more targeted research questions. In addition, development-led archaeological prospection often does not focus on non-destructiveness, because in-situ preservation is not compatible with the expected endpoint (archaeological site destruction and new building construction), despite the Valletta convention's preference for non-destructive methods of investigation (article 3.I.b) and in situ preservation (article 4.II). Therefore, many European countries rely on e.g. systematic trial trenching and, to a lesser extent, less invasive techniques ahead of developments. Merging both approaches requires tailored approaches and is irregular depending on the local legislation.

This session aims to address topics such as:

- Teaching practices in archaeological prospection/field evaluation
- Relationships between academic and development-led archaeological prospection practices
- Differences in the implementation of less destructive methods of investigation. Is this related to legislation, the environmental context, research traditions, recent developments?
- The under- or over-application of less destructive methods in these contexts. What are the ensuing risks and opportunities for archaeological resource management?
- Novel research in invasive sampling designs and prospection strategies across Europe. Why are these (not) preferred to non-invasive methods?
- How do we deal with the unavoidable uncertainty of archaeological prospection methods, especially in development-led site evaluations?

We invite national, regional, landscape- or site- specific overviews or case studies in academic research; teaching and archaeological resource management, and particularly development-led archaeology.



**1 APPLYING NON-INTRUSIVE METHOD “WHENEVER POSSIBLE?” - THE VALETTA CONVENTION AND THE ICOMOS CHARTER AS SEEN FROM NORWEGIAN HERITAGE MANAGEMENT VIEWPOINT**

**Abstract author(s):** Stamnes, Arne (NTNU University Museum, Dept. of Archaeology and Cultural History; The National Museum of Denmark, Dept. of Ancient cultures of Danish and the Mediterran; Aarhus University, Dept. of Geoscience)

**Abstract format:** Oral

International Charters and Conventions are important documents that countries can choose to ratify. From a legal point of view, charters are political statements that are not legally binding but still ensure that the country agrees on a political obligation. Signing the ratification of a Convention, on the other hand, commits a country to include its content within the domestic legal system. Both the European Convention on the Protection of the Archaeological Heritage (The Valetta Convention) from 1992 and the ICOMOS Charter for the Protection and Management of the Archaeological Heritage from 1990 have statements encouraging the use of non-destructive methods. While it is not defined what these “non-destructive” methods are in practice, the explanatory report to the Valetta Treaty emphasises that “excavation is to be regarded as the ultimate step in seeking information – not the normal method. Non-destructive methods are to be used wherever possible”.

Similarly, the ICOMOS charter clearly states that “Non-Destructive techniques, aerial or ground survey, and sampling should therefore be encouraged wherever possible, in preference to total excavation”. These statements were made in the infancy of geophysical survey methods. In the last 30 years, geophysical methods had undergone enormous technical development and have proven a wide range of applications than demonstrated when they were drafted and ratified. Indeed, this then should have encouraged an increased usage of non-destructive methods? Has the Heritage Management fully committed to these Charters and Treaties? An analysis of all written public documents regarding Norwegian Heritage Management, has shown that this had not necessarily been the case, but developments have been made. This presentation will analyse what role these documents have had on the status, role and acceptance of geophysical methods within the Norwegian Cultural Heritage Management System, or the lack thereof.

**2 THE USE OF NON-DESTRUCTIVE METHODS WITHIN DEVELOPMENT-LED PROSPECTION. NEW EXPERIENCES FROM MØRE & ROMSDAL, NORWAY**

**Abstract author(s):** Dahle, Kristoffer (NTNU University Museum; Møre & Romsdal County)

**Abstract format:** Oral

As a regional cultural heritage authority, Møre & Romsdal County is responsible for conducting archaeological prospections prior to development according to the Norwegian Cultural Heritage Act. In line with the Valetta recommendations, the County has gradually complemented its toolbox with less invasive digital technologies such as LiDAR and GPR.

From 2021-2025 the County and the Norwegian Research Council have financed a PhD on the use, applicability and potential of non-destructive methods on sub-alpine shielings or summer farms. This is a common site category rarely subject to development-led archaeology, both due to its peripheral location and lack of threats as well as the general appreciation and in situ conservation of present-day mountains landscapes. As a consequence, however, our knowledge on prehistoric and medieval transhumance is sparse.

This paper will present some preliminary results from the PhD-study, regarding strengths and weaknesses of different non-invasive methods (drone, geophysics) in various outland terrains. It will further discuss some general and practical experiences, possibilities and challenges in using non-invasive methods within development-led prospection.

**3 LARGE INFRASTRUCTURE CONSTRUCTIONS - AN INTEGRATION OF ARCHAEOGEOPHYSICAL PROSPECTION IN TO THE DEVELOPMENT-LED ARCHAEOLOGY IN THE CZECH REPUBLIC**

**Abstract author(s):** Tencer, Tomáš - Milo, Peter (Masaryk University; Faculty of Arts; Department of Archaeology and Museology) - Hlas, Jindřich - Zezula, Michal (The National Heritage Institute, Regional Office Opava) - Šálka, David - Havelka, Jan - Vágner, Michal (Masaryk University; Faculty of Arts; Department of Archaeology and Museology)

**Abstract format:** Oral

A tight schedule, limited budget and human resources are the main characteristics of large infrastructure construction projects.

The application of archaeological prospection methods becomes necessary when planning such projects. Since a non-destructive approach to archaeological excavation is not enshrined in Czech legislation, neither the methods are unified. Estimating the cost of the excavation is usually the first reason for using non-destructive prospecting methods. In combination with GIS analyses, well-established approaches (field survey, aerial archaeology etc.) will

significantly improve the chances of the correct time and cost estimation. However, these methods often require a broader timeframe for their successful implementation, such as suitable vegetation or climatic conditions. Despite the undeniable advantages, the picture provided by these methods is often limited and is also time-consuming. It is usually impossible to systematically survey the entire area; thus, we create blank spots. Since development-led archaeology is usually required to investigate all archaeology due to the threat of destruction. These areas pose a potential risk from both an investor and heritage management perspective. At this stage, usually, archaeogeophysical prospection comes to help. In the infrastructure constructions environment, it is mainly magnetometry. Motorized magnetometry systems offer an effective approach to filling the map's white spots.

We did several such geophysical surveys on roads, highways or gas pipelines within the last couple of years. Cooperation with archaeological and heritage management bodies and investors demonstrates the advantages of archaeogeophysical prospection. It also points out the weaknesses of the traditional excavation and prospection method used in development-led archaeology. Our paper will present some infrastructure projects in the Czech Republic and the process leading to archaeological research.

The paper was supported by project No TL03000537 of the Technology Agency of the Czech Republic (TAČR). - Optimized archaeological prediction in the process of large-scale construction sites.

#### **4 ARCHAEOLOGICAL PROSPECTION IN THE NETHERLANDS VIEWED FROM A COMMERCIAL COMPANY**

**Abstract author(s): Orbons, Joep (ArcheoPro)**

**Abstract format: Oral**

From the mid 1990s, archaeology in The Netherlands opened up to commercial companies. An archaeological working standard was developed, a national database created and in 2007 a heritage law became active that fully implemented the Valetta convention. A zooming in system of research steps was created starting with a desktop study, a scouting phase, a mapping phase, a validation phase ending with an excavation. At the end of every step, a selection-deselection decision is made. A split was made with prospection and excavation work. To assist this process, archaeological predictive maps were made.

The commercial company ArcheoPro was set up in 2004 to provide specialist prospection services, only doing the prospection part of the archaeological steps. We experience the good and the bad parts of this method of working. This way of working resulted in many good surveys. In many projects there is a good cooperation with local people, developers who incorporate archaeology into their building projects and transparent decision processes when archaeology is deselected.

But not all is well. There is very little feedback down the steps in this process. What did the prospections miss when the site is excavated? Companies tend to stick to their known methods. Augering is the tool of choice for most Dutch companies. It is very hard to introduce geophysics, remote sensing and other new methods. New methods are either distrusted or overrated and shifted to the side if it doesn't work out as expected although the Dutch State Archaeological service promotes new methods. The complicated Dutch soil situation and the high level of urban landscapes do not help introducing these new methods. We work together to improve the prospection steps as it is the first selection in archaeology to arrive at the best archaeology.

#### **5 TARTARIA - PODU TARTARIEI VEST. IDENTIFYING A SITE BY DEVELOPMENT-LED ARCHAEOLOGY AND SETTING UP A SCHEDULED MULTI-ANNUAL RESEARCH PROGRAM**

**Abstract author(s): Bors, Corina Ioana (National History Museum of Romania - MNIR) - Asandulesei, Andrei - Tencariu, Felix ("Alexandru Ioan Cuza" University - Iasi) - Cocis, Horatiu (County Museum of History and Art - Zalau)**

**Abstract format: Oral**

This prehistoric site situated on Mureş river valley (Alba County, Central Transylvania, Romania) was discovered in 2012 by large-scale archaeological field researches occasioned by the construction of the A1 motorway. At that time non-invasive field investigations were still a pioneering matter for Romanian archaeology, even for the development-led one. Despite this, throughout an open area archaeological excavation was completely investigated an area of about 2 hectares (on the southern and eastern limits of the site), significant archaeological features and vestiges being discovered, providing major new data and finds for Middle Hallstatt period (9th -8th c. BC). The most important ones are two ditches (on the southern and eastern site's), two bronze hoards and a collective grave. Given the particular nature of the site, since 2016 was initiated a multi-annual archaeological research program, aiming both field excavations and geophysics surveys (a large-scale magnetic survey and aerial photography) for documenting the setting of the prehistoric site characterized by particular features. Moreover, in 2021, a new complex range of non-intrusive investigations were undertaken: aerial photogrammetry scanning, Graphic Target Imaging – detection, LiDAR scanning – Light Detecting and Ranging, as well as a new geophysics survey. Thus, were obtained highly accurate and complex sets of data, indicating new archaeological features on the northern part of the site (a ditch), but also outside the currently outlined Hallstatt period habitation. Rather unusual as phasing these research

stages, yet with significant sets of survey data, by analyzing the results of the 2012 campaign in relation with the ones from 2016 – 2021 ones, by a comparative multidisciplinary approach is possible to have a better understanding of the features of this archaeological site and the surrounding landscape, a very representative one, providing also a very interesting case study on the benefits of archaeological prospection in undertaking development-led archaeological projects.

## 6 INNOVATIVE GPR PROSPECTING ON CULTURAL HERITAGE

**Abstract author(s):** Persico, Raffaele (University of Calabria) - Catapano, Ilaria - Ludeno, Giovanni (IREA-CNR) - D'Amico, Sebastiano - Colica, Emanuele (University of Malta) - Giardino, Claudio - Zappatore, Tiziana - Auriemma, Rita - Coluccia, Luigi - Antonazzo, Antonella (University of Salento)

**Abstract format:** Oral

Two innovative methods for GPR prospection of cultural heritage will be shown, namely the shifting zoom [1] and the autostaking with stop-and-go [2]. With regard to the first one, inverse scattering is a branch of electromagnetism that studies the possibility to image the inner of opaque structures. The migration of GPR data is a kind of simple inverse scattering algorithm. More complex processing algorithms are in general avoided because of their computational burden. The shifting zoom is a procedure that allows to reduce meaningfully this computational burden. In particular, thanks to the shifting zoom, we have applied a linear inverse scattering algorithm to the investigation of several large areas.

With regard to the second method, the auto-staking is the way to gather GPR data exploited when the odometer of the instrument cannot be exploited. The innovation implemented with regard to this method consists in gathering the positions of the needed marker points just stopping the antennas in correspondence of them. This requires some extra-processing, but it allows us to avoid asynchronisms between the instants of the GPR passage on the marker points and the time of the marker point recording. Moreover, the stop-and-go strategy makes virtually impossible to miss a marker point.

Acknowledgments

The authors are grateful to the Cost Action 17131 SAGA.

References

- [1] E. Colica, A. Antonazzo, R. Auriemma, L. Coluccia, I. Catapano, G. Ludeno, S. d'Amico, R. Persico, GPR investigation at the archaeological site of Le Cesine, Lecce, Italy, *Information Science* Vol. 12, 412, <https://doi.org/10.3390/info12100412>, 2021.
- [2] R. Persico, T. Zappatore, C. Giardino, S. D'Amico, E. Colica, Ground Penetrating Radara and photogrammetric investigations on prehistoric tumuli at Parabita (Lecce, Italy) performed with an innovative use of the position markers, *Remote Sensing*, Vol. 14, 1280, <https://doi.org/10.3390/rs14051280>, 2022.

## 7 PREDICTING DYNAMIC GEOPHYSICAL CONTRASTS OF ARCHAEOLOGICAL FEATURES AT VALTHER-TWEELING: A PATHWAY TOWARDS MORE ROBUST IMPLEMENTATION OF GEOPHYSICS IN DEVELOPMENT-LED ARCHAEOLOGY?

**Abstract author(s):** Verhegge, Jeroen (Department of Archaeology, Faculty of Arts & Philosophy, Ghent University; Department of Environment, Faculty of Bioscience Engineering, Ghent University) - Mendoza Veirana, Gaston - Cornelis, Wim (Department of Environment, Faculty of Bioscience Engineering, Ghent University) - Crombé, Philippe (Department of Archaeology, Faculty of Arts & Philosophy, Ghent University) - Grison, Hana (Institute of Geophysics of the Czech Academy of Sciences) - De Kort, Jan-Willem - Rensink, Eelco (Cultural Heritage Agency of the Netherlands) - De Smedt, Philippe (Department of Environment, Faculty of Bioscience Engineering, Ghent University; Department of Archaeology, Faculty of Arts & Philosophy, Ghent University)

**Abstract format:** Oral

The structural implementation of archaeological geophysics is hampered by various factors. Particularly for development-led implementation, the predictability of archaeological feature detection is often considered crucial. Modelling potential geophysical contrast of expected archaeological features in survey areas can provide valuable decision-making information. Such geophysical forward models are rarely used in archaeology because their reliability depends strongly on pedological and archaeological feature properties entered into the model. Quantifying relevant soil properties defining the targeted archaeology, along with their geophysical expression is a crucial but complex process in creating viable forward models.

Here, we present a sampling and modelling approach to support geophysical studies into Neolithic land use in the Low Countries. Especially in the sandy and loessic regions, archaeological soil features related to occupation, burial practices and other aspects of land use form challenging geophysical targets due to their age and potential homogenization with the soil matrix. Therefore, a series of natural soil profiles and archaeological feature profiles were measured, sampled and analysed to enable the conversion of traditional soil properties to geophysical soil properties through pedophysical model development. Additionally, in-situ sensors were installed to monitor dynamic soil prop-

erties (moisture content and temperature) and optimize survey timing. Using these in-situ measured and analytically derived soil and feature properties, geophysical contrasts are forward modelled throughout the monitoring period to assess feature detectability using different geophysical methods. The resulting pedophysical models and forward modelling procedures would be usable to predict geophysical contrast between natural soil profiles and (virtual) archaeological features as well, potentially removing a barrier to implement geophysical survey methods in development-led archaeology. In this contribution, we provide an overview of this approach, supported by its practical implementation at the megalithic monument of Valther Tweeling (NL). Alongside a methodological overview, we discuss the pitfalls and advantages, and its potential relevance for development-led applications.

## **8 SIMULATING TRENCHING FOR ARCHAEOLOGICAL EVALUATION: COMPARING THE VARIABILITY OF RESULTS AND DEALING WITH THE PROBLEM OF FALSE NEGATIVES**

**Abstract author(s):** Higham, Richard (University of Brighton; SEAHA - EPSRC Centre for Doctoral Training in Science and Engineering in Arts, Heritage and Archaeology) - Carey, Chris (University of Brighton) - Corcoran, Jane (Historic England) - Knight, David (Trent & Peak Archaeology) - Brolly, Matthew - Cole, James (University of Brighton)

**Abstract format:** Oral

Despite a diversification and increasing application of prospection methods within archaeology in recent decades, evaluation trenching is still the most commonly employed technique. Evaluation trenching across a percentage of the proposed site collects an excavated sample to gain information on, and prospect for, any archaeology in a given area. Across Europe, archaeological evaluation trenching is employed at different percentage coverages and uses different trenching configurations to gain this archaeological sample. However, with all evaluation trenching there is an issue of what we do not discover. In other words, if our trenches find no archaeology, is that because there is no archaeology present – the false negative? Or because the sampling strategy is flawed? By using GIS simulations of different evaluation trenching designs over archaeological sites, it has been possible to understand the types of archaeology we are likely to be missing and the types of archaeology we are more likely to find, demonstrating clear bias in the archaeological samples produced by evaluation trenching. The modelling approach presented here uses digitally reconstructed archaeological sites within a GIS. This modelled approach provides greater certainty and understanding about the results of the varying evaluation trenching practices that are currently employed in development-led archaeological evaluations.

## **A. ARCHAEOLOGICAL SURFACE PROSPECTION: FROM UNIVERSITY TEACHING TO FIELD PRACTICE. THE STATE OF THE QUESTION IN PORTUGAL**

**Abstract author(s):** Pereira Rocha, Leonor Maria (Universidade de Évora; CEAACP/UAlg) - Branco, Gertrudes (CHAIA/Universidade de Évora)

**Abstract format:** Poster

Archaeological surface prospection, as an legally recognised activity in archaeological work, is relatively recent in Portugal. Indeed, until the end of the 20th century, this work was not integrated into specific projects (scientific or rescue) and was not supervised by any state agency, so it was an activity with poorly defined methodologies and practices. However, when we analyse its antecedents, we realise that Portugal was a pioneer country, in European terms, in the attempt to protect heritage and in the creation of regional and national inventories of archaeological sites, initiated in the 17th century by King João V.

With the creation of the Portuguese Institute of Archaeology (1997) and the transposition of European legislation, namely the Valletta Convention, (also in 1997), this situation has changed due to the imposition of prospecting work in environmental impact assessment processes. These changes should have repercussions on the development of this activity, both in terms of the training of archaeologists and the definition of field methodologies.

With this work we seek to contribute to the knowledge of surface archaeological prospecting in Portugal, from teaching to field methodologies, with a critical approach to its evolution, starting from the principle that each archaeological work is a scientific production, which must ensure the production of knowledge and the preservation of our collective memory for future generations, as defined in the Convention of La Valletta (Preamble) and in the Portuguese Law of Cultural Heritage (Law nº 107/2001, updated by the Law nº 36/2021).

## **B. THE LEGAL THEORY AND PRACTICAL EXERCISE OF ARCHAEOLOGICAL HERITAGE CONSERVATION**

**Abstract author(s):** Branco, Gertrudes (CHAIA) - Rocha, Leonor (CEAACP/UAlg)

**Abstract format:** Poster

The European Convention on the Protection of the Archaeological Heritage (revised) held for the signature in Valletta (Malta), on 16 January 1992, and ratified by Decree of the Portuguese Republic President, on 16 December 1997, proposes, whenever possible, the use of non-destructive methods of investigation (subparagraph i), art. 3) and, when

feasible, the conservation in situ of elements of the archaeological heritage found during the development of works. (subparagraph 4, art. 5).

However, these principles are not evident in the Portuguese law which establishes the bases of the regime of protection and the valorisation of the cultural heritage (Law no. 107/2001, of 8 September). On the contrary, this law establishes that " the principle of conservation by the scientific record" to archaeological heritage shall be immediately applicable, under the terms of the law, (No. 1, Art. 75).

This principle overvalues the importance of the scientific record, to the priority preservation of archaeological assets in situ. It establishes a relationship of equivalence between knowledge and archaeological good, devaluing the various constraints inherent to the production of knowledge, and the fact that the archaeological heritage is a "fragile and non-renewable cultural wealth", as stated in the Lausanne Charter (1990)

The application of this principle supports the development of the so-called "preventive and safeguard archaeology" which, in Portugal, in the year 2021, represented 96% of all authorized archaeological activities, authorized in the national territory.

The use of innovative and non-intrusive methods, intended to act preventively, in order to guarantee the scientific reserve of archaeological elements and their in situ preservation, are supplemented by the use of intrusive methods, developed in the context of the work, facilitated by the legal concept that makes the good and its knowledge substantive.

---

### 399 LINKING DATABASES FOR COMPARING RESEARCH: DO WE NEED A EUROPEAN HILLFORT INFORMATION SYSTEM? [COMFORT]

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Loy, Anna (ROOTS Kiel) - Whitefield, Hans (ZBSA Schleswig) - Bernard, Loup (Université de Strasbourg) - Ibsen, Timo (ZBSA Schleswig)

**Format:** Round table

The proliferation of web-based geographic interfaces for the investigation of archaeological phenomena naturally leads to the conclusion that super-regional perspectives can now be assembled for numerous archaeological phenomena. Hillforts or fortification are one of the clearest examples of this trend with numerous regional and national scale compilations being made available. The focus of these databases varies from heritage management catalogues, to curated academic and scientific collections and touristic information. We seek to discuss the possibilities for a pan-European database, in terms of both theory and practicality; as well as how such a system might be used to shape future research.

Since the monuments themselves are multifaceted is it possible to apply GIS as a reductive technique to these monuments on such a super-regional or European scale or does it unduly suppress unique analysis and interpretation? Is the shared terminology of "hillfort" appropriate for such a wide area or does it actively obscure a broader spectrum of phenomena in prehistory?

In practical terms for a data base, we ask: Can we provide standardized knowledge and data on hillforts, which would help scientists filter the tremendous amount of information scattered in thousands of articles, publications, excavation reports, and archives according to their specific questions? Does it make sense to combine and link smaller platforms into a monothematic platform to raise awareness, promote hillfort research, and offer easy access to the related data?

It is also necessary to consider how this dataset could grow and develop overtime. Would developing guidelines for documenting hillfort excavations or surveys enable us to unify research questions and make hillfort research comparable? How should we go about incorporating the growing body of both archival and grey literature at our disposal? The round table aims to connect specialist and interested scholars who use and moderate hillfort specific databases.

---

### 400 STEP BY STEP. THE ROUGH ROAD TOWARDS COMMUNITY ARCHAEOLOGY

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Wollak, Katalin (Independent heritage expert; Hungarian Association of Archaeology and Art History) - Mařík, Jan (Institute of Archeology of the CAS, Prague) - Rácz, Ákos (Ferenczy Museum Centre, Szentendre; Community Archaeology Association)

**Format:** Regular session

Although there is a long tradition of volunteering in archaeology across Europe, community archaeology requires a multi-scale approach from both the professional actors and the civil side, i.e. the committed contributors. Civil society rightfully demands direct access to information about historical and archaeological research, and actively seeks a connection with professionals. By introducing new, more nuanced forms of regulation and by channelling the

demand for cooperation from both sides, partnership programmes have been set up in many countries, which have accelerated the emergence of community archaeology.

The COVID situation has led to a particular increase in social demand for outdoor activities over the past two years, which has been reflected in the large number of projects based on participatory engagement of civilians into archaeological fieldwork

In this process, the metal detecting activity has played an increasing role, particularly in the Central and Eastern regions of Europe, where earlier only restrictive legislation existed because of the state ownership of archaeological finds. We are experiencing both the challenges and extraordinary results of the transition from illegality to science-led projects through engaging law-abiding metal detectorists.

It is time now to discuss the methodological, institutional background for the quickly changing and developing phenomenon. Can we keep pace with this growing demand from the civil society? What forms of public or state support could support this grassroots process?

The organisers of the session are primarily looking for representatives from countries where community archaeology has been reinforced in the last few years.

## ABSTRACTS

### 1 METAL DETECTING AS CITIZEN SCIENCE IN DENMARK

**Abstract author(s):** Dobat, Andres (Department of Archaeology, Aarhus University; Moesgaard Museum - MOMU)

**Abstract format:** Oral

Passionate detector users have re-written the history of Denmark many times since the hobby's early beginnings in the late 1970s. A hallmark of Danish metal detecting is the well functioning cooperation between detectorists and professional archaeologists at museums and universities. Responsible detector practice is widely endorsed among practitioners and professional archaeologists regularly include detectorists in excavations and research projects.

Private metal detecting has already challenged the classic division of roles in archaeology, with amateur finders producing finds but otherwise being more or less passive recipients of professional expert knowledge. Most members of the detector community are not only very committed to their hobby. They are also highly skilled and competent when it comes to recording, identifying and dating archaeological finds.

In 2018, the recording APP DIME was initiated as a means to facilitate this cooperation model. The ultimate goal was to empower metal detectorists to not only act as finders but to act as citizen scientists who contribute with data and knowledge. The DIME project is driven by a vision for how to do archaeology more responsible, more inclusive, and ultimately more democratic.

The paper will present the DIME project and its background, but it will also evaluate to what extent we succeeded in realising our vision and what unexpected obstacles we met on the rough road towards Danish metal detecting as citizen science.

### 2 METAL DETECTING AS PART OF ARCHAEOLOGICAL CIVIC SCIENCE IN THE CZECH REPUBLIC - CURRENT DEVELOPMENT, CHALLENGES, AND THREATS

**Abstract author(s):** Komoróczy, Balázs - Vlach, Marek - Kmošková, Michaela (Institute of Archaeology of the Czech Academy of Sciences, Brno)

**Abstract format:** Oral

Efforts to prevent the loss of common archaeological heritage – as well as the extraordinary amount of data without which the archaeological science would be severely damaged in many aspects – have led the authors to create a model of collaboration with the metal detecting community that is compatible with the current legislative framework, functional and acceptable from the point of view of archaeological science. In recent years, the government of the South Moravian Region has also been actively involved in this effort. It is a significant shift, as the Region is the legal owner of archaeological finds, the founding entity of seven regional museums with significant archaeological activities and collections, and the monument care authority. A long-term conceptual collaboration project called "Joint Forces in Order to Discover the Common Archaeological Heritage of the South Moravian Region" was launched. Its main idea is the positive approach to the public interested in responsible and moderated participation in discovering material shreds of evidence of our past. In 2020, this approach also became part of the regional government's political program. Last year, with the creation of the Portal of Amateur Collaborators within the Archaeological Information System of the Czech Republic, this activity acquired a unified digital scheme to register finds. The setting up of circles of citizen collaborators is in progress in several archaeological institutions of the Czech Republic; nevertheless, this process is far from over.

The data obtained by the metal detecting community contributes to scientific research and builds up an entirely new basis for research activities. On the other hand, it should be emphasized that this development requires considerable efforts from archaeology through investing material and immaterial resources. The authors outline some scientific, organizational, and societal benefits and numerous limits and threats arising from the current developments.

### 3 THE ROLE OF THE HUNGARIAN NATIONAL MUSEUM IN COMMUNITY ARCHAEOLOGY

**Abstract author(s):** Vida, István - Rózsa, Zoltán (Hungarian National Museum / Magyar Nemzeti Múzeum)

**Abstract format:** Oral

Community archaeology is still forming in Hungary. There are many isolated endeavours of the rural museums as well as of the Hungarian National Museum. In a few cases there is cooperation between the institutions, but there is no nation-wide standardized protocol.

The present legal environment is not favourable, it is further burdening the museums and the organizers of the community archaeology programs. In this year great changes are expected in the national organization of archaeology, which also affect community archaeology. The HNM is preparing for a nation-wide leading role in order to coordinate the field in cooperation with the local museums.

Reorganization on the level of the museum volunteers' teams also seems to be essential. It is very difficult to work with the large number of new volunteers, but it is necessary to integrate a larger community. As people feel their importance they are willing to dedicate themselves more to the causes, and they also involve their immediate environment. This larger community might also help the prevention of illegal activities and the protection of the sites in their environment.

### 4 NAVIGATING THE BUMPY ROAD: HUNDREDS OF HOBBYISTS, THOUSANDS OF FINDS, AND RELATED ISSUES IN ESTONIA

**Abstract author(s):** Kurisoo, Tuuli (Tallinn University)

**Abstract format:** Oral

The usage of metal-detectors is regulated in Estonia since 2011. All hobby searchers need a licence that can be applied after passing a specific training. The curriculum covers diverse topics from archaeological finds to WW2 explosives, which prepare hobbyists for a range of situations. The interest in metal-detecting is very high and the number of license holders increases rapidly every year. This has created a situation where the amount of finds collected and handed over to heritage specialists has completely overburdened the National Heritage Board of Estonia (NHB). Additionally, it causes long delays in providing feedback to hobby searchers and hinders the process of acknowledgements and rewards. Both aspects have a negative impact on cooperation between the hobby searches and archaeologists/ heritage specialists.

This paper discusses how two research projects (with acronyms MetDect and EDAO) on metal-detector finds have offered some solutions for the abovementioned problems. In the course of the MetDect, a database of metal-detector finds was created and now being used by the NHB. There is also a social media page where different finds are introduced that is popular among local hobbyists and general public. The core of EDAO project is the Atlas of the metal-detector finds, which is the first publicly accessible map application of the public finds in Estonia.

### 5 CURRENT ARCHAEOLOGY, THE PROTECTION OF MONUMENTS AND THE LAIC PUBLIC IN SLOVAKIA. PROBLEMS AND SOLUTIONS

**Abstract author(s):** Ruffkay, Matej - Pieta, Karol (Institute of Archaeology, Slovak Academy of Sciences)

**Abstract format:** Oral

The Monuments Law of 2002 in Slovakia has significantly limited the possibility of archaeological institutions to express their professional opinion on the organisation and quality of field research, which is decided by the administratively overburdened county monuments offices. The newly established Archaeological Council, as an advisory body of the Ministry of Culture, has not been given powers to inspect the quality and adequacy of rescue or thematic excavations, and its suggestions for changes to the system or sanctions for poor quality in the work of experts are not respected. The law was intended to prevent illegal excavations, but it blankly excluded all non-professionals from the process of controlled recovery of archaeological artefacts.

This proved to be ineffective in the campaign against illegal searchers and led to the disintegration of the traditional network of volunteers, amateur archaeologists, tied to regional or central museums, the Institute of Archaeology and Universities. Thus, we have lost the legal possibility of obtaining valuable information about new sites and finds. Attempts to change this critical situation in the law have not yet led to a remedy, despite two initiatives by the professional community in 2013 and 2018.

Related to monitoring the activities of illegal prospectors is the urgent need to control collectors. It is about the legalisation and registration of illegal private archaeological collections, which often hide objects of high museum and

historical value. They exist hidden all around us, without legal protection and especially without the possibility of their legal acquisition or use for scientific and other purposes. We are looking for ways to revive and activate contacts with the interested public, in accordance with the legislation, in order to gather information from the ranks of the finders and to guide their activities in favour of the preservation and protection of the archaeological cultural heritage.

## 6 COMMUNITY ARCHAEOLOGY IN FEJÉR COUNTY (HUNGARY) – PROTOCOL, ACHIEVEMENTS AND CHALLENGES

**Abstract author(s):** Szücsi, Frigyes - Kiss, Alexandra (Szent István Király Museum; Community Archaeology Association)

**Abstract format:** Oral

There are no laws and regulations relating to community archaeology in Hungary. Therefore, the cooperation of professionals with civilians has developed in different ways and with different intensities in each county. The authors of this contribution organized the Community Archaeology Programme at the Szent István Király Museum in Székesfehérvár (Fejér County, Hungary) in 2020 after six years of cooperation with „museum-friendly” civilian metal detectorists. After two years of operation, it has become one of Hungary's largest and most active community archaeology programs with about 100 registered volunteers.

Our main goal is to actively involve the widest range of society in the struggle to save our archaeological heritage by popularizing the full spectrum of archaeological work. The participation of volunteers with a metal detector is regulated by our community archaeology protocol, while without a metal detector, we accept volunteers for our activities without restrictions under the supervision of professionals. Although the epidemiological situation has made it difficult for us to operate, we hardly had any major excavations in the last two years where volunteers from our Programme would not have been present. Of these, we would like to highlight our excavations for the third year in the Avar age (6–9th century) cemeteries in Csákberény, which are carried out partly with community funding and mainly thanks to the work of volunteers. Partly for preventive purposes and partly for topographic research, the metal detecting surveys are also important, as well as the assistance of volunteers in unplanned rescue excavations.

However, in addition to the results and the successes, we also need to talk about the difficulties and the challenges that lie ahead (the issue of sustainability, the unresolved nature of archaeological processing).

## 7 SAVING A HUNGARIAN CASTLE SZADVAR, CIVILIANS BUILDING COMMUNITY FOR ARCHEOLOGY

**Abstract author(s):** Dobos, Janos (Friends of Szadvar)

**Abstract format:** Oral

The 15 years history of an internet-based association called 'Friends of Szadvar' and their activities to save the remains of an almost 'forgotten' medieval castle in northern Hungary provides a good example of a bottom-up initiative to use the power of community not only in cherishing the cultural heritage of a nation but also in building the foundations of a functioning community archeology project.

The main ingredients of a working model may be identified from the very beginning of the first cleanup activities up to the present situation, when the significance and the potential of the place were even recognized and supported by the Hungarian government in a nationwide program. We introduce the challenges and the roadblocks, and the way of finding the right answers, forming a learning curve for the organization and the whole community around it.

In terms of the archeological aspects the partnership and the support of the Herman Otto Museum, Miskolc and its archeologists were essential. We attempt to walk through the process, how after the first years of enthusiastic drive, the partners had to find a working model which matches with the available resources and brings the desired outcome for the professional and the civilian individuals and serves the interest of the people living in the area of Szadvar.

---

## 401 TO USE OR NOT TO USE: 3D DOCUMENTATION IN FIELDWORK AND IN THE LAB [3D-ARCHAEOLOGY]

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Hostettler, Marco (Institute of Archaeological Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern) - Drummer, Clara (Orthodrone GmbH, Kiel) - Emmenegger, Lea (Freelancer) - Stäheli, Corinne (Institute of Archaeological Sciences, University of Bern)

**Format:** Discussion session

Excavating an archaeological site involves many decisions and trade-offs to be made. This is not only due to the limited resources on site but also has methodological roots. As excavations are destructive, decisions on the quantity and on which details documentation should focus must be taken. For documentation, a wide range of tools are available.



One such tool is 3D documentation. It brings with it many benefits like the possibility to move in a 3D space through the excavation, the generating of 'virtual' profiles, or high precision DEM's to name a few. 3D documentation of finds offers the possibility of fast unwrapping of complex features, fast drawings from different angles, or printing as a replica for different purposes.

However, when compared to conventional methods, more problematic issues arise as well. 3D models must be calculated before the excavation can proceed. The calculation either needs time or powerful hardware. The method also results in a vast amount of data, as, in contrast to a drawing, most details are recorded. The question here is how to balance and evaluate these pros and cons.

With this session, we want to ask: How and on which basis do you decide when choosing the documentation method? How do you evaluate the cost and time benefit of 3D documentation, also taking into account consequential costs such as data storage and curation over long periods of time? Is the time saved in the field doubled in the office? How much of the recorded data is used in the evaluation?

We aim to bring together archeologists, technicians, and restaurateurs concerned with the above stated questions, whether working in the field or the lab, or as decision-makers in managing positions. We highly encourage members of commercial archaeological enterprises and of heritage offices to bring in their points of view.

## ABSTRACTS

### 1 3D DOCUMENTATION OF MANY FACES

**Abstract author(s):** Janek, Tomáš - Souček, Josef (National Museum, Prague)

**Abstract format:** Oral

3D documentation is gradually becoming a standard in archaeology. Apart from capturing the exact shape, proportions and decorations of the artefacts, it also enables advanced visualisation and analyses. The presented artefacts were documented in the laboratory under optimal conditions. Photogrammetry was used for highly detailed models, 3D scanner for those with homogenous colour of the surface, where high quality texture was not necessary. The first method will show several examples of the generated drawing, showing that this approach is faster and more precise than usual drawing by hand. This tool might be useful especially for the publication purposes, when the number of coloured photos is strictly limited. Profile extraction is one of the essential digital tools used in documentation of archaeological material, with further advances of scaling, measuring and even basic seriation. Analyses of the surface and visual enhancements can uncover production details or techniques of decoration. Many of those details might not be visible with a bare eye, thus might be overlooked for example in standard photography. For a flat surface the reflectance transformation imaging might be used. Although it requires specific conditions, it does not require high computing power. In many cases the artefacts have decoration around the whole body, making it difficult to observe in complexity. Digital copy of the artefact makes it possible to unroll the decorative motives to a flat surface in order to increase the legibility of the ornament along with the workflow used to create it. With angle to plane and distance to plane function the deformation of the surface can also be shown. Most of these methods have been developed and known since a long time ago, but only recently with decreasing equipment costs and availability of open-source alternatives for commercial software, they become ever present even in archaeology.

### 2 FAST AND ACCURATE DOCUMENTATION OF COMPLEX ARCHAEOLOGICAL FEATURES. CASE STUDY: A CHALCOLITHIC DWELLING BELONGING TO CUCUTENI CULTURE, NE ROMANIA

**Abstract author(s):** Brasoveanu, Casandra (Arheoinvest Research Centre, Science Department, Institute of Interdisciplinary Research, Alexandru Ioan Cuza University of Iasi) - Brunchi, Radu (Doctoral School, Faculty of History, Alexandru Ioan Cuza University of Iasi) - Tencariu, Felix-Adrian - Asăndulesei, Andrei (Arheoinvest Research Centre, Science Department, Institute of Interdisciplinary Research, Alexandru Ioan Cuza University of Iasi)

**Abstract format:** Oral

Cucuteni culture is well-known for its fine painted ceramics, of great artistic refinement; just as spectacular are the remains of the dwelling structures. The constructions are generally destroyed by fire, often to the point of vitrifying the clay of the walls and floors. However, inside them important vestiges of everyday life and spiritual life are preserved. This generates difficulties, related to the correct methods of excavation and accurate documentation of the different layers of destruction.

Fortunately, due to the advance of 3D documentation methods, we are able to record the archaeological information from these sites much faster and also obtain an objective point of view over the archaeological context. An experienced archaeologist can document these archaeological features in 2-3 days and the result is a subjective technical drawing, while the 3D documenting using UAV takes around 15 minutes, with another 1-2 hours to process the data and provides a storage medium much more reliable, offering the possibility of replicating data on an offsite storage unit.

Thus, we chose as a case study a dwelling, investigated in the eponymous settlement of the Cucuteni culture, from NE Romania. It is a construction with heavily burned walls, collapsed over a suspended floor, which in turn overlapped the ground floor, where several features (an agglomeration of loom weights, numerous ceramic vessels, etc.) were identified. The ensemble was affected and partially mixed by various post-Chalcolithic disturbances. Under these conditions, without photogrammetry, the recording of the material in situ would have been difficult and time consuming. Also, the 3D models that we obtained allowed us their later usage for educational and popularization purposes. Although the utility of modern methods of recording the archaeological features is well-proven, we consider that the traditional ones cannot be neglected and, for now, a combined workflow can provide more accurate results.

### 3 RE-EVALUATING THE FRAGMENTARY CULT STATUE AT KLEONAI, GREECE THROUGH 3D DOCUMENTATION AND STUDY

**Abstract author(s):** Levitan, Rebecca (University of California, Berkeley) - Levine, Evan (Brown University) - Öztürk, Hüseyin (University of Cincinnati) - Nenova, Denitsa (Independent scholar)

**Abstract format:** Oral

The small, second century B.C.E. Temple of Heracles at Kleonai (Ναός του Ηρακλή Κλεωνέας) has long been a landmark in the Argolic Plain, known since the time of the early travelers in Greece and thoroughly studied and published, most recently by Mattern (2015). However, little scholarly attention has been paid to the extant in-situ fragmentary colossal cult statue of Heracles, and questions concerning the date, artist, and sculptural 'type' remain unsolved. The fragmentary nature, colossal scale, and unique context of the fragment have made this sculpture particularly difficult to study using traditional means of documentation.

This paper presents a novel restudy of the cult statue in its context, paying particular attention to the development and execution of our research methodology – drawing on recent innovations in digital object documentation with no need for specialist equipment. To overcome the primary factors that have inhibited detailed study of the fragment – namely its scale and imperfect preservation – we decided to create a high-quality photogrammetric model that could be easily scaled, manipulated, and compared to other examples of Herakles Epitrapezios. This research program, accomplished with only a single day of fieldwork, illuminates traces of fracture that are difficult to discern on-site, provides new evidence for the display context of the complete statue, and offers novel insight into its place within the corpus of seated Herakles sculpture. Moreover, the mindful application of new digital methodologies offers the opportunity to rethink how archaeologists have studied colossal sculpture and megalithic architecture, inviting new research questions and offering opportunities to more effectively document preservation and degradation of cultural heritage.

### 4 WHEN 3D DOCUMENTATION CREATES EXCAVATION SLICES

**Abstract author(s):** Tamba, Robert - Pujol, Angels (GIRA association)

**Abstract format:** Oral

This study is centered on the archaeological site of Puig Ciutat where the current hypothesis is that it is a Roman settlement with previous phases of occupation that was destructed and abandoned during the civil war between Julius Caesar and Gnaeus Pompeius. The site constitutes a perfect photo-finish of its destruction and abandonment where the documentation of the remains has been a continuous challenge.

Very quickly, 3D models were produced externally in order to document the constructive structures of the settlement. A real change came when 3D documentation was applied by team members as an answer to excavation needs. How can we have a complete description of a destruction when the first elements that come to the surface start their degradation and have to be quickly removed? How can the different layers of the destruction be compared and put into relation? The main challenge of the excavations has been to be able to obtain a picture as complete as possible of the destruction, including pottery, metal and burnt wood elements preserved by the abandonment but often retrieved partially and in fragments and which exact position and orientation are relevant to the archaeological interpretation.

Starting from 2019, the systematic use of photogrammetry during the excavations was the chosen solution. As processing time was not an issue, for each campaign, a total of 20 to 40 3D models were produced and used as ortho-photographs for the documentation of the remains.

The use of photogrammetry during the excavations is therefore mainly 2D. It enables through the production of georeferenced ortho-photographs a thorough mapping of all the elements that need to be documented which is done digitally on site during fieldwork and substitutes manual drawings. The 3D visualization of selected models are currently mainly used for dissemination purposes.

## 5 EXCAVATION IN 3D: CAN A 3D-VIEWER TOOL HELP TO UNDERSTAND AND PRESENT COMPLEX STRATIGRAPHY?

**Abstract author(s):** Pohl, Henrik - Dworsky, Cyril (Kuratorium Pfahlbauten) - Raab, Gerald - Wessling, Ronald (3D Studio Crazy Eye)

**Abstract format:** Oral

During an underwater archaeological excavation, only a few active scientific divers can take a direct look at the excavation area under water. So far, the uncovered excavation findings and finds have been documented mainly by means of sketches, drawings, and individual photos. Since the beginning of the underwater archaeological excavations at the pile dwelling settlements in Upper Austria in 2015, an image-based 3D scanning process has been an essential part of the documentation procedure. Each excavated documentation surface was systematically recorded using Structure-from-Motion (SfM) and Multi-View-Stereo (MVS). These methods yielded digital, photo-realistic, and three-dimensional copies of the respective excavation situations. Thus far, 2D plans, sketches and photos derived from orthophotos have been used for the scientific discussion. However, these struggle to convey spatial information of the excavation. Questions regarding the stratigraphy, recumbent timbers in complex positions and findings in general can ideally be answered in a combined 3D representation of existing information.

Since a comprehensive 3D GIS is still a desideratum not only in archaeological research, an independent analysis tool was developed in 2021. A 3D-Viewer for the excavation documentation of the pile dwelling settlement Weyregg 2 in Lake Attersee was created as part of the "Zeitensprung" project in cooperation between the Kuratorium Pfahlbauten, the Upper Austrian Landes-Kultur GmbH and the 3D studio Crazy Eye. This pile dwelling 3D-Viewer was crafted as an individual presentation, analysis, and discussion tool. Is it possible to use this tool to answer fundamental questions about an excavation, e.g. Can correlations within the different layers and profiles of the excavation area be better recorded? Can this 3D-Viewer support public relations through visualization? Does this tool permit statements about an improved excavation process?

## 6 FROM A PENCIL TO THE 3D MODEL

**Abstract author(s):** Miszk, Lukasz (Institute of Archaeology Jagiellonian University) - Ostrowski, Wojciech (Wars) - Papuci-Władyka, Ewdoksia (Institute of Archaeology Jagiellonian University; University of Warsaw)

**Abstract format:** Oral

Polish archaeological research of the Hellenistic-Roman capital of Cyprus, Nea Paphos, has been systematically introducing a 3D-based documentation technology since 2013. First of all, it began with 3D excavation documentation and experiments including UAV photogrammetry and terrestrial laser scanning, which were later replaced with close range photogrammetry. In addition, this 3D technology is applied to the documentation of parts of historic materials (Photogrammetry, RTI, HBIM) and non-invasive prospecting (GPR; DTM). In this presentation, we would like to focus on our experience with the introduction of 3D technology into the documentation of excavations.

We are currently using a workflow for collecting and processing data developed according to fieldwork conditions based mainly on photogrammetric models. The procedure used is based on several years of experience, which is time-efficient but also reasonably accurate. The procedure is based on the implementation of widely used Agisoft Metashape software, and its main assumption is that it can be used by archaeologists with a basic knowledge of photogrammetry.

Currently, our efforts are concerted on providing better access to 3D documentation deliverables (3D models and orthophotoplans) for all team members. Recent experience has shown that the creation of documentation by archaeologists in the field, constitutes a lesser problem - the main limitation remains its wide use by members of a broad interdisciplinary team, where not everyone has experience with GIS and 3D data.

## 7 STRUCTURE FROM MOTION PHOTOGRAMMETRY APPLIED TO ARCHAEOLOGICAL EXCAVATIONS: PERSPECTIVES FROM A DECADE OF WORK AT THE MEMOLAB

**Abstract author(s):** Rouco Collazo, Jorge - Romero Pellitero, Pablo - Ramos Rodríguez, Blas - Valencia Jiménez, Isabel M<sup>a</sup> (University of Granada)

**Abstract format:** Oral

The evolution of 3D documentation techniques in the last decades has brought about an on-going revolution in archaeological documentation, especially in excavation. In the MEMOLab – Biocultural Archaeology Laboratory of University of Granada (Spain), we have applied photogrammetry in archaeological interventions on a daily basis, both in university excavations and in commercial archaeology. We use both on-ground photogrammetry and aerial photogrammetry with UAV. Furthermore, having the 3D documentation of whole sites as a scientific objective, we apply SfM photogrammetry to each Stratigraphical Unit. This way we get a precise digital copy of the complete stratigraphic sequence that allows us to span the study and analysis of stratigraphy beyond excavation through the application of several other tools, such as GIS.

The aim of this paper is to explain the methodology and workflow of the MEMOLab in the application of photogrammetry and to discuss the advantages of the 3D documentation in speeding up the excavation process, its graphic and metric quality and the possibilities of further analysis and dissemination of 3D data. But also to discuss the disadvantages, such as the cost of the equipment, the work and calculation times of the models, the volume of data generated and, sometimes, the lack of further use of the 3D data generated for the archaeological interpretation of the sites. As well as the problems of the integration of 3D data with the decision-makers in charge of heritage protection. All of these will contribute to the general questions of this session about when and how to apply 3D documentation in archaeology.

## 8 HAND SCANNING ON THE SWEDISH WEST COAST: PROS, CONS, AND AN UNCERTAIN FUTURE

**Abstract author(s):** Skole, John (The Archaeologists, The National Historical Museums, Sweden)

**Abstract format:** Oral

As the technology for creating 3D models using handheld laser scanners develops, this form of documentation becomes ever more precise and economically viable. This presentation will look at how hand scanning has been successfully employed to document excavated shipwrecks from the west coast of Sweden to a degree of detail that otherwise would not have been possible. The 3D models created through this process are not only of great scientific value but can also be easily repurposed for public engagement and exhibition without much additional effort, and offer a more in depth experience with archaeological material than is usually otherwise available. The high quality-to-cost ratio of laser scanning can be used to the detriment of the archaeological record, however. A project has recently been proposed where Bronze Age rock art will be documented with a hand scanner and then destroyed to make room for industrial development. This is despite the fact that it is generally accepted that Swedish rock art should be interpreted in relation to the milieu in which it is found, something which the hand scanner cannot capture. Additionally, there is no national strategy in place for the long-term storage of 3D files. Currently the long-term accessibility of data from 3D models comes primarily through orthographic projections of models in reports and catalogues, or from being published in low resolution on privately owned websites. The preservation of detailed 3D models is therefore informally the responsibility of the archaeological company that commissioned them, who are under no obligation to preserve and maintain them, or even disclose that they have saved the models. How will researchers access our scans in 20, 50, or 100 years' time?

## A. 3D DOCUMENTATION METHODOLOGY IN ARCHAEOLOGY. BENEFITS AND PROBLEMS IN THE STUDY OF THE MEGALITHIC NECROPOLIS OF LA LENTEJUELA (TEBA, SPAIN)

**Abstract author(s):** Vijande, Eduardo - Becerra Martín, Serafín - Muñoz Muñoz, Alejandro - Fernández Sánchez, Diego (Universidad de Cádiz) - Moreno Márquez, Adolfo (Universidad de Almería) - Gómez Sánchez, Leticia - Cantillo Duarte, Juan - Ramírez Amador, José - Pavón González, Laura (Universidad de Cádiz)

**Abstract format:** Poster

Currently, new technologies for the collection of topographic data and graphic representation allow us to extract more precise data than the traditional methods used in archaeological sites. The creation of 3D models from images taken by Unmanned Aerial Vehicles (UAV) and the use of 3D laser scanners enable us to better understand archaeological features and facilitate the understanding of a wide variety of high-quality graphic information (plans, sections, elevation digital models ...).

These 3D models not only aim to create topographic images, but also are a valuable tool for the interpretation of construction techniques and for excavation planning. They also offer a wide variety of new instruments in terms of outreach through digital applications and tools.

Our work in the megalithic necropolis of La Lentejuela (Teba-Spain) has allowed us to refine our data collection methodology in this sort of sites. The aim of this presentation is to discuss the pros and cons of the use of these technologies in a site which comprises nine megalithic monuments with very different features.

---

## 402 SCALING BRONZE AGE SOCIETIES – BETWEEN THE MICRO AND MACRO

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Austvoll, Knut Ivar - Horn, Christian (University of Gothenburg) - Anfinset, Nils (University of Bergen)

**Format:** Regular session

With the recent surge of far-reaching mobility perspectives and implementation of 'big-data' modelling to understand patterns of contact, Bronze Age Europe seems more connected and integrated into reigning top-down narratives of the past. Yet, these models under-communicate how local adaptation and bottom-up organization undergird these overarching mobility patterns.

It is a methodological and theoretical challenge to merge these views. With a growing body of data made available in open-access publications and databases, as well as easily available computational tools for spatial and statistical

modeling we can begin to scale and compare local developments and interaction within over-arching mobility patterns. Interpretive explanations to help make sense of the accumulated data generally falter to traditional or lesser developed theoretical frameworks. Frameworks such as 'Collective Action Theory', 'Anarchism theory' and others hold the potential to integrate dynamic scaling between big-data and local polity organization but are often presented as generalized models for cross-cultural comparison, and less towards specific periods such as the European Bronze Age.

We welcome papers that explore the dynamics and interconnected perspectives between the local and interregional. In this, we encourage papers with either theoretical and/or methodological considerations that address scaling and modelling of quantitative data to compare and connect the heterogeneity of local polities within overarching interaction networks (e.g. trade, warfare, etc.) of the European Bronze Age. The aim of the session is to investigate how we can bridge the gap between qualitative interpretation and quantitative data collecting.

## ABSTRACTS

### 1 SCALING AND EVALUATING LATE NEOLITHIC AND BRONZE AGE SETTLEMENT SITES IN SOUTH-EASTERN NORWAY

**Abstract author(s):** Sand-Eriksen, Anette (Museum of Cultural History, University of Oslo)

**Abstract format:** Oral

In South-Eastern Norway, rock art sites and grave mounds have given indications of extensive networks and activity during the Late Neolithic and Bronze Age, stories and patterns which have been enhanced by studies of various stray finds and hoards. What we have had little knowledge about in this region, however, are the actual settlements and the daily way of life in and around them during the LN and BA. Since the first evidence of farm-based settlements in South-Eastern Norway were excavated in the early 2000s, the known number of buildings dated to LN and BA has increased dramatically.

A recent aggregation of the settlement material, mainly through reviewing unpublished excavation and survey reports, have resulted in a database of a little over 100 buildings from South-Eastern Norway. Based on this material, this paper has a two-folded purpose. Firstly, through in-depth analysis of the placement of the settlement material in GIS (overlay), I will present some preliminary results scaling the settlements' location type, placement, patterns and (likely) subsistence strategies. Secondly, based on these observations, I will evaluate if the settlements are results of elite authorities or cooperative polities, seeking to explore (overarching) interaction networks and examine the dynamics of organizational variability within human groups over time.

### 2 POPULATION DYNAMICS IN MIDDLE AND LATE BRONZE AGE BRITAIN FROM THE MACRO TO THE MICRO-SCALE

**Abstract author(s):** Armit, Ian - Bleasdale, Madeleine (University of York) - Büster, Lindsey (University of York; Canterbury Christchurch University) - Fischer, Claire-Elise (University of York) - Evans, Jane (British Geological Survey) - Reich, David (Harvard University)

**Abstract format:** Oral

Recent aDNA research has identified significant population movements across the English Channel during the Middle to Late Bronze Age. These seem particularly marked during the period from around 1000-800 BC. While some level of human mobility was already evidenced by similarities in material culture and the movement of metal ores across the Channel in this period, the scale of the genetic transformation in southern Britain was unexpected.

In this paper we consider the demographic changes of the Middle/Late Bronze Age at three different scales. At the inter-regional scale, using primarily aDNA evidence, we identify the movement of people, perhaps best viewed as population exchange, between southern Britain and Continental Europe. Focussing on the regional scale, with the use of multi-isotope analysis to complement aDNA evidence, we examine communities in Kent, comprised of individuals with diverse geographical origins. Moving to the local scale, where we also employ evidence from osteoarchaeology and funerary archaeology, we examine the funerary site of Cliffs End Farm to identify individuals directly implicated in the population movements of the time, and attempt to understand aspects of their life histories and their roles and treatment within the communities within which they died. We argue that it is only by addressing each of these scales of analysis, that we can begin to build detailed understandings of the dynamics of Bronze Age communities.

The work forms part of the COMMIOS project, led by the University of York, partnered with the University of Glasgow, UKRI (British Geological Survey) and Harvard Medical School which has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and grant innovation programme under grant agreement No 834087.

### 3 MODELLING LOCAL BRONZE AGE SOCIETIES IN SCANDINAVIA

**Abstract author(s):** Austvoll, Knut Ivar (University of Oslo) - Artursson, Magnus - Horn, Christian - Green, Ashely - Ling, Johan (University of Gothenburg)

**Abstract format:** Oral

Within the cultural sphere that is the Nordic Bronze Age, at the northernmost fringe of the European continent, one is confronted by one of the most diverse regions in Europe in terms of both landscape variation and ecological zones. Yet, the region produced such a marked uniform cultural expression within an area of well over 550 000 km<sup>2</sup> that the entire region is often summarized relatively homogeneously. The reasons for this are manifold, but a primary contributor was the successful import and control of metal in a complex exchange system of peer-polity interaction between local groups.

These local groups have tended to be presented as hypothetical constellations based on top-down narratives. Preliminary results from the project 'Modelling Bronze Age Societies' (2020-01097\_VR) will be presented, which incorporate publicly available databases and grey literature that are modelled through multiscale tools in GIS (i.e. Ripley's K-function and Kernel Density) in order to identify local constellations of Bronze Age societies.

By integrating these datasets this paper aims to provide a nuanced, tangible framework of identifying local polities and how their interaction may have contributed to the region's economic success.

### 4 THE MICRO, THE MACRO AND THE COMPLEX: THEORETICAL AND EPISTEMOLOGICAL CHALLENGES OF APPLYING MULTI-SCALAR APPROACHES TO PREHISTORIC SOCIETIES

**Abstract author(s):** Moyano Di Carlo, Julián (University of Gothenburg)

**Abstract format:** Oral

Merging micro and macro analyses of past human societies is the biggest theoretical challenge we face today. Computational methods and Big Data have provided an enormous amount of information at different levels, but to date, we lack a theoretical framework combining it in a coherent and effective way. The problem lies in how social processes scale over time and space, and in the epistemological barriers that hinder their modeling. In this paper, I will argue that Complex Systems Theory (CST) is the best framework for carrying out this task, because it has the potential capacity to model the particularities and the generalities of a system within a unique model. To understand the theoretical and epistemological challenges that this entails, I am going to focus on two key concepts in complexity sciences: emergence and self-organization. By analyzing these concepts philosophically, we can better understand the challenge of scaling prehistoric human societies. I will argue that we need to use recursive multi-scalar analytics to create scalable interpretations that we can validate and expand later using modeling techniques (e.g. agent-based modeling). Finally, I will show some preliminary examples of how this can be applied to the study of Bronze Age societies and their material culture.

### 5 ENCIRCLED BY STONES. POTTERY, DEATH, WOMEN, AND POLITICS ACROSS THE BALTIC SEA

**Abstract author(s):** Polanska, Weronika (University of Oslo)

**Abstract format:** Oral

How can traces of Bronze Age interactions beyond and within a prehistoric community be explored through archaeometry and a theoretical approach?

Ceramics dating to the Bronze Age period III-IV found at the site of Hunn in Eastern Norway can provide insight into this question. Both grave construction and ceramic material found on the site reveal some similarities with contemporary sites from Western Pomeranian Lusatian culture. I have chosen 10 ceramic sherds from Hunn and collected 3 clay samples from locations in Poland, Norway, and Germany. The archaeometric studies will contribute to the discussion on the social and material responses to both connectivity and separation as a result of the maritime connections within the Baltic Sea and beyond.

My discussion is based on my master's thesis in which I'm analyzing late Bronze Age materials from the site of Hunn, and comparing them with the available literary sources on the site of Dolice in Western Pomerania. By using ceramic petrography and analytical techniques such as pXRF, FTIR-ATR, and XRD, it is possible to identify potential correlations between ceramic materials and the source of raw materials and firing technology.

I will present theoretical approaches that consider mobility, pottery, and funerary traditions to discuss how different scales of social interaction may have been expressed in the ceramic material. I will mention the domestic producer and their choices of material against the backdrop of a mobile Bronze Age society and include an ethnoarchaeological example of women's expression of political alliances through pottery.

## WATER AND THE AFTERLIFE – WATER-RELATED RESOURCES IN THE BURIAL CONSTRUCTION OF THE NORDIC BRONZE AGE

**Abstract author(s):** Horn, Christian (Gothenburg University)

**Abstract format:** Oral

The sea, rivers, and lakes which formed a waterscape were highly important to communities living during the Nordic Early Bronze Age in southern Scandinavia (1800/1700-1100 BC). Waterways were the highways that facilitated journeys, contact, trade, and warfare, allowing maritime warriors and other actors to distinguish themselves. This is reflected in rock art and Early Bronze Age burials which were frequently placed directly by the sea, lakes, or waterways.

With this maritime world as the basic paradigm for our current understanding of the Nordic Bronze Age, it is surprising that the use of water-related resources in the construction of burials such as seaweed, beach pebbles, molluscs, etc. has drawn relatively little attention. This talk aims to summarize this material and model it by using GIS and network analysis. These methods of researching their distribution and relationships to other burial goods, construction, and the deceased will help to understand their significance in the beliefs of local societies during the Nordic Bronze Age.

## 403 DOMESTICATION OF SPACE: INTERNAL AND EXTERNAL DWELLING STRUCTURES IN MIDDLE AND UPPER PALAEO-LITHIC SITES [PAM]

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** PEAN, Stéphane (Muséum national d'Histoire naturelle, UMR 7194 HNHP) - Shydlovskiy, Pavlo (Taras Shevchenko National University of Kyiv, Department of Archaeology and Museology) - Mester, Zsolt (Eötvös Loránd Tudományegyetem BTK Régészettudományi Intézet)

**Format:** Regular session

The structuration of the settlement area is a bright feature of Middle and Upper Palaeolithic campsites. Different occupation characteristics can be identified by the functional specifications of distinct archaeological structures, in relation to the palaeoecological framework and the dynamics of settlement development over time.

Dwellings and constructional materials, pits (storage or dumping), hearths, activity areas, such as workshops or butchering zones, demonstrate the spatial arrangement of residential practices in different sectors. Their study requires interdisciplinary research to establish their chronological and functional relationships and the insertion of the settlement in the surface microrelief and local landscape features. The analysis of separate structures with functional peculiarities from Middle and Upper Palaeolithic campsites allows to reconstruct the interaction of inhabitants with the surrounding landscape, to understand the links between different types of activity inside the settlement area, to establish functional and seasonal characteristics of occupation and to identify behavioural features of Palaeolithic settlers.

The session gives the opportunity to connect new researches on dwelling structures from Middle and Upper Palaeolithic sites through Europe, and interpretative studies of spatial behaviour, in relation with specific landscape, palaeo-ecological and cultural features.

## ABSTRACTS

### 1 STUDYING SPATIAL PATTERNS AT THE ABRI DU MARAS (SOUTH-EAST FRANCE, MIS 3): A GIS ANALYSIS AND 3D PALAEO-TOPOGRAPHIC RECONSTRUCTION

**Abstract author(s):** Guillemot, Pierre - Moncel, Marie-Hélène (Muséum National d'Histoire Naturelle - MNHN, UMR 7194 HNHP) - Jaillet, Stéphane (Laboratoire Environnement Dynamiques et Territoires de Montagne - EDYTEM, UMR 5204) - Chacón, M.Gema (Institut Català de Paleocologia Humana i Evolució Social - IPHES-CERCA; Departament d'Història i Història de l'Art, Universitat Rovira i Virgili - URV; Muséum National d'Histoire Naturelle - MNHN, UMR 7194 HNHP) - Pois, Véronique (Université Perpignan Via Domitia - UPVD, UMR 7194 HNHP)

**Abstract format:** Oral

Intra-site spatial analysis of Middle Palaeolithic sites is among current debates regarding the complexity of the social organisation and the cognition of Neanderthals. These approaches make it possible to characterise how prehistoric groups occupied their living space and how they organised their activity areas, thus to describe their cultural and social behaviours. The Abri du Maras in South-East France is a major Middle Paleolithic site and has already shown its potential to characterise the cognitive and technological behaviours of Neanderthals. In this study, we carry out a high-resolution spatial analysis focused primarily on the lithic assemblages of levels 4.1 and 4.2, dated to MIS 3. The methodology combines two approaches: the use of innovative GIS tools from the free and open-source QGIS software, and palaeosurface reconstructions, using 3D software, allowing us to integrate palaeotopographic data to the spatial analysis. The results show a similar use of space for both levels, that is to say a structured spatial organisation, with main and peripheral activity zones. The densest areas were probably the remains of intense knapping

activities while some specific artefacts are used in the periphery. These spatial patterns are similar to those described by ethnoarchaeological studies and usually attributed to modern humans. They indicate a structured management of the space. Our analysis confirms previous results from other Middle Palaeolithic sites, attesting a complex spatial organisation and a social behaviour for Neanderthals. We also highlight the relevance of our methodology, both the used of GIS tools and the method of palaeotopographic reconstruction, as well as the complementarity of the 2D-3D tools, to perform high-resolution spatial analysis of Palaeolithic sites.

## 2 THREE LITHIC CLUSTERS – THREE DIFFERENT FUNCTIONS? LITHIC ANALYSIS OF THE ASSEMBLAGES FROM MOGYORÓSBÁNYA, N-HUNGARY

**Abstract author(s):** Markó, András (Hungarian National Museum - Budapest; University of Szeged)

**Abstract format:** Oral

The assemblages of the site complex at Mogyorósbánya yielding three spatially separated settlement units, securely dated to the LGM were documented. During the excavations more than 8000 lithic artefacts of the special Pebble Gravettian industry, more than one hundred Palaeogene and Neogene mollusc, coral and nummulite skeletons, a piece of fossil resin and numerous but poorly preserved animal bones and antlers were excavated.

At the central part of the site III lying around feature III/8 and III/9 the flaking of the quartzite cobbles, as well as the rejuvenation of burins and burin-cores are documented. The extensive refit studies (yielding more than 250 refit groups until now) show that this part of the locality can be connected to both the periphery of this units and to the settlement spots I and II.

In the paper the possible function of the investigated parts of the localities reflected by the lithic artefacts will be discussed.

The research is supported by the Bolyai János Kutatási Ösztöndíj (Bolyai János Research Fellowship Program).

## 3 LATE UPPER PALAEOOLITHIC DWELLING STRUCTURES FROM MOHELNO-PLEVOVCE (MORAVIA, CZECH REPUBLIC)

**Abstract author(s):** Bartík, Jaroslav - Škrdla, Petr (Institute of Archaeology of the CAS, Brno) - Nejman, Ladislav (School of Archaeology and Anthropology, The Australian National University) - Demidenko, Yuri (Ferenc Rákóczi II Transcarpathian Hungarian Institute; Institute of Archaeology NASU) - Rychtaříková, Tereza - Augustinová, Klára (Institute of Archaeology of the CAS, Brno)

**Abstract format:** Oral

The Mohelno-Plevovce site is located in the valley of the Jihlava River, which is deeply incised into the Bohemian-Moravian Highland. Due to its close proximity to a pumped-storage hydro-electric power plant, the site is continually eroded by water level fluctuations on a daily basis, and thus regularly monitored by archaeologists. Until now, rescue excavations have uncovered four spatially separated paved areas. These stone structures are associated with a peculiar lithic industry characterized by tiny microliths, produced on atypical carinated end scrapers/cores, and splintered tools/bipolar anvil cores. The artefacts were made from both local and exogenous rocks. The spatial distribution of finds follows the boundary of the pavement, suggesting a barrier effect. The structures are therefore interpreted as interior floor features of sheltered constructions. A different type of a possible dwelling structure was excavated recently – a concentration of artifacts and burnt bones partially delimited with large stones along its perimeter.

## 4 INTERNAL AND EXTERNAL STRUCTURES OF THE UPPER PALAEOOLITHIC DWELLING NO.4 FROM MEZHRYCH SETTLEMENT (UKRAINE)

**Abstract author(s):** Shydlovskiy, Pavlo (Taras Shevchenko National University of Kyiv; Muséum national d'histoire naturelle, UMR 7194 HNHP; Centre for Paleoethnological Research) - Péan, Stéphane (Muséum national d'histoire naturelle, UMR 7194 HNHP) - Tsvirkun, Ostap (National Museum of the History of Ukraine; National University of Kyiv-Mohyla Academy; Centre for Paleoethnological Research) - Chymyrys, Marharyta (Taras Shevchenko National University of Kyiv; Centre for Paleoethnological Research) - Dudnyk, Diana (Institute of Archaeology of the NAS of Ukraine; Centre for Paleoethnological Research)

**Abstract format:** Oral

Mezhyrich is a Late Upper Palaeolithic settlement in Middle Dnieper basin (Ukraine), which belongs to the Epigravettian cultural complex and dates to 15-14.4 ka 14C BP. Four mammoth bone dwellings have been discovered through long-term research since the mid-1960's.

In 2018, investigations of the interior space of unit Dwelling 4 were resumed. It was found that the bones that make up the structure form such elements as the basement (regularly dug in a circle of mammoth skulls and long bones), outer cladding (flat, long bones, and mandibles), cover bones (tusks and scapulae that fell inside the structure). A study of the interior space of the dwelling revealed differences in the lithic and faunal composition in different areas



of the filling. A lithic workshop was found in the north-eastern part. In the opposite SW part, relative to a central hearth, the remains of medium-sized mammals were found in anatomical order together with a series of tools for leather processing. The complexity of the internal filling of dwelling is complemented by the presence of at least three surfaces with a subhorizontal location of the findings. In previous years, two cultural layers were found in the adjacent area, as well as several functionally different structures surrounding the dwelling: pits, workshops, areas of dense cultural layer. Current research, together with the previously established multi-layered nature of the Mezhyrich site, proves the periodicity of the residents' stay in the settlement.

The whole settlement structure of Mezhyrich site consists of four spatial units. Each unit consists of functionally different structures located around a mammoth bone dwelling and in different archaeological horizons and should be considered as a complex dynamic structure that characterizes the interaction of a small social group with the local landscape.

## 5 LATE PALAEOLITHIC AND MESOLITHIC SETTLEMENT FEATURES IN THE CARPATHIAN BASIN

**Abstract author(s):** Király, Attila - Mester, Zsolt - Faragó, Norbert (Eötvös Lorány University Institute of Archaeological Sciences)

**Abstract format:** Oral

In situ Upper Palaeolithic dwelling structures have always been a scarce archaeological phenomenon in the Carpathian Basin, hence, only one PhD dissertation reviews this topic from the past 50 years in Hungary. Spatially fixed settlement features in Hungary are mostly dated to the second half of the Upper Palaeolithic period. The reports about them usually highlight the features themselves, less attention has been paid to the spaces between the features, the site structures, and their comparative study. We present three such sites from the late glacial and early post-glacial periods, the Younger Dryas Páli-Dombok and Szekszárd-Palánk, and the Preboreal Vác-Sződliget. Palánk and Sződliget have been unearthed during salvage excavations in the 1950-1960s. Following early reports, no detailed investigations of their features were undertaken, a task we just finished in the frames of a revision project. The Páli site was recovered under similar circumstances by us in 2014-2015. One site feature dwelling constructions (structures évidentes), the two other provided patterned distributions of combustion features and artefacts (structures latentes). These sites represent different spatial arrangements, ecological niches, and landscape use along successive periods of occupation lending a *longue durée* aspect to our study. Besides, we intend to reintegrate the somewhat „forgotten”, and recently acquired, unpublished archaeological evidence of this region to Central European research.

## 6 THE CORNERSTONES OF PALEOLITHIC DWELLING STRUCTURES: WHAT IS EVIDENT?

**Abstract author(s):** Chu, Wei (Leiden University)

**Abstract format:** Oral

The physical components of a dwelling structure—shelter, hearths, and other “furniture” are often cited as main examples of how humans modify their environment and influence sources of natural selection. Yet, the antiquity and past modes of shelters remains largely unknown because recognizing unambiguous archaeological examples and decoding how they were used may have been complicated by taphonomic processes. The absence of evident shelters before c. 20 kya therefore represents either a rapid, monumental shift in the ordered use of space or a gap in current knowledge that has yet to be verified. Drawing from patterns obtained from lithic taphonomy, pre-existing structures within karstic features and ethnographic sources, results show that the lack of evidence at magnificently preserved sites indicate that the absence of open-air shelters is not only the result of site formation processes but suggestive of highly ephemeral structures that would not have left obvious remains. This understanding of the physical building blocks of early societies prehistoric shelters has implications for theories of prehistoric mobility, culture, and evolution.

---

## 404 SOCIO-ENVIRONMENTAL SYSTEMS AND RESILIENCE TO DISTURBANCE REGIMES

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Solheim, Steinar (University of Oslo) - Kay, Andrea (MPI-SHH)

**Format:** Regular session

The increasing intensity and frequency of extreme climate events resulting from longer-term changes in disturbance regimes are among the most pressing policy issues facing the world today. By integrating archaeological and palaeoecological data we can learn from the past about what makes some socio-environmental systems more resilient to long term and periodic challenges than others. This allows for historical comparisons but also provides context for current and future management.

This session is part of the PEOPLE 3000 - Paleoclimate and the Peopling of The Earth. The P3k-working group aims to integrate paleo-population, paleoecological, and paleo-social records into co-evolutionary models to investigate the

properties of socio-environmental systems (SES) that may convey more or less resilience to changes in disturbance regimes.

What makes some socio-environmental systems more resilient to changes in disturbance regimes than others? In this session we welcome papers focusing on integrating different datasets such as archaeological radiocarbon and paleoecological data to provide examples of how changes in disturbance regimes may or may not influence socio-environmental systems, or papers that explain long-term patterns of energy consumption in socio-environmental systems and how these systems were impacted by changing climates and environments. We invite papers aiming at understanding the complex dynamics between society, technology and ecology during the Holocene either through empirical case studies or through theoretical approaches. Papers focusing on local, regional or larger scale case studies across Europe and beyond are welcome.

## ABSTRACTS

### 1 EXPLORING ENERGY REGIMES AS AN APPROACH TO CONTEXTUALIZING SOCIO-ENVIRONMENTAL SYSTEMS ACROSS DISCIPLINES

**Abstract author(s):** Vella, Emily - Hatlestad, Kailin (Uppsala University) - Martinez, Alexandre (Vrije Universiteit Amsterdam) - Lindholm, Karl-Johan (Uppsala University) - Nikulina, Anastasia (Leiden University) - Zapolska, Anhelina (Vrije Universiteit Amsterdam) - Svenning, Jens-Christian (Aarhus University) - Kluiving, Sjoerd (Vrije Universiteit Amsterdam)

**Abstract format:** Oral

The current climate crisis, along with biodiversity loss and pollution are a driving force for scientific research. Archaeologists contribute to this research by using the past to better inform the present and the future. This in turn has led to an increase in multi-disciplinary research between archaeologists, geologists, geographers, paleo-climatologists, palynologists, ecologists, policy makers, and beyond. Such studies can lead to important results on the topic of human-induced climate change since the theoretical frameworks on how to contextualize this research across disciplines has been lacking.

We propose Energy Regimes as a framework to facilitate discussions across relevant disciplines. Energy Regimes are a novel way to categorize archaeological sites, cultures, and landscapes based on their energy sources, resource use, and socio-environmental interactions. Energy Regimes are independent from time and space, which allows the framework to be highly flexible and adaptable to the variety of anthropogenic and natural activities. We believe that Energy Regimes is the optimal classification system for working across disciplines, at a variety of scales, and across time. In addition, by providing a common language and approach, Energy Regimes can aid in the integration of different datasets.

In this presentation, we will present the Energy Regimes framework and categorization system as well as how it can be implemented, with a focus on diversity and inclusion.

### 2 LUCKY LATITUDES: THE GEOGRAPHY OF PREHISTORIC HUMAN POPULATION GROWTH

**Abstract author(s):** Bird, Darcy (Washington State University; Max Planck Institute for the Science of Human History) - Gauthier, Nicolas (University of Florida) - Freeman, Jacob (Utah State University)

**Abstract format:** Oral

Human population growth impacts Earth's ecosystems more than any other mammal. It is therefore critical to identify the factors that drive long-term growth of human populations. In this paper, we ask to what extent long-term growth rates of human populations co-vary with geography. We test the role of geography, broadly construed, on the long-term growth rates of human populations via a global analysis of radiocarbon growth rates (and by inference, population), controlling for land use and climate. Regional analyses have found that climate change (Lima et al. 2020) and social, technological, and land-use change affect human population growth (Shennan et al. 2013; Freeman et al. 2021). As population densities increase, humans develop techniques in a positive feedback process that allow them to adapt to the trials of high population density (Shin et al. 2019; Sachs 2020). We therefore investigate whether geographic differences in climate and land use correlate with differences in population growth rates. Those living at the so-called "Lucky Latitudes" were closer to the optimum climate niche (Xu et al. 2020; Morris 2010), which increased their growth rates, especially if innovations were created to offset interpersonal difficulties. These innovations may have displaced human populations from demographic equilibrium, leading to decreased population stability but increased long-term population growth. Our initial results partly support these hypotheses and suggest differences in long-term growth rates between Eurasia, Africa, and the Americas.

### 3 **FLOODPLAIN STABILITY CONTROLS THE GROWTH AND RESILIENCE OF WESTERN NORTH AMERICAN DRYLAND AGRICULTURAL COMMUNITIES**

**Abstract author(s):** Finley, Judson (Utah State University) - Robinson, Erick (Boise State University)

**Abstract format:** Oral

Indigenous agriculturalists north of the Colorado River occupied the ecological margins of maize cultivation in western North America from 300-1300 CE. Fremont societies practiced diverse agricultural strategies designed to offset shortfalls in foraged foods caused by a dominant pattern of multidecadal precipitation variability. From this perspective, agriculture increased the robusticity of food sources leading to small but resilient local populations. Our previous work in northern Utah's Uinta Basin demonstrates that in the absence of the dominant multidecadal precipitation variability regime between 750-1050 CE, agricultural conditions improved, and populations expanded to form villages along the floodplains of northern Colorado Plateau dryland alluvial systems thus creating the capital necessary for incipient social complexity. But did the very same conditions (i.e., decreased precipitation variability) that allowed the growth of Fremont agricultural societies make them simultaneously vulnerable to arroyo formation, a key geomorphic risk to floodplain agriculturalists? In this study, we test the hypothesis that complex response in alluvial cycles limits the growth potential and resilience of dryland agricultural societies. We present preliminary results from Cub Creek in Dinosaur National Monument that shows rapid sedimentation punctuated by episodic arroyo formation characterized the last 2,000 years of the valley's history. We present stratigraphic and chronological evidence of an arroyo-forming event between 900-1000 CE that corresponds with the final decades of the Cub Creek agricultural village. We conclude that arroyo formation combined with the return of the dominant multidecadal precipitation variability regime at 1050 CE was a key ecological constraint on the growth potential of local Fremont populations. These findings have potential implications for early Indigenous dryland agricultural systems throughout the interior of western North America.

### 4 **PREHISTORIC FARMERS IN THEIR DIVERSITY. LAND USE, LAND COVER AND DEMOGRAPHY IN CENTRAL EUROPE**

**Abstract author(s):** Kolar, Jan (Institute of Botany, Czech Academy of Sciences; Masaryk University) - Macek, Martin (Institute of Botany, Czech Academy of Sciences) - Abraham, Vojtech (Charles University) - Tkac, Peter (Institute of Botany, Czech Academy of Sciences; Masaryk University)

**Abstract format:** Oral

Prehistoric farming in temperate Europe was diverse in time and space. Agro-pastoral communities at the beginning of the Neolithic had fewer crops than those in the Iron Age, and they differ also by technologies used in agriculture, land use or in general. The consumption of resources, especially fuel wood crucial for pottery production, or later for metallurgy, was also different. Additionally, their population density also dynamically fluctuated from reacting to environmental and/or social stimuli.

This paper will explore in detail the socio-environmental interactions of prehistoric agro-pastoral communities in Central Europe. Quantitatively analyzing large datasets of archaeological sites (tens of thousands of records), radiocarbon dates (thousands of records) and pollen data (tens of thousands of samples) covering the whole area of Czech Republic we want to answer several questions. Did the contemporary prehistoric farmers interacted with the vegetation differently in different regions? Did these diverse practices reflect their resilience? Did they transform the disturbance regimes? Why some regions witness significant population fluctuations? Were innovations and technologies crucial for coping with critical situations? For answering these questions we will demonstrate the importance of modelling procedures and a long-term perspective.

### 5 **ENVIRONMENTAL PROBLEMS AND SOCIAL PROCESS IN LATE ROMAN HISPANIA: THE CASE OF THE ROMAN PROVINCE OF BAETICA (3RD-5TH CENTURIES)**

**Abstract author(s):** Martín Casado, Juan Manuel (Universidad de Málaga)

**Abstract format:** Oral

The matter of natural disasters is a very current issue, with phenomena such as climate change or the CoV-19 pandemic becoming a clear threat to the security and stability of communities. However, environmental phenomena, as triggering forces of disasters and catastrophes, are being valued as a useful tool for historical analysis (Van Babel et al. 2020).

This contribution presents the results achieved so far in the framework of my PhD thesis project, entitled "The role of natural catastrophes in the historical process of coastal communities in the Iberian Peninsula in the first millennium BC". We have carried out an interdisciplinary study of the impact that ancient earthquakes, tsunamis and climatic changes had on the communities of the southern Iberian Peninsula, from the Late Bronze Age to Late Antiquity (Martín Casado i.p.). In particular, the Roman province of Baetica has proved to be an opportune framework for study by identifying an apparent concentration of extreme phenomena during the Late Antiquity chronological

horizon (Brown, 1971). Research in coastal environments is beginning to point to the occurrence of a horizon of destruction between the 3rd and 5th centuries AD associated with a high-energy marine event (Rodríguez-Ramírez et al. 2016; Campos Carrasco et al. 2015), while inland there is significant evidence of seismic episodes, to the extent that there is even talk of a Late Roman "seismic crisis" (Silva Barroso et al. 2016; Silva Barroso 2019: 61). To this must be added the documented incidence of a climatic change towards colder and drier conditions (Martínez-Cortizas et al. 1999). All in all, we intend to expose this reality and propose how it can be related to the current line of research that includes the effect of environmental shocks among the causes of the crisis of Roman power structures (McCormick et al. 2012).

## **A. SOCIO-ENVIRONMENTAL RESPONSES TO THE 1ST MILLENNIUM AD DISTURBANCES; A CASE STUDY OF BRANDENBURG, EASTERN GERMANY**

**Abstract author(s):** Alinezhad, Khadijeh - Doerfler, Walter (Institute of Prehistoric and Protohistoric Archaeology of Kiel University)

**Abstract format:** Poster

There is a consensus that disasters occur when raised hazards coincide with existing vulnerability. Societies that are resilient can diminish a hazard and adopt or rebound to the normal paradigm. Conversely, vulnerable societies that are already weak and fragile have the potential to fail. The first half of the 1st millennium AD is characterized by a time of disturbances and migrations (The Late Antique Migration Period). Three large volcanic eruptions occurred in AD 536, AD 540, and AD 547 with the effect that the following post-eruptive cooling triggered frost events, drought, crop failure, famine, disease, and the fall of civilizations. In our research a multiproxy approach including pollen, varve, XRF-geochemistry, and <sup>14</sup>C-AMS dating was conducted on an annually laminated sequence from Lake Kleiner Tornow, eastern Germany, to present a high-resolution record of vegetation and human dynamics and climate variability in the 1st millennium AD. The pollen diagram revealed that between ca. AD325 to AD425 arboreal pollen increased and anthropogenic pollen indicators (API) declined, which indicates the first phase of human abandonment in the given region (the beginning of the Migration period). From ca. AD445 to AD540 a dramatic expansion of hornbeam (*Carpinus*) and low values of APIs represent woodlands re-expansion and the movement of Germanic groups on the continent regions and Britain. The mid-6th century events have hit a small remaining population in a heavily reforested landscape that did not show further suffering but an increase in settlement indicators instead. The later invasion by Slavonic tribes after AD600 is represented by a further increase of APIs. The following centuries are characterized by Slavonic expansion and Germanic colonization in the region. Thus, the first millennium AD is a time of booms and busts of human populations in the Northern German plain with different internal and external forces pushing this development.

## **B. LANDSCAPE STABILITY OVER 1100 YEARS OF PASTORAL FARMING IN NORTH ICELAND**

**Abstract author(s):** Erlendsson, Egill - Eypórsdóttir, Elísabet (Institute of Life and Environmental Sciences, University of Iceland)

**Abstract format:** Poster

From the time when Iceland was colonised in the late 9th century CE, large scale degradation of vegetation and soils have left the country as one of the most eroded in Europe. Deforestation and exposure of soils to erosion by wind and water continue. The process of soil erosion may have undergone three stages of increase over the historical period: 1) Numerous studies demonstrate destabilisation of land surfaces soon after the settlement; 2) soil erosion escalated during the course of the Little Ice Age (LIA); 3) significantly increased numbers of sheep and change in emphasis from dairy to meat from the mid 19th century CE resulted in large-scale desertification, particularly in highland areas. However, many of the studies come from the volcanic zones of the island, where the bedrock is the most porous and erosion-susceptible volcanic soils are thickest. Here we examine landscape stability in Svarfaðardalur in North Iceland over the last c. 3000 years, out of which anthropogenic activity features as a contributing factor over the last c. 1100 years. Our examination works along the hypotheses that 1) the impact of settlement was swift and pronounced, 2) that the LIA facilitated enhanced levels of erosion and 3) that the levels of soil erosion escalated further from c. 1800 CE. We employ sedimentary/soil properties (bulk density and organic matter) and geochemical analyses (C/N and high-resolution XRF scanning) from five sites that form an altitudinal transect along the valley. Tephrochronological framework allows us to accurately isolate and date changes and periods of landscape destabilisation. Our results indicate that levels of soil erosion did not increase significantly during the medieval period or by the onset of the LIA. Increased sheep numbers and agricultural emphasis from the 18th century probably facilitated the greatest increase in soil erosion.

**Theme:** 3. The Carpathian Basin: Integration, Mobility and Diversity

**Organisers:** Szilagyi, Kata (Kiel University, Institute of Pre- and Protohistoric Archaeology) - Werra, Dagmara (Polish Academy of Sciences, Institute of Archaeology and Ethnology, Unit for Prehistoric Flint Mining)

**Format:** Discussion session

The session focuses on the local and regional importance of lithic raw material in the Carpathian Basin and its surrounding area during the Neolithic, Chalcolithic and Bronze Age. Provenance studies and multidisciplinary research have created a huge amount of data, which can provide an adequate basis of information and evidence to study the connections between prehistoric communities. The dynamic exchange pathways created wide networks between communities, which provide an excellent basis for research on chronological issues, social inequalities, diverse social and economic interconnections in past societies. Beyond the supra-regional scale, economically-minded research perspective, we would like to focus on the local or regional lithic materials, which were more or less constantly available for a community. We also would like to consider the same issue in the non-mountain area, where the communities probably had to have another connection, behaviour and value concept towards the lithic artefacts. We would like to consider what the local region could mean for the prehistoric communities from a lithic perspective, and what kind of skills and knowledge were important for the procurement activities. This session aim is to discuss the details of all kinds of lithic tools (chipped and polished stone artefacts, macroliths), compare the different periods and focus on diachronic changes from the social archaeological perspective.

We welcome contributions to the following questions:

- How can we identify the local, mesolocal and translocal regions and network-system of lithics?
- What is the significance of the different scale levels for lithic studies in Prehistory?
- How did lithic raw materials, new traditions, ideas and practices spread between the Carpathian Basin and adjacent regions?
- What social and economic significance could lithics have had over these millennia?

### ABSTRACTS

#### 1 PRESENCE OF CHOCOLATE FLINT AT THE NEOLITHIC ARCHAEOLOGICAL SITES SOUTH OF THE CARPATHIAN MOUNTAINS

**Abstract author(s):** Sudol-Procyk, Magdalena (Institute of Archaeology, Nicolaus Copernicus University in Torun) - Werra, Dagmara (Institute of Archaeology and Ethnology, Polish Academy of Sciences) - Malak, Magdalena (Institute of Archaeology, Nicolaus Copernicus University in Torun) - Trela-Kieferling, Elżbieta (Archaeological Museum in Kraków) - Krajcarz, Maciej (Institute of Geological Sciences, Polish Academy of Sciences) - Mandera, Sara - Binnebesel, Hubert (Institute of Archaeology, Nicolaus Copernicus University in Torun)

**Abstract format:** Oral

Research on the occurrence and distribution of siliceous rocks is a useful method for the reconstruction of potential contacts between prehistoric communities. Attempts to describe these relationships (their purposefulness, scope and intensity) are among the most challenging issues in prehistoric studies.

Chocolate flint is one of the most widespread types of siliceous rocks materials used by prehistoric communities in Central Europe. The research on chocolate flint so far has been considered according to one model, which assumes obtaining this raw material from outcrops located in the north-eastern margin of the Świętokrzyskie (Holy Cross) Mountains, central Poland. However, a discovery of this raw material deposits in another region, Kraków-Częstochowa Upland (around 150 km to SW), has a significant impact on all previous interpretations regarding its use and distribution, both on a regional and European scale.

In the presentation, the authors would like to present the issues concerning the occurrence of chocolate flint in inventories at archaeological sites situated to the south of the Carpathians. The problem of the origin of this raw material will also be discussed in the light of the current state of knowledge, and the possibility to characterize chocolate flint from various sources (limitations and perspectives will be presented).

The chocolate flint items are registered outside Poland (in Bohemia, Moravia, Slovakia, Hungary and Austria). Therefore, it is extremely important to determine whether prehistoric communities obtained this raw material from the Świętokrzyskie Mountains region or Kraków-Częstochowa Upland.

Research on chocolate flint is carried out thanks to funding from the National Science Center, Poland, grant No 2018/30/E/HS3/00567.

## 2 TWO HUNDRED YEARS OF LITHIC RAW MATERIALS (DE-)VALUATION FROM THE MONS BASIN (4 200-2 200 BCE)

**Abstract author(s):** Collin, Jean-Philippe (Paris 1 University; Namur University)

**Abstract format:** Oral

Far away from the Carpathian Basin, the Mons Basin (Western Belgium) is located at the northern margin of the Paris Basin. It is a very small geostructural unit (ca 520 km<sup>2</sup>) with a singular geology characterized by an important diversity and a well preserved flint-bearing deposits.

The author proposes to focus the question of network scales analysis on the basis of the geostructural unit as a reference unit and to confront this approach with the more classical one based on distance. While the latter allows the easy identification of highly valued product throughout the network (integration in a social landscape), the former allows for fine reading of the economy of lithic resources practiced by communities, in relationship with their environment (exploitation of terroir / natural landscape).

Within the Mons Basin and the surrounding areas, the economy of raw materials evolved throughout the Neolithic period. Focusing on the period from the end of the 5th millennium to the end of the 3rd millennium, changes in acquisition strategies are highlighted. The valuation of lithic materials and productions varies according to the resources available locally, according to the periods and according to the success of other highly valued productions within the exchange networks of northwestern Europe. The scale of the lithic networks seems, as a reflection of the relationships between human communities, in constant motion.

## 3 PRELIMINARY RESULTS OF PROVENANCE STUDIES ON THE POLISHED STONE MATERIAL AT THE NEOLITHIC SITE OF ALSÓNYÉK

**Abstract author(s):** Szilágyi, Kata (Kiel University) - Szakmány, György - Sági, Tamás - Józsa, Sándor (Dept. of Petrology and Geochemistry, Eötvös Loránd University) - Szilágyi, Veronika (Centre for Energy Research) - Oláh, István (independent researcher) - Oszlász, Anett (Institute of Archaeology, Research Centre for the Humanities)

**Abstract format:** Oral

The polished stone assemblage from the settlement features and burials of Neolithic (ca. 5800-4500 cal BC) Alsónyék-Bátaszék site were started to be subject to macro- and microscopic petrographic and instrumental analyses. It is our aim to integrate the entire lithic assemblage into a comprehensive database, and apply archaeological and geological approach with equal importance. The majority of the raw materials of the polished stone tools originates from Mecsek Mountains in the vicinity of the site (Lower Cretaceous alkaline igneous rocks, variegated marl, bituminous limestone, spiculite). In addition to the local lithic types, many stone tools made from long-distance raw materials: mainly serpentinite, contact metabasite (so-called Železný Brod type), hornfels, 'white stone', and the less frequent Na-pyroxenite, eclogite and nephrite, which indicate the Czech Massive, Transylvania, Banat and the Alps as raw material source areas.

The primary tool types are variable axes, adzes, chisels, and maces. We have observed correlations between the main lithic types and the axe's shape in several cases. The import stone tools made from extremely high-quality raw materials (e.g. contact metabasite, hornfels or 'white stones') are significantly smaller sized than stone tools made from local raw material. The working traces of axes recovered from the graves shows great variability. Many of them are finely crafted and perfectly polished, with no signs of wear visible to the bare-eye, while others show wear, re-sharpening, chipping and cracks from use.

A further aim of our work is to refine the raw material groups and supply zones by means of mostly non-destructive petrographic and geochemical analyses. From an archaeological point of view, in addition to the reconstruction of the technological sequence of the axe-making process, we will gain new insights into the environmental use, knowledge on the surroundings and lithology, stone tool-making and burial customs of the Neolithic communities of Alsónyék.

---

## 406 ANCIENT AND TRADITIONAL CRAFTS IN CHANGING ENVIRONMENTS: ADDRESSING THE NEEDS FOR TEMPORAL PERSPECTIVES

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Radini, Anita (BioArCH and York JEOL Nanocentre, University of York) - Demarchi, Beatrice (University of Turin) - Beach, Alison (St Andrews University)

**Format:** Session with precirculated papers

It has become clear that the way our modern society lives is no longer sustainable, environmentally and socially. The production of material culture, just like with food, can have huge human and environmental costs (e.g. inequality of living conditions, pollution, biodiversity loss). There is growing interest in the role that ancient/traditional crafts and the materials that they use can play in human and environmental health and in how we can preserve them in changing environments. Traditional and ancient crafts are used as poverty relief strategies in many regions of the world but

face enormous challenges stemming from climate change and political and social unrest within the regions in which they are still widely practiced. They are also increasingly important in the economies of the industrialised world, for example as a hobby and small scale business. Although Archaeology is incredibly well placed to provide important temporal perspectives on material culture, the impact of ancient/traditional crafts on people and the environment and their adaptations to past and current climate shifts are still little discussed by scholars. Our session aims to initiate a new multidisciplinary and novel dialogue on the challenges and potential solutions that the study of ancient crafts/crafters can provide to 1. inform decision-making in material culture production in the future; 2. reduce the impact human industries have on the environment, people and climate; 3. adapt to changes that are coming in our modern world. We are proposing the creation of a 'multi-scalar' perspective, from the biomolecular point of view (e.g. improving the visibility of organic materials such as fibers/dyes), through to landscape archaeology, as crafting activities shape places through. We thus welcome papers to explore the role of the study of ancient and traditional crafts as a means of improving the health of modern people and our planet.

## ABSTRACTS

### 1 TRADITIONAL CRAFTS AND FUTURE HEALTH: WHY WE NEED THE PAST

**Abstract author(s):** Radini, Anita (Centre For Human Palaeoecology)

**Abstract format:** Oral

Ancient and traditional crafts are becoming an important economic resource in many countries, however little is known about their impact on human health and on the natural resources. Ancient workshops and archaeological artefacts exemplify crafters' skills, technologies employed, trades and more, while the crafters themselves often remain invisible. Our understanding of occupational health in ancient times is limited both by a paucity of historical texts, as well as the lack of specific 'occupational' markers on ancient skeletal remains. Studies focused on linking skeletal pathologies with specific occupations are notably few, due to the limitations of current osteoarchaeological methods for reconstructing activity patterns from human remains. As such, skeletons can rarely be associated with specific crafts, preventing a full understanding of how divisions of labour and associated inequality of living conditions and health experiences have developed and perpetuated in past and current societies. This paper aims to provide an overview on why we need to develop new ways of tracking ancient crafters in the Archaeological record. It presents potential ways forward by means of Osteoarchaeology and Experimental Archaeology. Finally, it discusses the role that such areas of Archaeology can play in future decision making policies on the preservation of traditional and heritage crafts.

### 2 CRAFTS AND ARCHAEOLOGY OF NORTH AFRICAN ETHNIC MINORITIES

**Abstract author(s):** Leone, Anna (Department of Archaeology Durham University) - Radini, Anita (York University)

**Abstract format:** Oral

North Africa is home to an extraordinary cultural and archaeological heritage, resulting from complex and long term environmental changes and population dynamics.

Today, ethnic minorities (such as the Amazigh and Tuaregs) survive, often in remote and unforgiving areas of North Africa, from Morocco to Egypt, perpetuating traditions that are millennia old. Threatened by environmental change (e.g. desertification and flash floods) and sociopolitical unrest, both the archaeological remains as well as the cultural heritage that has survived for centuries, is now disappearing fast. While such traditions have been an essential part of the history of this region, their history is almost exclusively oral or visible in archaeological record, while written texts referring to them have always been written by their conquerors. Therefore, protecting both oral history, living crafting skills and their archaeology are key aspects of saving their tradition. In order to successfully preserve the archaeological and crafting heritage of the ethnic minorities we need synergistic approaches and collaborations between researchers and the local communities that are effectively the perpetrators and protectors of a non-renewable cultural heritage that can be considered by all means an economic resource for the future. This paper presents a comprehensive overview of the current situation in Libya and Tunisia and discusses a research agenda for the future.

### 3 SMOKING HABITS IN A CHANGING WORLD: REVIEWING THE FIRING PRACTICES OF WEST BALKAN POTTERS

**Abstract author(s):** Jackson, Mark - Carlton, Richard - Shillito, Lisa-Marie - Rogers, Abbie (Newcastle University)

**Abstract format:** Oral

This paper will focus on the firing of calcite-tempered cooking pots in the village of Malešići, north-west Bosnia where the decision by potters 40 years ago to alter a long-standing tradition of open-firing is being reassessed in the light of health hazards it has created. The traditional method of open-firing is now carried out in an enclosed space which, whilst providing shelter from wind and rain, has the unintended consequence of trapping smoke in the shelter, cre-

ating an unsafe working environment and presenting health hazards to the potters, who carry out firing as a family event. Learning from this experience, the potters now wish to create a more sustainable and safer firing environment closer to their original system, but sited outside the built environment of the village core. Issues complicating their decision concern absolute cost, cost-benefit, community acceptance and, perhaps most significantly, potential technological repercussions, since any aspect of technological change risks upsetting the delicate equilibrium of the chaîne opératoire and may affect product quality. Kiln firing, for example, while potentially more controllable and likely to be safer, may not be suited to firing calcareous pottery fabrics. In our paper we will investigate the environmental impact and health hazards of the current firing system by measuring fuel consumption and smoke generation. These will be compared with other firing systems in the area, such as open-air bonfire-firing and kiln-firing, allowing the merits of the various systems to be evaluated in terms of health and environmental benefits. The results of this analytical evaluation feed into discussions with potters to inform their decisions about potential future firing strategies, thereby contributing to the longer-term sustainability of the tradition.

#### 4 **INCORPORATING ARCHAEOLOGY IN THE FORMAL TRAINING OF PHDS IN SUSTAINABILITY: THE CASE OF SUSTNET, TURIN (ITALY)**

**Abstract author(s):** Demarchi, Beatrice (Universita` di Torino) - Giacomina, Cristina (University of Turin)

**Abstract format:** Oral

The importance of a deep-time perspective in addressing the challenges of the Anthropocene is widely recognised, and archaeology enables the reconstruction of human ecodynamics through time as well as the assessment of past human impacts on the environment. Archaeologists are also acutely aware of the wealth of information preserved in legacy collections, of their fragile nature, and of the threats faced by the archaeological record in a time of rapid environmental change. However, using academic knowledge to foster a more sustainable future requires the active engagement of key stakeholders. This can only be achieved when research is co-designed, not simply communicated (e.g. Richer et al 2019, *Internet Archaeology* 53, <https://doi.org/10.11141/ia.53.2>).

Here we report on the efficacy of a preliminary step undertaken by the Teaching Board of a new interdisciplinary and international PhD Programme in "Sustainable development and cooperation" (SUSTNET). The first year of the programme has been exceptional, as we have recruited 24 Early Stage Researchers thanks to funding devoted to "Green" research by the Italian PNRR (Piano Nazionale di Ripresa e Resilienza - designed to respond to the Next-GenerationEU Plan). None of the students have any background in archaeology and all of them must spend several months working in a local firm/industry as a condition of their funding. We included archaeology among the compulsory training sessions the PhD students have to attend. The aim was to encourage the students, who must co-design their research with local stakeholders, to include a historical perspective in their research. We monitored their level of awareness and engagement before and after the module, using short questionnaires, and here we will present and discuss the preliminary results of this experiment.

#### 5 **PRESERVING CRAFTSMANSHIP IN MODERN IRAQ: A HISTORY OF BOAT CONSTRUCTION IN MESOPOTAMIA DURING THE UR III PERIOD**

**Abstract author(s):** Girardi, Virginia (University of Oxford)

**Abstract format:** Oral

This study analyses boat construction during the Ur III period, in particular riverine boats, identifying all products and raw materials employed for watercraft manufacturing in southern Mesopotamia. The contribution also focuses on how the communities accessed these resources, and how boat construction was organised in the mar-sa, the facility assigned to this activity.

Most consistent knowledge of boat construction during this period, is achieved by the study of the administrative documents concerning the supply of materials for this activity.

The Ur III documents support the understanding of how Mesopotamian communities managed boat construction, and how this activity was carried out by highly specialised craftsmen, working in the mar-sa. The texts mention the construction and repair of different types of boats, called ma2 in Sumerian, mainly made of wood, reeds and bitumen, and employed for the transport of both high-bulk low-cost commodities, such as cereals, and high valued products, throughout the Ur III state canals and watercourses.

Although southern Iraq has been affected by slightly significant environmental and climate shifts, boat construction materials and techniques have been preserved until modern times, allowing craftsmen to access the same resources, especially organic materials. Modern boat builders have preserved an ancient tradition, with low environmental impact and obtaining excellent results for the different watercrafts.

The textual analysis is combined with most relevant experimental archaeology projects and ethnographical instances of modern Iraqi boats craftsmanship, and provides information concerning boat construction materials and techniques, and how these have been preserved until today.



With the support of ethnographical observations from modern Iraqi craftsmen, this contribution shows new preliminary results of the study concerning boat construction, explaining how boats were employed and manufactured, and how boat construction techniques have been preserved until modern times, in response to all of the changes that are coming in our modern world.

## 6 PEOPLE, PLANTS, AND CRAFTS: WEAVING AND TWISTING PLANT-BASED MATERIALS IN THE WESTERN MEDITERRANEAN DURING IRON AGE

**Abstract author(s):** Martin Seijo, Maria (Universidad de Cantabria) - Azorín, Marian (Institut Català de Paleocologia Humana i Evolució Social-IPHES)

**Abstract format:** Oral

Traditional forms of ecological knowledge and craft practice should be at the centre of the current debates about biodiversity preservation and circular economy. The INTERTWINED project will reclaim crafters' experience both as a framework for interpreting archaeological crafts and as a way of rethinking our relationship with materials. By focusing on these craftworks, we will try to deepen our understanding on the intertwined relationship among people, plants, and crafts. This project is focused on direct and indirect archaeological evidence of basket- and cordage-making using plant-based materials from Western Mediterranean, dated between Iron Age (IA) and Early Roman Empire (ERE) - c. 9th-8th centuries BCE to 4th century CE-. By focusing on these craftworks, we will try to deepen our understanding of the intertwined relationship among people, plants, and crafts. This multi- and interdisciplinary project integrates archaeological, ethnographical, and ethnobotanical evidence with the experimentation developed by artisans. Traditional craft skills, knowledge and practice should be at the centre of the debate about our relationship with the environment and about our current 'take-make-waste' model of production. This project seeks to promote research, development and innovation applied to the conservation and sustainability of the important archaeological, historical, cultural and social heritage of the Iberian Peninsula, with the specific focus on crafts and plant material. This investigation will contribute to the social and economic development of the territories under study, mostly rural areas affected by ageing and depopulation, by combining archaeological and ethnobotanical research, experimentation and artisanal work.

## 7 WORKING WOMEN: A NEW INTERDISCIPLINARY APPROACH TO CRAFT AND ARTISTIC PRODUCTION IN PRE-MODERN FEMALE RELIGIOUS COMMUNITIES

**Abstract author(s):** Beach, Alison (University of St Andrews)

**Abstract format:** Oral

This paper discusses a new approach to investigating the lives of medieval religious women that combines traditional historical research with cutting-edge experimental archaeology, bioarchaeology, and cutting-edge micro- and biomolecular analyses of human remains. The ongoing interdisciplinary studies of women's work presented offer a valuable new window on the craft and artistic activities of pre-modern women that challenge deeply rooted assumptions about gender in monastic contexts and illuminate vital female contributions to sustainable circular monastic economies. The paper presents evidence for female participation in parchment preparation and repair, book copying and decoration, activities often thought to be primarily the domain of male monastics, as well as for cloth production and the production of precious liturgical textiles, activities more commonly associated with medieval women. The collaborative research presented here brings together experts in the humanities, social sciences, and biological and physical sciences to create new knowledge about the role of women in the medieval past, pioneering new methods for recovering individuals, activities, communities, and economies previously less visible to us, or visible mainly through written sources authored or authorized by men.

## 8 FROM MICRO-ARCHAEOLOGY TO MICRO-ECONOMY: A CASE STUDY FROM THE ITALIAN PIEDMONT REGION

**Abstract author(s):** Sandron, Sarah - Boano, Rosa - Cinti, Alessandra - Spiteri, Cynthia - Demarchi, Beatrice (University of Turin) - Beach, Alison (University of St Andrews)

**Abstract format:** Oral

Ancient crafts are an important part of the heritage of a population: each craft carries the strong identity of the community they originated from and helps us to understand the history of the people who practiced them, as well as the significance of the items they produced. However, with the development of industries and mass production we are losing connections with our tradition and heritage. This is problematic not only from a cultural point of view, but also because traditional crafts are the results of centuries or even millennia of adaptations and adjustments in human-environment relationships. Furthermore, ancient sustainable crafts can fuel the transition towards a greener economy.

Archeology can make a fundamental contribution to restoring connections between past and present: in this paper we present the case study of the 18th century monastic community of S. Maria della Stella (Saluzzo, Italy), in which historical documents and bioarchaeological analysis of dental calculus can provide a valuable record of ancient crafts

of the Piedmont region, such as chocolate production and textile manufacturing. We wish to start a discussion on possible approaches by which we can not only trace back the ancient roots of local traditions, but also reconstruct typical crafts of a territory, preserving ancient know-how for future generations as well as helping the micro-economy, by revitalising the local handicraft market.

## 407 DIGITAL RELIGIOSCAPES: CURRENT METHODOLOGIES AND NOVELTIES IN THE ANALYSIS OF SACR(ALIZED) SPACES

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Lätzer-Lasar, Asuman (Max Weber Center, University of Erfurt) - Lamesa, Anaïs (French Institute for Anatolian Studies)

**Format:** Regular session

The study of ancient religions – their materiality and practices – was subject to enormous changes, especially since different approaches from other disciplines, such as sociology, cultural studies, or anthropology, were made fruitful for the archaeology of ancient religions and subsequently enabled a qualitative approach to the research questions. This led to an understanding of religious spaces on the one hand as an outcome of social interaction (Lefebvre; Hofmann/ Lätzer-Lasar), and on the other hand as a shared space with its own locally produced identity (Hayden/ Walker 2013). However, the digital humanities have yet to find a meaningful way to integrate the resulting qualitative data into existing digital infrastructures and correlate it with quantitative data.

The session therefore aims to bring together experts working with different methods of gathering, modelling/visualising, presenting, and analysing data to discuss the diverse ways in which heterogeneous methods and tools can be usefully combined. Approaches that use mixed data (qualitative and quantitative), such as Story Maps or Deep Map(ping) (Bodenhamer et al. 2015) are just as welcome as the presentation and discussion of the advantages and disadvantages of various individual tools and applications, such as network models, cartograms, modelling of movement patterns, temporality or sensoriscapes (soundscapes, smellscapes, viewsheds), etc.

Since we are concentrating on the methodological approaches and applications for investigating religious spaces, we invite case studies from any chronological period, as well as from any geographical region.

Literature:

- David J. Bodenhamer et al. (eds.) 2015. Deep Maps and Spatial Narratives, Bloomington, in: Indiana University Press.
- Hayden, Robert M.; Walker, Timothy D. 2013. 'Intersecting Religioscapes: A Comparative Approach to Trajectories of Change, Scale, and Competitive Sharing of Religious Spaces', *Journal of the American Academy of Religion* 81. 399–426.
- Hofmann, Kerstin P.; Lätzer-Lasar, Asuman (in press). 'Archaeology and Sacred Space: On ancient and contemporary practices of (de-)sacralization of the Palatine in Rome', in: Bachmann-Medick, Doris; Kugle, Jens; Stornig, Katharina (eds.), *Conceptualizing Sacred Space(s). Perspectives from the Study of Culture Special Issue, Saeculum, 2021/2. Jahrbuch für Universalgeschichte*.
- Lefebvre, Henri 1974. *The Production of Space*. Blackwell Publishing.

## ABSTRACTS

### 1 CREATING A DEEP-MAP OF THE ASKLEPIEION OF PERGAMON: PROCESS AND PITFALLS IN DIGITIZING A RELIGIOSCAPE

**Abstract author(s):** Williamson, Christina - Katevaini, Alexandra (University of Groningen)

**Abstract format:** Oral

Sanctuaries are ambiguous spaces – they are the primary memory banks of their communities (Haake et al. 2011), yet are at the same time constantly being produced through human interactions and religious practices (Lefebvre 1974). The density and overlap of their continuous rewritings makes these religioscapes a minefield for localized stories of political power, social display, personal salvation and divine intervention. More than any other public space in the ancient world, sanctuaries embody the consciousness of their communities. But how can we access their wealth of stories, when the material culture is often haphazard and biased?

The concept of 'deep-mapping' provides a way forward as it focuses on the temporal layering of spatial narratives (Bodenhamer et al. 2015; <http://deepmappingsanctuaries.org>). Our project examines the Asklepieion of Pergamon. In use for some 600 years, this shrine developed from a natural shrine in a spring-fed basin to a cult of healing to a regional center of gravity that attracted the attention of kings and emperors. Across this timespan, visitors left an entangled trail of votives, ceramics, coinage, sculpture, architecture, inscriptions and literary accounts. This documented material is mapped in place using Geographic Information Systems, allowing comparative analyses of patterns,

anomalies, and their intersections over time, ideally leading towards an identification of diverse localized narratives and a better understanding of how past, present, and future interoperated in these spaces.

But our deep maps are not unproblematic. Can a metrical tool adequately assess data that is inherently inconsistent in quality? How can we do justice to those whose voices largely went unheard? How do we visualize both the accumulation of meanings over time, as well as their erasures in this dynamic and contested space? In our paper we sketch the outlines of our approach while discussing these issues along with some initial results.

## 2 FEMALE ANGLO-SAXON SAINTS: IMMERSIVE STORYTELLING THROUGH INTERACTIVE WEB MAPS

**Abstract author(s):** Tenzer, Martina (University of York)

**Abstract format:** Oral

Female Anglo-Saxon saints are venerated across Britain and are still an inspiration in modern times. While the Anglo-Saxon Christian world is mostly seen in the light of kings and bishops, research of the lives, workings, and places of veneration of female saints offer new perspectives for the research of religious places and aspects of veneration in Britain. Scientific projects, such as 'Finding Eanswythe' (Canterbury Christ Church University), draw the spotlight on this subject.

The challenge in research nowadays is to bring the vast amount of information and data together in a comprehensible form to inspire further research and foster appreciation of the rich history in the wider public. Heritage experts and researchers benefited from the development of the Geographic Information Systems (GIS), which enabled the visualisation of data and interrogation of maps through a graphical interface. Additionally, the internet, open access sources, and public web mapping have improved connectivity, accessibility, and availability of information.

This paper will present the outcome of a project aimed to extend the 'Finding Eanswythe' project and map female Anglo-Saxon saints across Britain, which forms a side project of an AHRC/UKRI funded PhD research on place attachment. The aim of the project was to combine spatial, quantitative, and qualitative data on one platform, creating a deep map. The interactive web map allows an overview of the network and distribution of female saints and gives deep insight and understanding of the lives, workings, places, and legends of this rather neglected but important part of history. Integrating historical data, spatial data, photographs, and videos combine quantitative and qualitative data in a deep map for immersive storytelling.

## 3 DESCRIBING HERMION/ERMIONI WITH PAUSANIAS, A DEEP MAP

**Abstract author(s):** Witmore, Christopher (Texas Tech University)

**Abstract format:** Oral

This talk presents an experiment in descriptive visualization. Through the juxtaposition and comparison of two very different descriptions of a peninsula known successively as Hermion, Kastri, and Ermioni, Pausanias's *Periegesis*, and a collage of maps and other images, we hope to reveal not so much a common space, but a diversity of spaces. In attempting to suggest something of these spaces, we push our descriptions to the edge of oversaturation and disruption, where too much information teeters on the verge of noise. By calling our attention to some of the most basic characteristics of both texts and maps (legibility, organization, consistency, fungibility, etc.) as modes of manifestation, we aim to challenge these forms, shift our bearings, and open up other descriptions for archaeologists. In designing our text and imagery topologically we aim to accentuate pleats and rifts where different connections may be formed and for other spaces to emerge. We aim to make the reader aware of different modes of engagement, between reading a text, viewing various digital media, and observing a deep map. Differences arise out of designed difficulties; without the aid of a magnifying glass or digital translation, the printed text is almost too small to read; the map and aerial imagery disrupt the notion of homogeneous space across the whole and, as such, sparks heterogeneity. Overall, our project lends itself to two very different engagements. As a reader, one may follow along page by page sequentially, as with reading a book, so that portions of the description are revealed in step with the progression; or by assembling each page on an open, flat surface one may choose to engage with information as one wishes. Forge associations. Rework the arrangement of narratives. Enter into the work as a participant observer and different spaces will emerge.

## 4 DIGITIZATION FOR THE RECONSTITUTION OF AN ALTERED COLONIAL CULTURAL HERITAGE, THE SAINT MONICA CHURCH TODAY IBN BADIS MOSQUE IN ALGERIA

**Abstract author(s):** Bousnina, Monia (Université el Bez Sétif I)

**Abstract format:** Oral

Today, the mastery of technological processes has enabled the digital tool to become a support for research, communication and heritage preservation. This work is the result of a reflection within the Laboratory of Mediterranean Architecture on the different applications of digitization on the cultural heritage built in Algeria. This work concerns a heritage object built in 1867. Our mission as an architect is to consider the city as a palimpsest where different layers

of history, architecture and sociology are superimposed to be safeguarded. This approach is part of the problem of reconversion by safeguarding and restoring an altered heritage. The case of the Ibn Badis mosque ex Saint Monica church in the city of Setif (colonial city in the highlands of eastern Algeria), questions the strategies for preserving and enhancing the colonial heritage in Algeria. Legacy of a painful colonial past, the Sainte Monica church is an edifying example, since it was transformed into a mosque after independence. Buried under rehabilitation works, it has been transformed into a religious symbol of the nation. Deviated from its primary function and immersed to respond to the new post-independent socio-cultural values that it had to represent. In order to find its traces and reconstruct the original object, digitization work carried out in situ by combining the technical processes of photogrammetry and lasergrammetry (terrestrial laser scanning) was carried out. The entire process generated a model that will serve as a support for the study and archiving of the monument. Digitization has made it possible to show the evolution over time and above all the architectural and architectonic transformation that the building has undergone from 1867 to the present day. Since many rehabilitation works have been undertaken in the meantime.

## 5 RELIOSCAPE AND CAPPADOCIA, A NEW APPROACH FOR AN OLD RESEARCH SUBJECT

**Abstract author(s):** Lamesa, Anaïs (IFEA) - Üçbaşaran, İdil (Ortahisar Belediyesi)

**Abstract format:** Oral

Cappadocia is a region located in the centre part of Anatolia (Turkey). Well-known, the region was mainly studied for its rock-cut churches. But less attention has been brought to its necropolis, mosques (whether they are built or carved) nor to its old houses and the relative chronology of the rock-cut sites themselves. These two research lacks mainly highlight that the history of the Cappadocian landscape was most often ignored by researchers except for some renowned sites such as Göreme.

To start a project crossing geography and archaeology, calling digital tools and traditional field working, we will focus on one area: the town of Ortahisar and its surroundings. Ortahisar is in the touristic heart of Cappadocia, located in the centre of the Nevşehir province. It has 39 churches and seven mosques known across its old village and agrarian areas.

Thinking this village on the long-term, through the religioscape concept will be the first step of our project. We understand religioscape as "the distribution in spaces through time of the physical manifestations of specific religious traditions and of the populations that build them" (Hayden & Walker 2013). The cartographic study will aim to analyse the spatial distribution of the different monuments and buildings according to their religious, architectural, and artistic characteristics. By crossing relative chronology databases and maps, the study will give a visual of the spatial extent of the different populations, their evolving area. Given so, we ambition to delineate the boundaries between the sacred and profane spaces through time.

## 6 MAPPING THE SACRED LANDSCAPE OF CHALCIDICE

**Abstract author(s):** Denk, Olivia (University of Basel)

**Abstract format:** Oral

This paper represents a digital approach to visualize the ancient religioscape of Chalcidice, a microregion in northern Greece. The unlocking of the peninsula's sanctuaries and cults is a desideratum of archaeological research and is investigated within the framework of my doctoral project funded by the Swiss National Science Foundation (SNSF) at the University of Basel (Switzerland). By using ArcGIS to map the ancient sites and cult places it was achieved to create the sacred landscape of Chalcidice. As a result, the significance of the sanctuaries' spatial location in relation to the god's characteristics was revealed. The map was embedded to ArcGIS StoryMaps where selected archaeological, literary, numismatic, and epigraphic evidence will be added. Regarding the numismatic data linked open data principles will be used which connects the project with the international numismatic community. Additionally, own photos taken during the research stay abroad in Greece will gradually complement the online presentation. The aim of this paper is to discuss the status of ArcGIS as a digital tool for the investigation of ancient religious spaces. Therefore, the digital ArcGIS map will be compared with the visualization in nodegoat.

## 7 FROM MIKRO TO MAKRO MAPS: A CASE STUDY OF A RURAL SACRIFICIAL SITE IN THE ALPINE REGION

**Abstract author(s):** Waldhart, Elisabeth - Gridling, Stefan - Stadler, Harald (Department of Archaeologies, University of Innsbruck)

**Abstract format:** Oral

This detailed study of a rural sacrificial site in the west of Austria (Heiligkofel, Oberleibnig, East-Tirol) explores two different approaches to mapping and how they could be brought together. In 2020 metal detectorists, undertaking a survey project in the area, discovered more than 150 objects. The range of objects discovered – fibulae, coins, militaria, and miniature objects – and the results of initial excavation work support the theory that a rural sanctuary dating from early Iron Age to Roman Imperial period was located there. The results of these first studies point to a so

called "Brandopferplatz". This type of sacrificial site is known in the inner alpine area from the Bronze Age to the Iron Age and is characterised by burnt offerings and animal sacrifices. The range of objects indicates a continuous use after the Roman conquest.

Since the place in question can be classified as a natural sanctuary with little to none built structures, other sources and methods are used to determine the sacralised space. Therefore, we aim to combine a micro-perspective on objects with a visualisation of the distribution of these objects. The first approach maps possible traces of manufacturing, use and potential marks of sacrificial practices on selected small findings from the survey. This information is then linked to the distribution of objects, while also considering other features.

Understanding the sacred site not only as built space, but also as a space created through sacrificial acts and rituals, these mappings of the sanctuary are expected to provide new insights into its various patterns of use. The continuous worship at this sanctuary, despite political and religious (?) changes in the region, raises questions about the relationships between the local population and the Romans expressed at this site.

## 8 RECONSTRUCTING SACRED LANDSCAPES: TOWARDS A PHENOMENOLOGY OF STONE PILLARS IN THE LEVANT

**Abstract author(s): Pappalardo, Chiara (University of Catania)**

**Abstract format: Oral**

Large-scale stone pillars (menhirs) standing in rows at open-air sites have been recently considered as a feature that characterizes Palestine and Transjordan especially during the late third millennium BCE. It seems that, due to their unknown function, these upright megaliths were located at some distance from the proper dwelling area of nearby settlements, and, despite being associated to 'high places' after Macalister's interpretation of the Gezer complex as a Canaanite *bāmāh*, purportedly not at the highest altitude available. Through the analysis within a 3-D GIS environment of the material data from the Central Coastal Plain, the Lisan Peninsula, the Kerak Plateau, the Madaba Plains and the Wadi 'Araba, this contribution attempts to trace a phenomenology of Levantine stone pillars within their original landscape. In particular, it will assess the potential of combining a site location analysis with the least-cost path and the viewshed analysis to shed light on the spatial relationship of these monuments with reconstructed routes, with the shift in settlement patterns that characterized the complex phase of the so-called Intermediate Bronze Age, and ultimately with coeval socio-economic actors. Such a phenomenological and cognitive approach will prove beneficial to extract new information from legacy data, and to promote a fresh and holistic interpretation of the widespread phenomenon of monolithic pillars and its significance.

## 9 MAPPING THE IRON AGE MORTUARY LANDSCAPES OF THE INNER TIAN SHAN, KYRGYZSTAN: SURVEY, DIGITAL MAPPING, AND LANDSCAPE APPROACHES

**Abstract author(s): Chang, Claudia (Independent scholar; Research Associate, Institute for the Study of the Ancient World, New York University) - Tourtellotte, Perry (Independent Scholar)**

**Abstract format: Oral**

In 2019 and 2021 archaeological surveys were conducted on the south side of Lake Issyk kul in the upland gorges of Juuku, Sutti Bulak, Chichi Khan and Chong Kizil Suu. We mapped the locations of over 500 burial mounds or graves by using GPS readings placed on satellite maps from Google Earth, Nakarta, and Zoom.earth. We used these digital maps to examine topographic features such as ridges, terraces, river banks and their relationship to the mortuary remains. Over 90 percent of the large inventory of archaeological features were burial mounds (kurgans) associated with Iron Age to early Medieval periods. These mounds, identified as Saka (eastern variants of the Scythians), Wusun, Kenkol, and Early Turkic cultures, date from the 8th century BCE to the 9th century CE and document sacred mortuary landscapes. Many of the burial mounds, robbed in antiquity and in the present, symbolize status, power, and territory as well as follow certain sociological and cosmological principles associated with notions of the divide between every day life (habitations) and the sacred world of the dead. In this paper we present preliminary results of these mortuary palimpsests and explore their religious and cosmological meanings in these valleys of north-central Kyrgyzstan. Although our approaches are mainly quantitative, we invite qualitative interpretations as to the religious meaning of these mortuary-scapes in creating memories, sacred materiality, and cosmological principles. The relationship between sacred spaces and the natural landscapes of mountains, ridges, terraces, and the saline lake below is an important aspect of ritual and cosmology of Central Asian pastoral/nomadic groups.

## 10 DIGITAL DEATHSCAPES OF REPUBLICAN ROME

**Abstract author(s): Lätzer-Lasar, Asuman (Max Weber Centre, University of Erfurt)**

**Abstract format: Oral**

The Twelve Table Laws from the 5th century BCE state that a dead person may not be buried or burned in the city. Even though this can generally be assumed for the city of Rome, the city dwellers were confronted with the conse-

quences of urban growth due to the successive expansion of the metropolis. Graves and tombs that had previously been on the outskirts of the city suddenly found themselves in the midst of a heterogeneous and lively urban fabric. Furthermore, space became a resource to be carefully negotiated due to the scarcity of space and the increasingly dense building development. Empty spaces, such as the underground quarries that were converted into catacombs, had to be used efficiently.

In this paper, I bring together these diverse strands of development in order to more clearly depict and evaluate the urban embeddedness of the tombs, as well as the intertwining of the world of the living with the world of the dead. Therefore, I focus on the location of Republican tombs within the territory of the 'experienced' city of Rome, their accessibility, visibility and use for religious practices such as commemoration. The visibility of the tombs, investigated through viewshed analysis, provides further information on the perception and urban embeddedness of these monuments. Whereas the diachronic and praxeological approach enables to sketch specific biographies of places as well as allows for a closer look at the changing identities of these monuments.

---

## 416 CHALLENGING ISLAND ARCHAEOLOGY WITH THE THIRD SCIENCE REVOLUTION

**Theme: 5. Climate Change and Socioenvironmental Perspectives**

**Organisers: Santana-Cabrera, Jonathan (University of Las Palmas de Gran Canaria) - Speciale, Claudia (University of Gothenburg) - Surera-Torres, Pau (Incipit - Instituto de Ciencias del Patrimonio - CSIC)**

**Format: Regular session**

Islands in archaeology were traditionally analysed in terms of isolation and connectivity through time as well as how these phenomena affected the structuration of specific cultures and social structures. Such approaches have now declined because they could not easily deal with the diversity and variability that island worlds present to us. These include: the level(s) of geographical constraints, their size and/or availability of primary resources, with human colonization creating even greater complexities. Examples of the latter involve peculiar processes of adaptation, long-term lack of contacts, specific agro-pastoral systems and management of limited resources. Bio-molecular archaeology and the third science revolution are now opening new horizons in the analysis of islanders' human-environmental diachronic relationships. At times, they have challenged previous concepts, interpretation, and established archaeological theories.

In this session, we will deal with, not only the role of remote/limited islands as possible nodes of network, but also their bridging roles in cultural or biological bottle-neck processes and the challenges that human colonization (or re-colonization) faced. We will also discuss concepts of isolation and connectivity in relation to archaeological contexts or materials, landscape and insular identity and how contemporary trends in archaeological research can support original interpretations. Papers regarding all geographical contexts and chronological spans are welcome.

### ABSTRACTS

#### 1 CHRONOLOGY, SITE FORMATION PROCESSES, PALEOENVIRONMENTAL CONTEXT AND THE SEASONALITY OF HUMAN OCCUPATIONS AT LAS ESTACAS CAVE, TENERIFE (SPAIN)

**Abstract author(s):** Hernández Gómez, Cristo (Departamento de Geografía e Historia. Universidad de La Laguna; Instituto Universitario de Bio-orgánica Antonio González. Universidad de La Laguna) - Jambrina Enríquez, Margarita (Departamento de Biología Animal, Edafología y Geología. Facultad de Ciencias. Universidad de La Laguna; Instituto Universitario de Bio-orgánica Antonio González. Universidad de La Laguna) - Castilla Beltrán, Álvaro (Departamento de Geografía e Historia. Universidad de La Laguna; Instituto Universitario de Bio-orgánica Antonio González. Universidad de La Laguna) - Gutiérrez Zugasti, Igor (Instituto Internacional de investigaciones prehistóricas de Cantabria - Universidad de Cantabria, Gobierno de Cantabria, Banco Santander. Universidad de Cantabria) - de Nascimento, Lea (Departamento de Botánica, Ecología y Fisiología Vegetal. Facultad de Ciencias. Universidad de La Laguna; Grupo de investigación Interuniversitario de Ecología y Biogeografía insular) - Mesa Hernández, Eduardo (Grupo de Investigación) - García Villa, Pedro (Instituto Universitario de Bio-orgánica Antonio González. Universidad de La Laguna; Dipartimento dei Beni Culturali: archeologia, storia dell'arte, del cinema e della musica, Università degli Studi di Padova) - Hernández Tomé, Laura (Departamento de Geografía e Historia. Universidad de La Laguna; Instituto Universitario de Bio-orgánica Antonio González. Universidad de La Laguna) - Mallol Duque, Carolina (Departamento de Geografía e Historia. Universidad de La Laguna; Instituto Universitario de Bio-orgánica Antonio González. Universidad de La Laguna; Interdisciplinary Center for Archaeology and the Evolution of Human Behaviour - ICArEHB, Universidade do Algarve)

**Abstract format: Oral**

The aboriginal settlement and socio-cultural evolution of the Canary Islands have been the object of much scientific debate. At present, the amount of chronometric, archaeological, bioanthropological, and paleoenvironmental information is significantly increasing thanks to a growing number of interdisciplinary studies on different sites through-

out the archipelago. However, the existing datasets are still scanty and fragmentary. Here, we present the results of a multiproxy, geoarchaeological study of Las Estacas Cave, in Buenavista del Norte, Tenerife (Spain), an aboriginal archaeological site with some of the oldest radiocarbon dates of the archipelago, thus representative of early human settlements in the islands. Previous excavations reported material evidence of long-lived pastoralist, fishing, and shell gathering activity at the cave and its surroundings. Our data, which includes new radiocarbon dates, micromorphology, lipid biomarkers, palynology, and sclerochronology, shed light on site formation processes and their timing, as well as on seasonality and the paleoenvironmental context. We strongly encourage future collaborative work to build upon these results and advance in our understanding of the Canary Islands aboriginal societies.

## 2 CHALLENGING CONCEPTS OF REMOTENESS IN THE OUTER HEBRIDES

**Abstract author(s): Rennell, Rebecca (UHI Archaeology Institute) - Gal, Emily (University of the Highlands and Islands)**

**Abstract format: Oral**

Our research investigates prehistoric activity on the 'remote' Roisinis peninsular on the east-coast of the small island of Benbecula in Scotland's Outer Hebrides. The area is of unique archaeological and palaeoenvironmental research value. Investigations in the 1960s/70s revealed complex Bronze Age activity (Crawford, 1977; Shepherd & Tuckwell, 1977). Ongoing erosion continues to uncover prehistoric material. Roisinis is characterized by windblown, calcareous sands (machair) - typically a west-coast Atlantic environmental phenomena. Despite research potential there has been little academic interest over the last fifty years. The site's perceived 'remoteness' and related fieldwork challenges have been barriers to further research. Since the 1990s, archaeological research across the Hebrides has been defined by a west-coast research bias. Prioritization of west-coast archaeology has rendered the Hebrides' east-coast poorly understood and woefully under-explored. Our research seeks to redress this imbalance and challenge concept of 'remoteness'. The assumption is often that islands are by their very nature 'remote'. We challenge this and at the same time explore how remoteness varies across island landscapes and environments. Furthermore, we consider how archaeological research can serve to establish remote landscapes through research bias, research constraints and research methods. Our research seeks to improve our understanding of east-coast prehistoric settlements and more specifically to explore the role of windblown sand in the formation of archaeological sites in varying landscapes.

## 3 NEW PERSPECTIVES ON THE COLONIZATION OF THE CANARY ISLANDS

**Abstract author(s): Santana-Cabrera, Jonathan - Morquecho-Izquier, Aarón - Brito-Mayor, Aitor (University of Las Palmas de Gran Canaria)**

**Abstract format: Oral**

The Canary Islands were settled 2,000 years ago by farming populations from North Africa. Archaeological narratives support the idea that the first colonists remained isolated until the arrival and colonization of Europeans in the 15th century AD. When Europeans arrived, Canarian populations spoke distinct dialects and did not have the seafaring skills needed to navigate between islands. These ethnohistorical texts and the archaeological evidence indicate that the inhabitants of the Canary Islands shared a similar cultural and technological background but showing significant diversity between islands in terms of social organization, material culture, subsistence practices and demography. Most archaeologists have interpreted this variability as consequence of the ecological constraints of the island environments and the isolation of the island societies through time. A key question is to determine when the first archaeological indicators of diversity appeared in the island societies and what extent island ecologies, anthropogenic impact and isolation influenced on this diversification. New archaeometric approaches have provided new clues to understand this process, yielding new hypothesis that challenge previous knowledge.

## 4 UNDERSTANDING SMALL ISLANDS DYNAMICS FROM MULTIDISCIPLINARY AND MULTI-PROXY ANALYTICAL APPROACHES. THE CASE OF FORMENTERA (BALEARIC ISLANDS, WESTERN MEDITERRANEAN)

**Abstract author(s): Sureda, Pau (Instituto de Ciencias del Patrimonio - Incipit-CSIC)**

**Abstract format: Oral**

The Balearic Islands (Western Mediterranean, Spain) were the last islands of the Mediterranean Sea to be colonized. This happened at the end of the III millennium cal BCE by settlers related to the Bell Beaker phenomenon. During most of the II millennium BCE, during the Bronze Age, they were settled by groups more or less homogeneous, known as Naviform (boat-shaped) societies. In the isle of Formentera, prehistoric human occupation is associated with insularity factors, including an extreme environment. Cap de Barbaria II is one of the biggest open-air naviform villages occupied during this period in Formentera, where different funerary sites such as Ca na Costa or Cova 127 have been also investigated. Recently, multidisciplinary and multi-proxy archaeological research conducted within these sites revealed specific trends and suggested an adaptation of the economic behaviour of these settlers to an environment poor in resources. In this sense, aspects such as innovation, diversification, and intensification in the use

of resources characterized the subsistence and technological patterns developed by the prehistoric inhabitants of Formentera. Here, I will present new data from different archaeological and paleoenvironmental analytical studies in order to reveal subsistence patterns and social practices from this particular archaeological context in comparison with the rest of the archipelago.

## 5 HUMAN-ENVIRONMENTAL INTERACTION ON A SMALL ISLAND: A PRELIMINARY MODEL OF FRESHWATER SUPPLY IN HELLENISTIC AND ROMAN USTICA (ITALY)

**Abstract author(s):** Vinci, Giacomo (Dipartimento di Scienze Storiche e dei Beni Culturali, Università di Siena) - Foresta Martin, Franco (Laboratorio Museo di Scienze della Terra Isola di Ustica; Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Palermo) - Furlani, Stefano (Dipartimento di Matematica e Geoscienze, Università di Trieste) - Dawson, Helen (Dipartimento di Storia Culture Civiltà, Università di Bologna; Institut für Prähistorische Archäologie, Freie Universität Berlin)

**Abstract format:** Oral

Recent work carried out by the authors on the volcanic island of Ustica (Palermo, Italy) based on the integration of geomorphological and archaeological data has led to a preliminary reconstruction of the ancient water supply system on the island, highlighting the interactions between communities and the insular environment and the paramount importance of efficient hydraulic systems to tackle the lack of fresh water sources through the island's history.

To understand this general picture, we recently carried out a topographic survey using drone and LiDAR acquisitions at the Rocca della Falconiera, the main Hellenistic and Roman settlement of the island (around III c. BC - III c. AD).

The site is located in the north-eastern part of the island – on a 140 m high promontory modelled by weathering and erosion– and later became the seat of an eighteenth-century fortress erected by the Borbone kings. The Hellenistic and Roman settlement features dozens of square dwellings laid out on three terraces linked by stairs. The dwellings are flanked by numerous channels and circular cisterns dug into the volcanic tuff and coated with mortar, some were excavated in 1975 and 1980. Rainwater collection, coupled with stillicide or dripping water found in caves, was still in use as recently as the 1970s and supplied sufficient water to the island community.

Volume calculation of the water cisterns at the Rocca della Falconiera settlement has allowed us to design a preliminary model of freshwater supply at the site which provides new insight on the modes of extraction, storage and consumption of water. Our study underscores how the islanders were able to deal with natural constraints and limited resources in historical times up to the present day, and has potential to shed light on earlier adaptations, which enabled island settlement even during prehistoric times.

## 6 BEYOND FARMING, SHEPHERDING AND RECOLLECTION: ISLANDER SUBSISTENCE STUDIED THROUGH STABLE ISOTOPE ARCHAEOLOGY DURING THE PREHISPANIC PERIOD OF THE CANARY ISLANDS

**Abstract author(s):** Cañadillas, Elías (University of La Laguna) - Santana-Cabrera, Jonathan (Universidad de Las Palmas de Gran Canaria)

**Abstract format:** Oral

The prehispanic period of the Canary Islands is defined by the arrival of North African settlers to the archipelago and their continued existence on it until the European conquest and colonization of the islands. This 1500-year occupation appears to be based on the reliance on the same dietary sources across time, which were a mixture of foods brought from the continent and wild vegetable and animal species collected, albeit with different distribution of said resources depending on regional and seasonal variations. Current archaeological work developed in the archipelago gravitates towards identifying specific differences between islands and time periods, and whether the inhabitants of each island relied on a specific main food source or there is actually a mixed diet.

Carbon/nitrogen stable isotope archaeology has provided useful in the past to shed light on the aforementioned questions. However, since the Canarian environment and the species consumed by the islanders do not differ drastically until the colonial period, in with other animals and vegetables are introduced, isotopic analyses allow only for general conclusions in this approach. Therefore, linear mixing models provide inefficient and insufficient to address specific questions, hence the introduction of Bayesian modelling and multi-proxy analysis along with traditional isotopic studies.

The present communication evaluates and contextualises the isotopic information available to archaeologists for the prehispanic period of the Canary Islands, along with recent and unpublished data, to suggest new ways of interpreting diet and subsistence patterns on Island environments.



## 7 ONE IN A FLEET OF A THOUSAND: ADRIATIC SMALL ISLAND ARCHAEOLOGY AND THE CASE STUDY OF THE ISLAND OF IST

**Abstract author(s):** Domines Peter, Pio (University of Zadar)

**Abstract format:** Oral

The island of Ist belongs to the group of small outer islands of the northern Dalmatian archipelago. The poor state of research, caused mostly by inaccessibility and the harshness of the island karst landscape doesn't deviate from the rest of similar islands which, despite all research potentials, have not been explored enough, neither have yet been a case of systematic study. Following that situation, the student project „Archaeological Landscape of the Island of Ist – Archaeo.IST“ was initiated in 2020 with the aim of collecting qualitative and quantitative data for understanding how insularity affected human interactions in the landscape of small island at the edge of the Adriatic archipelago. The basis of landscape research was the application of extensive field survey followed by test excavations on chosen sites from different periods. Preliminary results provided the insight into dynamics of anthropogenic transformation of island landscape seen as a process considerably determined by scarce natural resources which presumably challenged the idea of permanent colonization. Archaeological records are mostly related to the late prehistoric periods, Bronze and Iron Age, a time when intensive land use occurred and the island proved to be an oasis of small community integrated into a broader network of interactions with nearby islands and short-distance land as a part of the Adriatic cosmos of coherence.

## 8 LET'S TALK ABOUT DEATH. SOCIAL CHANGES THROUGH THE STUDY OF FUNERARY ARCHITECTURE AT THE MINORCA ISLAND (6TH-2ND CENTURY BCE)

**Abstract author(s):** Carbonell Pastor, Sonia (University of Alicante)

**Abstract format:** Oral

Throughout the last century, periodization proposals flourished in relation to the prehistoric and protohistoric development of the Balearic Islands (Spain). These essays focused on the uniqueness of the Balearic archaeological record and thus assumed the exclusion of the islands from the rest of the socioeconomic dynamics that were taking place at that time in a much larger geographical space. This reductionist vision of treating an island as a delimited space, closed, and totally isolated in terms of contacts leads to biases and interpretive errors. Based on the theoretical principles of Social Archaeology, my study focuses on the funerary practices of the island of Menorca throughout the 1st millennium BCE with the aim of understanding how funerary activities were inserted into the productive framework of the specific Menorcan society. The study cases that we will present consist of a series of rock-cut tombs necropolis whose archaeological context is unknown to us as they have been looted since ancient times. As a result, our consideration starts from treating the "artificial caves" or rock-cut tombs as an object in itself, that is, as a result of a productive activity that is part of a certain social standardization. In this consideration, we tend to consider the socioeconomic context in which the Balearic Islands were inserted, especially the commercial contacts with Punic groups from the island of Ibiza.

## 9 SAME SPACE, DIFFERENT PEOPLE: RADIOCARBON DATES AND THE INDIVIDUALS FROM TWO DIFFERENT NECROPOLES FROM POLLENTIA (MALLORCA, BALEARIC ISLANDS)

**Abstract author(s):** Ordóñez, Alejandra (Universidad de Las Palmas de Gran Canaria) - Cau Ontiveros, Miguel Angel (Equip de Recerca Arqueològica i Arqueomètrica de la Universitat de Barcelona - ERAAUB, Institut d'Arqueologia de la Universitat de Barcelona - IAUB, Universitat de Barcelona - UB; ICREA; Chercheur associé, Aix-Marseille Univ, CNRS, Centre Camille Jullian, Aix-en-Provence) - Chávez Álvarez, Esther (Universidad de La Laguna) - Mas Florit, Catalina (Equip de Recerca Arqueològica i Arqueomètrica de la Universitat de Barcelona - ERAAUB, Institut d'Arqueologia de la Universitat de Barcelona - IAUB, Universitat de Barcelona - UB)

**Abstract format:** Oral

The archaeological site of Pollentia hosts remains from different periods of Mallorcan History, from the Romans up to medieval times. Its use, first as a city and later as a Necropolis, are evidence of the changes through time in the relationships between different populations and this insular landscape. Furthermore, the geographical emplacement of Mallorca, in the middle of the Mediterranean routes, has meant the presence of many different societies, all of which have left their cultural footprint reflected in the archaeological record.

The extent of the contributions of each new colonizer to the population as a whole is fundamental to assess their impact on the preexisting societies and to evaluate changes, permanences and mixtures over time. For this analysis, Radiocarbon dates and their precise interpretation are fundamental to understanding diachronic processes.

This research focuses on some of the remains from two burial sites excavated in Pollentia. The first one is the necropolis located above the Forum of the Roman city, with more than 300 inhumations. Recent Radiocarbon dates have provided chronologies that fall into the late Byzantine (534-902/903AD) and early Muslim period (902/903-1229AD). A chronology more recent than those previously proposed. Nevertheless, the inhumations follow the Christian ritual,

showing the persistence of Christianity long after the arrival of the Muslims. The second one is the Necropolis of Sta. Ana, with dates from the end of the Muslim period to after the Catalan Conquest (1229). We present the osteobiography of five individuals, three from the Forum Necropolis and two from Sta. Ana, to show differences and similarities in living conditions of populations from different chronological periods, but from the same environment. Thanks to the new chronological data, this diachronic analysis was possible, showing that Radiocarbon dating could provide valuable tools for historical analysis beyond traditional ones.

## 10 IDENTITY AND LONGUE DURÉE: REVISITING THE PREHISTORY OF MENORCA

**Abstract author(s):** Díaz-Zorita Bonilla, Marta (Eberhard Karls Universität Tübingen; SFB1070 "Ressourcenkulturen" Eberhard Karls Universität Tübingen) - Timm, Monice - Marciales, Mauricio (SFB1070 "Ressourcenkulturen" Eberhard Karls Universität Tübingen) - Baten, Jörg (Eberhard Karls Universität Tübingen) - Alarcón García, Eva - Moreno Onorato, Auxilio (University of Granada) - Escudero Carrillo, Javier (University of Granada; Eberhard Karls Universität Tübingen) - Arboledas Martínez, Luis (University of Granada)

**Abstract format:** Oral

The prehistory of Menorca is well-known for its monumental architecture and the vast amount of prehistoric sites throughout the island, but although many research has been carried out, there are still some missing links in the Menorcan past regarding their social organisation and funerary behaviour. Therefore, we present here some results from our recently excavated funerary cave located within the necropolis area of Cales Coves (Alaior). Since its discovery, the Biniadrís cave has provided exceptional all kind of well-preserved archaeological material. This represents a unique funerary context without any human disturbance for over 3000 years. In order to investigate identity and to reconstruct the social organisation of the population who inhabited Biniadrís during the Late Bronze Age and the Iron Age in Menorca, we have applied bioarchaeological methods in combination with state-of-the-art biomolecular analyses.

This paper discusses the latest bioarchaeological results like the radiocarbon chronology  $^{14}\text{C}$  to explore some concepts, such as the *longue durée* of this context with complex funerary behaviour in relation to the isolation but also connection towards the Mediterranean. Additional concepts such as island sustainability are also explored to better understand the husbandry management.

## 11 STEROIDS AND BILE ACIDS IN DUNG: BIOMOLECULAR APPROACH TO A RECENT INDIGENOUS FUMIER DEPOSIT IN LA PALMA (CANARY ISLANDS)

**Abstract author(s):** Fernández-Palacios, Enrique (UDI de Prehistoria, Arqueología e Historia Antigua, Departamento de Geografía e Historia, Facultad de Humanidades, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers - AMBI, Research Lab, Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna) - Jambrina-Enríquez, Margarita (Departamento de Biología Animal, Edafología y Geología, Facultad de Ciencias, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers - AMBI, Research Lab, Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna) - Égüez, Natalia (UDI de Prehistoria, Arqueología e Historia Antigua, Departamento de Geografía e Historia, Facultad de Humanidades, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers - AMBI, Research Lab, Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna) - Herrera-Herrera, Antonio (Archaeological Micromorphology and Biomarkers - AMBI, Research Lab, Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna; Departamento de Química, Facultad de Ciencias, Universidad de La Laguna) - Mallol, Carolina (UDI de Prehistoria, Arqueología e Historia Antigua, Departamento de Geografía e Historia, Facultad de Humanidades, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers - AMBI, Research Lab, Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna)

**Abstract format:** Oral

Lipid biomarker analysis focused on steroids has shown to have great potential for discriminating animal faecal input in archaeology, i.e., between human, pig and ruminant. This is particularly interesting when applied to stabling deposits to assess animal diet, herding strategies, and livestock composition. Here, we report preliminary results from a faecal biomarker study of sediment samples from Belmaco Cave, a pastoralist archaeological site (fumier) in La Palma (Canary Islands). The site was occupied by pastoralist communities over the course of five centuries prior to the first arrival of Europeans in the 15th Century. Previously obtained soil micromorphological data indicates livestock penning and periodic burning in the central area of the cave such that the stratigraphic sequence is made up of three recurrent, interstratified facies: 1) unburned sheep/goat dung, 2) charcoal-rich sediment, and 3) sheep/goat ash. We selected samples from each of these differentiated sedimentary facies, as well as a control sample, and performed faecal biomarker analysis focusing on sterols, stanols, and bile acids. Our preliminary data shed light on the origin of the faecal matter at the prehispanic pen, as well as on the effect of burning on archaeological sedimentary steroids.

12

## LIVING ON THE EDGE: LANDSCAPE, SUBSISTENCE, AND NETWORK DYNAMICS ON USTICA ISLAND (SICILY) DURING THE BRONZE AGE

**Abstract author(s):** Dawson, Helen (Università di Bologna; Freie Universität Berlin) - Mannino, Marcello (Aarhus University) - Spatafora, Francesca ("Polo di Palermo per i Parchi e i Musei Archeologici/Museo Archeologico A. Salinas")

**Abstract format:** Oral

This paper explores the dynamic interplay between prehistoric communities and landscape in the context of Ustica, a small volcanic island located at the heart of the central Mediterranean, some 50 km north of Palermo, Sicily. In particular, we present new data from recent excavations at the Bronze Age "Faraglioni" village (ca. 1400-1200 BC), including the results of stable isotope analysis conducted on animal remains, which allow us to offer a preliminary reconstruction of subsistence strategies and environmental conditions at the site. We also consider possible links between the Faraglioni village and contemporary sites, both on Ustica itself, Sicily, and the neighbouring Lipari islands, assessing the extent and role of cultural connections. Our ongoing research on Ustica sheds light on issues of isolation and connectivity, resource exploitation, place attachment and islander identity, focusing on this seemingly marginal island's occupation during a time of heightened interaction in the Mediterranean, and highlighting the challenges and solutions adopted by this Bronze Age community.

13

## THE WHO, WHY, AND WHEN. PEOPLING OF THE CANARY ISLANDS AND THE CHALLENGES OF ARCHAEOOMETRY

**Abstract author(s):** Cuello del Pozo, Paloma (Texas A&M University)

**Abstract format:** Oral

The debate of the peopling of the Canary Islands has continued since European explorers arrived at the region during the Age of Discovery. Indeed science, technology, and interdisciplinarity have provided archaeology with significant bodies of data contributing and bringing light to questions on insular occupation. Or do they? This paper examines some of the main postulations put forward in regard to island peopling with a focus on the Mediterranean landscape and how these frameworks translate to the Canarian case. With archaeometry taking precedence in the hypothetico-deductive approach of archaeological research, theoretical models that help make sense of overwhelming bodies of quantitative results need not to be left behind. Stable isotope analyses, radiocarbon measurements, and paleogenetics are helpful and necessary tools to understand ancient human activities. In the Canary Islands, these methods are being refined and increasingly applied every year; however, the prevailing questions of who, why, and when did the archipelago become first occupied are still standing. Canarian archaeology has gathered considerable quantitative bodies of data from radiocarbon measurements and ancient DNA (aDNA); yet processes of occupation, and social network systems generally modelled for island chains are still fully unidentified. The decontextualized nature of the archaeological landscape in the Canaries, and a lack of consensus surrounding radiocarbon dates are some of the circumstances contributing to heated debates among local scholars. In this communication, the author reviews most current literature on aDNA for the Canary Islands considering the diversified and dynamic interactions that gave rise to Iron Age civilizations. Furthermore, this paper discusses Canary Islands settlement theorems, the chronological evidence used for such arguments, and how such postulations align with current literature on island colonization. Finally, the author presents a modest perspective on such controversies aided by preliminary stable isotopic data.

14

## THE PEOPLING OF THE CANARY ISLANDS FROM A PALEOGENOMIC PERSPECTIVE

**Abstract author(s):** Serrano, Javier (Universidad de La Laguna) - Ordóñez, Alejandra - Santana, Jonathan (Universidad de Las Palmas de Gran Canaria) - Arnay, Matilde - Fregel, Rosa (Universidad de La Laguna)

**Abstract format:** Oral

A North African origin for the indigenous population of the Canary Islands has been determined thanks to the contribution of multidisciplinary research, including the analysis of ancient DNA. Although most of the research interest has been centred on determining their exact geographic origin, the analysis of the Canarian indigenous population also offers a unique opportunity to understand how human populations are affected by isolation, migration and/or adaptation to a new environment. In order to understand the colonization process and evolution of the indigenous people of the Canary Islands, we obtained nine indigenous low-coverage genomes and genome-wide data from 36 additional individuals. Comparisons between islands indicate that the genetic composition of the indigenous populations was variable, with some populations showing the effects of strong genetic drift processes. This result implies that, after the peopling of the archipelago, every island experienced their own evolutionary path, determined by the environmental conditions and the limitations of insularity. The islands with greater resources were able to maintain relatively high population sizes, while strong genetic drift processes affected the smaller islands. We also detected differences in the genetic composition of eastern and western islands, reinforcing the idea of a heterogeneous colonization process in the archipelago.

15

## PALEOGENOMIC ASSESSMENT OF THE IMPACT OF THE EUROPEAN COLONIALISM ON INDIGENOUS POPULATIONS: THE CANARY ISLANDS AS A PROXY

**Abstract author(s):** Fregel, Rosa - Díaz-Pérez, Clara (Universidad de La Laguna) - Ordóñez, Alejandra (Universidad de Las Palmas de Gran Canaria) - Serrano, Javier (Universidad de La Laguna)

**Abstract format:** Oral

The Age of Discovery (13th - 14th centuries) and the subsequent establishment of European colonies across the world triggered the European dominance of the global economy. It also had important cultural and ecological consequences, because for the first time it brought together distant civilizations and environments. Historically, island ecosystems have been used as natural laboratories to address the study of ecological processes and speciation. In the same vein, islands can be used to understand the impact of complex migratory movements, such as those derived from European colonialism. The current population of the Canary Islands is the result of the admixture of the indigenous people of North African origin and European colonizers, but it is also influenced by additional migratory flows due to the importation of African slaves for sugar cane cultivation or to the intense commercial contact with the American continent. Given the complexity of these admixture processes, the ancient DNA analysis of historical sites of the Canary Islands is crucial to understand how the genetic composition of the human populations changed over time. In this presentation we will review how the paleogenomic analysis of historical sites in the Canary Islands is shedding light on the complex demography of this region.

16

## CHALLENGING ISLAND ARCHAEOLOGY WITH THE THIRD SCIENCE REVOLUTION: NEW DATA FROM THE TWO LIMESTONE ISLANDS OF MALTA AND LISMORE.

**Abstract author(s):** Stoddart, Simon (University of Cambridge) - Ariano, Bruno - Bradley, Daniel (Trinity College Dublin) - Cologne, Anders (University of Cambridge) - Esposito, Carmen (Cardiff University) - Kaljee, Colin (University of Cambridge) - Madgwick, Richard (Cardiff University) - McLaughlin, Rowan (Queen's Belfast) - Nafplioti, Argyro (Independent) - Reimer, Paula (Queen's Belfast)

**Abstract format:** Oral

Recent analysis has been undertaken of materials from two limestone islands, one in the southern Mediterranean, the other on the western flank of Scotland: respectively Malta and Lismore. These two very different examples, contrasting in chronology and distance from their mainlands, raise a range of interesting questions about island archaeology in the light of scientific work, principally using radiocarbon, isotopes and aDNA. The Maltese data are primarily from human remains dating to the fourth and third millennia BC. The Scottish data are primarily from animal remains dating to the late first millennium BC and the early first millennium AD. The Maltese archipelago is some 80km from its nearest mainland of Sicily, itself an island which contains similar geology. Lismore is a mere kilometre from its nearest mainland, albeit across a tidal race and an area of potentially contrasting geology. Both have been placed in their chronological context by substantial radiocarbon modelling and have been subjected to recent isotopic analysis. In the case of Malta this has been supplemented by work on aDNA. We debate the underlying qualitative and quantitative issues, some first raised over ten years ago by one of us in Prince Edward Island at the Institute of Island Studies and at the Dublin World Archaeological Congress with a similar comparison of these two islands focused on risk, identity and connectivity, by combining old and new data, seeking to address weaknesses and strengths of our current knowledge and methodology, and pointing to ways forward in future research.

17

## FUNERARY RITUALS AND MOBILITY ON A SMALL MEDITERRANEAN ISLAND. THE CASE OF USTICA (SICILY, ITALY) DURING THE NEOLITHIC

**Abstract author(s):** Speciale, Claudia (Gothenburg University) - Arienzo, Ilenia (National Institute of Geophysics and Volcanology, Naples) - Micciché, Roberto (University of Palermo) - Prillo, Vito (University of Padua) - Battaglia, Giuseppina (Cultural Heritage Department, Palermo) - Larosa, Nunzia (UNE - University of New England, Armidale) - de Vita, Sandro (National Institute of Geophysics and Volcanology, Naples) - Rickards, Olga - De Angelis, Flavio (UniRoma 2, Tor Vergata, Rome)

**Abstract format:** Oral

Ustica is a small volcanic island, 60 km away from the Northern coast of Sicily. The new investigations of the first human colonization, happened in the mid-5th millennium BCE, allow to give light to the way these communities were organized and used local and imported resources. The megalithic funerary structure, present in the area of Piano dei Cardoni, on the southern coast of the island, preserves the secondary depositions of multiple individuals and was used for a span of several generations. The combined  $87\text{Sr}/86\text{Sr}$  and DNA analyses are giving deeper information on the mobility during these phases, including animal resources. The archaeological context was analyzed also in terms of mobility of raw resources and the results of the comparison of these data is here presented. A wider insight on mobility during the same phases is given to understand how Ustica is located in the Central Mediterranean network during the Middle and Late Neolithic.

## A. MITOGENOMIC ANALYSIS OF THE DOMESTIC ABORIGINAL SPECIES OF THE CANARY ISLANDS

**Abstract author(s):** Díaz Pérez, Clara (Universidad de La Laguna) - Ordoñez, Alejandra (Universidad de Las Palmas de Gran Canaria) - Serrano, Javier - Vacas-Fumero, Emilio - Fregel, Rosa (Universidad de La Laguna)

**Abstract format:** Poster

Genetic analysis on the origin of the indigenous people of the Canary Islands has been mainly approached focusing on human populations. However, the study of their domestic fauna has received less attention. In this study, we use for the first time next-generation sequencing and enrichment technologies to analyze indigenous Canarian domesticates (goats, sheep and pigs). Conservation of faunal endogenous DNA is good, finding differences between species, but not between types of samples (bone vs. teeth). Enrichment techniques produced high-quality data, even for poorly conserved samples. We were able to obtain complete mitochondrial genomes for all species and carry out a more in-detail phylogenetic study of goats. All goat samples belong to clade A, a haplogroup that is widespread in Eurasia. Lineages similar to those of the ancient samples from the Canary Islands have been observed in North Africa, in Europe, and in the Near East, confirming that they belong to sub-haplogroups of clade A with a wide distribution around the Mediterranean basin.

---

## 417 AS FAR AS VASES GO: STUDIES ON ANCIENT GREEK POTTERY TRADE AND ITS CONTEXTS

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Gares-Molero, Alejandro (University of Valencia) - Rodriguez-Perez, Diana (University of Oxford) - Diez-Castillo, Agustin (University of Valencia)

**Format:** Regular session

This session aims at analyzing and shedding light on the role of trade, distribution and (re)contextualization for research on Greek pottery (Early Iron Age - Hellenistic period). The first Greek wares to be ever studied came from Italian soil, and, since then, these ceramic productions have been documented in as distant regions as present-day Galicia, the British Isles or the Crimean Peninsula. Scholarship has shown that this dispersion of materials seems to unveil large-scale trade dynamics, which would be effective thanks to the role played by numerous agents: well-based ceramic industries, dynamic markets, and consistent maritime and terrestrial commercial networks. As a result of these overseas enterprises, Greek pots became part of the material culture of different autonomous societies, which sometimes implied changes in the significance, functionality and value of these objects. Hence, this session calls for communications that contribute to the study of ancient Greek pottery outside its production area by addressing one or various of the previously mentioned aspects. Special attention will be paid to those proposals which either 1) focus on commercial contexts (i.e. ports and shipwrecks); 2) analyze the presence and distribution of Greek imports in a given area; 3) define trade routes of specific series or productions; 4) explore the resignification of Greek pots among non-Hellenic peoples and contexts (i.e. Etruscans, Iberians or Scythians).

The session is sponsored by El Sec Shipwreck Re-excavation Project (University of Valencia).

## ABSTRACTS

### 1 RELIEF WARES IN THE ARCHAIC MEDITERRANEAN: A TRANSCULTURAL AND DECENTRALIZED NETWORK

**Abstract author(s):** Ward, Andrew (Indiana University)

**Abstract format:** Oral

While generally understudied compared to painted fine wares, pottery decorated with impressed relief decoration offers a unique opportunity to understand the complex networks of exchange and adaptation that connected the Archaic Mediterranean world (700-480 BCE). A particular style of continuous figural relief, impressed onto large ceramic forms like lustral basins with cylinder rollers, is attested archaeologically across a number of non-contiguous regions during the sixth century BCE. Past scholarship has tended to see these regional traditions, in places like Ionia, the north Aegean, western Sicily, and Etruria, as originating in Archaic Corinth, the style's diffusion framed in terms of a center-periphery model of exchange and cultural adaptation.

The results of a multiyear project funded by the American Council of Overseas Research Centers reveals instead that this and other styles of Archaic relief wares followed a more decentralized system of exchange, their uneven attestation across the Mediterranean best explained by the itinerancy of craftspeople and the importance of existing demand in local communities. Rather than evidence of Hellenization when discovered in Etruscan, Phoenician, and other non-Greek communities, contextual analysis reveals that Greek relief wares proved popular where they could be adapted to conform to traditional ritual practices. Rather than evidence for Hellenization or Globalizing processes, the spread of Archaic relief wares across the Mediterranean demonstrates the adaptability and transcultural

tural resonances of figural ceramics, and the ingenuity of Greek traders and craftspeople in finding new markets for their wares.

## 2 IMAGINED CREATURES AND THEIR TRAVELS: ARCHAIC VASES AS ENACTORS OF GEOGRAPHIES

**Abstract author(s):** Neill, Liz (Boston University)

**Abstract format:** Oral

Imagined creatures, and the real vases that carried them to various parts of the Archaic world, served as enactors of overlapping geographies. Certain creatures (i.e., the Lernean Hydra), though not physically real, were alive in the Archaic imagination and inherently tied to a real place. Others (i.e., griffins or sea monsters) connoted non-Hellenic or transitory locations – defined by their dangerousness and non-Hellenicness in opposition to a Greek center. But what happened when the vases carrying these creatures traveled outside of that “center”?

The high level of invention and artistic choice in crafting imagined creatures, the productive interplay between the physical geography of production and use sites and the imagined Archaic geographies of creatures, and the range of provenance(s) all establish imagined creatures as a fruitful corpus for a geographically-based study. This case study will map both locations recognizable today (production sites, the earliest provenanced appearances of selected creatures on vases, findspots) and “imagined” locations (those enacted by ancient artists’ and storytellers’ depictions of creatures of the oikoumene).

I will focus on excavated creature vases, examining the physical presence of creature vases as Archaic commodities and delving into regional trends in findspots. I will juxtapose these geographical contexts (far from their original sites of production) with literary evidence, interrogating whether these ancient findspots and the distribution of Greek imports correlate with, respond to, or push back against literary descriptions and perceived geographies of imagined creatures. I will conclude by highlighting how these vases served as enactors of geography and introducing future possibilities for mapping the creature corpus.

## 3 THE CHANGE IN THE ROUTES OF ATTIC POTTERY IN THREE CENTURY OF ITS PRODUCTION

**Abstract author(s):** Giudice, Filippo (University of Catania) - Zisa, Flavia (Università Kore di Enna)

**Abstract format:** Oral

The production of figured Attic pottery covers roughly three centuries (from the last quarter of the sixth century to the end of the fourth century BC). Already in the last quarter of the sixth century BC, and even more so in the first quarter of the sixth century, thanks to Solon’s prudent policy aimed at favoring handicraft activities, Attic pottery reached Egypt (Naucrati in particular), Libya (Tocra) and timidly Sicily. Gradually, subsequently mainly under Cimon, and partially under Pericles, exports to external markets increased.

The defeat of Egospotami marks a clear ceasura in the production and export of Attic pottery. The defeat of the Athenian army in Lamia and the occupation of Piraeus by the Macedonian army gradually close the production and export of Attic pottery.

Only a decade later, when Konon returned to Athens to put the structures of Piraeus back on their feet, the ceramic industry resumed production and distribution on a large scale in external markets, towards the Black Sea area, towards the Po Valley and toward the Iberian area.

## 4 LONG DISTANCE TRADE NETWORKS AND IONIAN-INSPIRATIONS IN THE WORKSHOP OF AMASIS

**Abstract author(s):** Attout, Antoine (Université Libre de Bruxelles)

**Abstract format:** Oral

In the context of the session “As Far as Vases Go” I would like to shed new light the controversial link between the workshop of Amasis and Ionia by integrating an examination of the distribution of the vases produced by the Amasis workshop and their archaeological contexts.

For a long time, the question of the link between Ionia and the workshop of Amasis has been widely discussed with highly debatable or unfounded arguments. Today, a much better knowledge of the East Greek pottery allows to identify a series of truly Ionian-inspired elements on several vases from the Workshop of Amasis. Naturally, these elements raise questions about the role played by the workshop of Amasis in athenian pottery. The distribution of these vases and their archaeological contexts bring an new angle to the problem and probably offers a first part of the answer.

First of all, most vases of the workshop of Amasis are concentrated in a few very specific sites such as Naucratis, Miletus, Samos and Gravisca. These sites include sanctuaries where the Ionians systematically play a preponderant role throughout the 6th century and operate as communication nodes in a vast network of exchange involving Ionian merchants. Interestingly enough, some vases attributed to Amasis bear a votive inscription clearly connected with this Ionian long trade network.

This distribution and contexts suggest that the Workshop of Amasis supplied decorated vases to a network of travelers, probably Ionians themselves if not in close contact with Ionian circles, who disseminated its productions throughout the Mediterranean and especially in sanctuaries settled near important ports of long distance trade where the Ionians played a predominant role. It therefore seems clear that the Amasis workshop integrated a series of Ionian elements into its production in order to meet the particular demands of this network.

## 5 (RE)DEFINING THE TRADE ROUTES AND THE DISTRIBUTION PATTERNS OF A SIGNIFICANT ATTIC POTTERY WORKSHOP OF THE LATE ARCHAIC PERIOD

**Abstract author(s):** Kathariou, Kleopatra (University of Ioannina, Greece)

**Abstract format:** Oral

The Euphiletos Painter was one of the most prolific painters of Panathenaic amphorae, active in the last third of the 6th century BC. There are also reported neck-amphorae of standard type and a few amphorae of type A and B by his hand, as well as hydriae of standard shape, a few oinochoai and two plaques from the Athenian Acropolis.

Since Beazley's times the number of vases attributed to his hand has increased, and many more additions have been made possible. Interestingly, there is a considerable number of vases painted by his hand with known provenance. Therefore, it was a real challenge to try to reconstruct the commercial network of the particular pottery workshop and to define the different routes that the cargo ships followed.

The most dense and easy to follow network was the one to the Western part of the Mediterranean. Unexpectedly, we were able to locate fragments of vases by the Euphiletos Painter among the material that came to light in the 1930's in the excavations held by W. Lamb in the ancient city of Antissa on the island of Lesbos as well as among the finds from the old excavations of the Italian Archaeological School on the archaeological site of Hephaestia on the Lemnos' Island. In this way, it was made possible to trace a new commercial route that the traders carrying vases of the Euphiletos Painter's Workshop followed, towards the Aegean Islands and the East.

Furthermore, issues related to the customers' preferences that differed from region to region were examined as well as the role of the traders in the choice of vase shapes and their decorative themes.

## 6 AS FAR AS ATTIC VASES GO: STUDYING THE PRESENCE OF ATHENIAN KERAMEIKOS IN ANCIENT THRACE

**Abstract author(s):** Tsiadaki, Despoina - Mourthos, Ioannis - Michailidou, Natasa - Karta, Meliana (Culture & Creative Industries Dpt, Athena Research Center, Xanthi Branch)

**Abstract format:** Oral

Attic Pottery in Thrace (AtticPOT) is a three-years program of the ILSP/ATHENA RC studying the Attic pottery found in the vast geographical area known as ancient Thrace, now divided among many Balkan countries. The whole project revolves around a digital repository (AtticPOT repo), where published Attic pottery is recorded. Being a product of an interdisciplinary team of researchers, it transcends the boundaries of modern nation-states (Greece, Turkey, Bulgaria, Romania).

The purpose of this paper is, based on the accumulated in the AtticPOT material, to record the general distribution of numerous Attic vases scattered around various sites of ancient Thrace, as well as to examine them using a variety of variables. Preferences on shapes and iconography will be seen within their contexts. The contribution of specific painters of Athenian Kerameikos will be measured. Another issue that will be explored is the relationship between pots, their contexts and the more than 200 sites of ancient Thrace where Attic pottery was found, according to the AtticPOT repository. Tracing axes through which Attic pottery infiltrated inland Thrace will allow us to discuss if we can also trace ancient routes. Finally, pottery's contribution to practices and representations concerning complex social phenomena, will enable the exploration of the contribution of Attic pottery on the formation and transmission of various aspects of social memory of both Greek colonists and locals within broad geographic areas.

## 7 IMPORTATION AND FUNCTION OF ATTIC RED-FIGURE POTTERY IN RUVO DI PUGLIA IN THE LATE 5TH AND EARLY 4TH CENTURIES B.C.

**Abstract author(s):** Giudice, Elvia (University of Catania) - Giudice, Giada (Munich University, Gerda Henkel Stiftung)

**Abstract format:** Oral

Within the framework of the theme "As Far as Vases Go: Studies on Ancient Greek Pottery Trade and its Contexts" we would like to focus our attention on the imports of red-figure Attic pottery in Ruvo di Puglia, an indigenous site of Peucezia, in the last decade of the 5th and the beginning of the 4th century BC. If, in fact, it may be considered an established fact that there was a strong decrease in the export of figured Attic pottery from around 420 BC in all Magna Graecia and Sicily, an exception seems to be represented by Ruvo di Puglia, where the quantity of imported pottery, in contrast, seems not only to increase in the last quarter of the 5th and, even more so, in the first quarter of

the 4th century BC, but document a direct link between the Athenian Kerameikos (or at least the trademen) and the Peucetian city. The significant number of vases is an indication of the phenomenon, including the kantharoi (a special native Peucetian shape) of the Class and Group Bonn 94A, the rhyta and the figure vases of different shapes of the W Class and Persian Class, the askoi and the several cups, almost all of the stemless type, which have not yet been compared in any other site of Magna Graecia, but also of Tyrrhenian Etruria and along the mid and high Adriatic coast. Our aim is to investigate the reasons for this trade trend and to explain the function of Attic imports in the reconstructed contexts.

## 8 A WOMAN'S SHAPE? GREEK VASES AND LOCAL IDENTITIES IN CENTRAL APULIAN TOMBS

**Abstract author(s):** Peruzzi, Bice (Rutgers State University of New Jersey)

**Abstract format:** Oral

The increasing use of osteological analysis in Mediterranean archaeology in the last few decades has shown the pitfalls of gendering burials on the basis of their grave assemblages. Yet, the association of specific artifacts or types of pottery with male or female tombs still persists in scholarship. This paper analyzes the presence of traditionally "feminine" Greek pottery shapes in Central Apulian tombs as means to investigate the relationship between the consumption of specific objects and the construction of identity in antiquity.

Central Apulia was inhabited by a non-Greek population, conventionally known as the Peucetians. Between the 6th and the 3rd century BCE, Peucetian tombs were furnished with assemblages that included large quantities of Greek vases, imported from Attica or from the nearby colonies of Taranto and Metaponto. Traditionally, these imports have been seen through the lenses of hellenization; yet, the study of the necropoleis shows that the Peucetians were using Greek vases very differently from their Athenian contemporaries. This is illustrated, for example, by the presence of sympotic sets in female tombs, or of vessels traditionally connected with the "female sphere" (e.g., kalathoi, hydriai, lekanides) in male ones.

Adopting a context-based approach, my paper discusses how these "women" shapes" were appropriated by the local populations and imbued of new meanings, to reflect the complex nexus of personal, social, and cultural identities that the deceased had maintained in life. As tombs remains our largest source of emic information for Central Apulia, a more nuanced reading of this pottery provides an important step toward a deeper understanding of Peucetian society.

## 9 ATTIC POTTERY IN UNPUBLISHED CONTEXTS OF THE NECROPOLIS OF VALLE PEGA IN SPINA

**Abstract author(s):** Vendrell Cabanillas, David (Autonomous University of Madrid)

**Abstract format:** Oral

At present, the Etruscan necropolis of Valle Pega in Spina (in the currently Italian city of Comacchio) remains practically unpublished. The excavation journals deposited in the National Archaeological Museum of Ferrara (Emilia Romagna, Italy) allow a preliminary study of the burial goods of almost 2700 graves that cover a chronology spanning from the middle of the 5th century to the end of the 2nd century BC. Among its notable graves are the tombs 323B and 30C, which are two female burials from the end of the 5th century BC. Their rich assemblages suggest that these graves belonged to two spinetic women of high socioeconomic status. They were not only buried in a necropolis characterized by presenting a higher level of wealth than that of the Valle Trebba necropolis, but they were also accompanied (for their journey to the afterlife) by previously selected funerary material (Attic and local) previously selected that perhaps may respond to a local burial funerary ritual. Furthermore, in both tombs there is an Attic red-figure column krater representing a female bathing scene, respectively; a visual theme uncommon in Spina's figurative repertoire, but whose interpretation would easily adapt to spinetic funerary ideology. Therefore, our speech proposal is to present an archaeological and iconographic analysis of the grave goods of these tombs with the objective aim of i), on the one hand, identifying and defining existing commercial and distribution patterns between continental Greece and Padan Etruria and, on the other hand, ii) understanding their own ideological and identity discourses.

## 10 THE REACH OF AN ATTIC WORKSHOP: TRADING HAIMONIAN VASES IN THE WESTERN MEDITERRANEAN

**Abstract author(s):** Gares Molero, Alejandro (Universitat de València) - Chidioglou, Maria (National Archaeological Museum of Athens) - Macian Fuster, Alejandra (Universitat de València)

**Abstract format:** Oral

Originally characterized by professors C. H. E. Haspels and J. D. Beazley, the Haimon Group constitutes one of the latest but most prolific Attic Black-Figure productions. The vases of this workshop have been widely documented across the Mediterranean basin, especially, in peripheral territories. Nonetheless, there are few studies centered on the commercialization of these products in distant areas. This paper discusses the presence and trade dynamics of the vases attributed to the Haimon Group in the Western Mediterranean.



The complete process of production, commercialization and consumption in the West of these ceramics is studied. To this end, we characterize the Haimonian series, contrasting established attributions on artistic grounds with the archeological record of its production center, Athens. In this way, we identify production groups and phases. Secondly, we analyze the vase-trading process itself, establishing supply routes and areas. For this purpose, we follow series distribution in western territories and consider both relevant archeological contexts (i.e. coetaneous shipwrecks) and pan-Mediterranean trade dynamics. The reception process is also considered, as we distinguish consumption patterns and demand indexes of Haimonian series, shapes and iconographies among different cultural –and commercial– areas.

The exposed study has revealed significant results that will be presented in this paper: 1) the vases of the Haimon workshop were traded in serial groups as they tended to be conjunctly used in western territories; 2) There existed a demand for specific shapes depending on reception areas (market-driven production hypothesis); 3) local buyers showed a particular interest in Haimonian figural programs, using them to construct various social and identity discourses.

## 11 SETTING CORINTHIAN AMPHORAE IN THE WESTERN MEDITERRANEAN: PRODUCTION, TRADE(S), AND DISTRIBUTION ROUTES

**Abstract author(s):** Sanchez Conde, Francisco Javier (Universidad de Salamanca) - Gutierrez Soto, Itziar (Universidad de Alcalá) - Gares Molero, Alejandro (Universitat de Valencia)

**Abstract format:** Oral

Amphorae of Corinthian type are one of the main indicators of Greek pottery trade in the Western Mediterranean between the 7th and the 4th century BCE. This typology of transport vessels was initially studied by Dr C. G. Koehler, who elaborated a compelling classification and defined Corinth as the main production centre. Later literature has provided new insight, for example, defining Western production places. Despite these facts, studies on the commercialization of these series are not frequent.

This paper discusses the trade of Corinthian transport amphorae in the Western Mediterranean. To this end, in the first place, we characterize the studied material based on archaeometrical features (i.e. paste composition and shape). Thus, we establish clear production series. Secondly, the distribution of Corinthian amphorae in the Western Mediterranean is analyzed using GIS software. Patterns and material concentrations are defined. Lastly, specific archaeological contexts are taken into account, especially those of commercial nature (i.e. storage spaces, shipwrecks and ports).

In this way, this study contributes to defining the production and trade of amphorae of Corinthian type in the Western Mediterranean. As a result, we have been able to successfully define the commercial routes (maritime, fluvial and terrestrial), Western distribution points and the transport and reception processes of this material in the study area. Apart from that, the driven analysis has allowed us to both sequence chronologies for different production phases and define the associated material these amphorae were traded with (i.e. specific types of Attic fine ware).

## 12 DISTRIBUTION OF GREEK POTTERY IN THE WESTERN MEDITERRANEAN DURING THE SECOND HALF OF 6TH CENTURY BC: NEW EVIDENCE FROM EMPORION

**Abstract author(s):** Santos Retolaza, Marta - Castanyer Masoliver, Pere - Tremoleda Trilla, Joaquim (MAC Empúries)

**Abstract format:** Oral

Recent excavations in the Phocaeen port enclave of Emporion (Empúries) are providing a significant volume of ceramic assemblages corresponding to the initial stage of the nucleus of the so-called "Neapolis" during the second half of the 6th century BC. Complementing the results of the excavations carried out previously in the first archaic establishment of the Palaiapolis (Sant Martí d'Empúries), the study of the archaeological contexts corresponding to the later implantation of the new colonial nucleus to the south of the natural port allows us to characterize the different categories of Greek ceramics that compose them: different productions of Western Greek tableware, made locally or imported from Massalia, as well as other categories of imported Greek pottery, fundamentally originating from Magna Graecia and from Attic workshops.

Considering also the remarkable variety of amphorae categories, of Iberian, Greek, Etruscan and Phoenician-Punic origin, these ceramic assemblages are also a proof of the deployment of Phocaeen maritime trade on the Mediterranean coast of the Iberian Peninsula from the last third of the 6th century, in which the role of the Emporion port enclave was essential. In the same chronological context, the Greek shipwreck of Cala Sant Vicenç, at the north-eastern coast of the island of Mallorca, also constitutes a valuable testimony of the mechanisms and strategies of Greek commercial navigation and of the distribution of Greek pottery and amphorae during the Late Archaic period.

### 13 **ATTIC POTTERY IN IBERIA (LATE 5TH-4TH CENTURY BC): THE LONG PATH FROM PRODUCER TO CONSUMER**

**Abstract author(s):** Dominguez, Adolfo (Universidad Autonoma de Madrid)

**Abstract format:** Oral

The arrival of Greek products to the Iberian Peninsula has always been shrouded in controversy from the very beginning of their presence, since it has been considered almost an undisputed fact that they arrived in Iberia as part of the cargoes of Phoenician ships, even though today, and thanks to archaeological finds in some sites such as Huelva in the 6th century BC, some (but not all) have begun to be convinced of the reality of Greek trade with Iberia at that time.

However, when we look at other historical phases, such as the one we want to analyse here (late 5th-4th century BC), the debate about distribution mechanisms and who was in charge of them is once again reproduced. The weight of ideas formulated in the past, sometimes based on a weak evidence and a view of distribution mechanisms that is not free of prejudice, has led to the widely held idea that the marketing of Attic ceramics during this period was in the hands of "Punic" traders, although it is not always clear who these "Punics" were (Carthage?, Ibiza?, Gadir?). On the other hand, the possible involvement of Greek agents in their distribution is downplayed because it is concluded (without decisive arguments) that the role of the main Greek centre in Iberia, Emporion, has been overshadowed by that of other agents.

In this paper we intend to explore the different data available to us (and, among them, the wreck of El Sec plays a fundamental role) to revisit the issue of who transported Attic ceramics from their place of production to their recipients in the Iberian Peninsula.

### 14 **WAVES OF IMPORTS IN A DISTANT TERRITORY, THE IBERIAN EDETANIA: ATTIC SUPPLY, TRADING ROUTES AND LOCAL MARKETS**

**Abstract author(s):** Macián Fuster, Alejandra - Garés Molero, Alejandro (Universitat de València)

**Abstract format:** Oral

During the last decades, relevant studies on the presence of Greek imports in the Western Mediterranean have been published. However, few works focus on the trading process of these imports in specific socio-political areas. This paper examines the commercialization of Attic pottery in Edetania, a protohistoric Iberian territory defined by the rivers Millars and Xuquer (present-day València and Castelló provinces). From mid-6th to late 4th century BCE, Attic ceramic imports were introduced to the Edetanian territory via maritime trade by exogenous agents, first Greek, later Punic. These traded goods reached indigenous ports, such as Grau Vell (Arse - Saguntum), and, from there, they entered into inner commercial circuits controlled by Iberian oppida. Edetanian commercial circuits for Attic pottery are yet to be established. Defining these -outer and inner- trade dynamics is the central focus of our study.

To this end, we analyze the Attic ceramic record documented in the study area. Both published and unpublished materials are considered. Aspects such as vase dating, functionality, technique and, most importantly, production, are taken into account and used to establish series. In the second place, obtained data are evaluated in context: spatially, series dispersion and concentration are estimated in relation to geopolitical features (i.e. coast proximity and territorial organization). Chronologically, importation phases are considered. The co-existence of the given series onsite is also tested.

As a result, the trading process of Attic pottery in the Edetanian region is unveiled. Three waves of imports are established, with clear trading lots and groups. Ports of entry and both terrestrial and coastal distribution routes are also outlined. Eventually, this study has allowed us to prove the existence of different commercial circuits for Attic vases inside Edetania that may correspond to distinct local markets with their specific consumption patterns.

### 15 **TO BE OR NOT TO BE. THE DIALOG BETWEEN GREEK VESSELS AND IBERIAN POTTERY IMITATIONS IN THE UPPER GUADALQUIVIR (SPAIN)**

**Abstract author(s):** Moreno Padilla, María Isabel (Instituto de Investigación en Arqueología Ibérica. Universidad de Jaén)

**Abstract format:** Oral

The main objective of this proposal is to review certain contexts and material assemblages of the Iberian societies of the Western Mediterranean during the fourth century BC. Specifically, it focuses on an aspect barely studied in Iberian Archaeology: the dialogue established between Greek potteries and its Iberian imitations in the Upper Guadalquivir. In this territorial area, the entry of Greek products and their association with the Iberian elites generated a profound change in the production models of Iberian pottery. This change was accompanied by a growing specialization of pottery production to cover a demand for products that, with greater or lesser fidelity to the original model, imitate Greek forms or adopt certain characteristic elements of them. The duality established between the original model and the copy acquires, in the Iberian world of Alto Guadalquivir, some interesting perspectives for reflec-

tion. The analysis of necropolises such as Baza (Granada), Castellones de Céal (Hinojares, Jaén) and Toya (Peal de Becerro, Jaén), together with the review of krater imitations such as that of Atalayuelas (Fuerte del Rey, Jaén), show interesting relationships between the imported form/image and the local form/image. Both, the Greek vases and the Iberian imitations, complement each other and are part of the ideological mechanisms linked to power. In the case of Greek vases, the iconographic re-reading of their themes becomes an essential element of Iberian aristocratic mythology. Regarding Iberian pottery imitations, the formal and iconographic ellipsis that is established encourages new forms of social status representation. In these cases, while the pottery forms underline the social difference, the geometric decoration- characteristic of the Iberian area- shows the need to establish symbolic links between the elite and the rest of society.

## 16 **A LANDLOCKED EMPORION. AN UPDATE OF THE DISTRIBUTION OF GREEK POTTERY IN THE MIDDLE VALLEY OF GUADIANA RIVER**

**Abstract author(s):** Pulido, Guiomar (Universidad Autónoma de Madrid) - Miguel-Naranjo, Pedro - Rodríguez González, Esther (Instituto de Arqueología de Mérida-CSIC)

**Abstract format:** Oral

Previous research has shown that the Middle Valley of Guadiana river, situated in the inland territory of the Iberian Peninsula, was a consolidated point of attraction and distribution of the Mediterranean commercial circuits during the Protohistoric period. Thereby, the Mediterranean trade routes linked the Greek world to the Iberian Peninsula following diverse courses through the eastern coast of the peninsula and the western coast across the Strait of Gibraltar. Despite its remote location from the coast, the findings of Greek pottery have continued to occur in Guadiana's sites, as part of a trade activity process which takes place between the beginning of the sixth century B.C.E. and the end of the fourth century B.C.E. when Attic vases stop appearing. This meant as well the standstill of the connections with the agents who provided those imported materials from the harbours and a change in the contact networks between the diverse areas.

Our investigation is inserted in that chronological and spatial frame, attempting to supply an update of the Greek pottery catalogue, most of them come from Attic workshops, found in the zone. This labour will consist in adding the last findings to the rest of the Greek vases already documented, along with a description of their archaeological contexts. The ultimate goal is to determine the concentration of the Greek imported material in order to define its spread patterns in the Middle Valley of Guadiana river during the sequence between the beginning of the sixth century B.C.E. and the end of the fourth century B.C.E.

Thanks to that, we will be able to reconstruct the changes which happened in the trade networks referring to both the trade routes and the arrived vases shapes, based on the demand, the product's availability and the dynamism of the commercial activity.

## 17 **SAILING FROM THE ATTIC PORTS TO THE COAST OF OPHIUSSIA. THE TRADE ROUTES OF ATTIC VASES TO THE WESTERN HESPERIDES**

**Abstract author(s):** Morais, Rui - Ferreira, Daniela (Faculty of Arts and Humanities of University of Porto) - Mauro, Chiara (Complutense University of Madrid)

**Abstract format:** Oral

Between the end of the 7th and the 4th cent. BC, Greek pottery—mainly Attic—reached the Iberian Peninsula, eventually arriving at settlements located in what is currently Portuguese territory. This paper aims at reconstructing the travel of these pots from its very beginning (i.e., the ports of departure) up to their final destinations. In particular, it will analyze from what ports the pottery was possibly shipped, what routes it followed and how, when and where it was introduced into the local realities. The shipped products are not the result of a direct trade between ports but rather the result of the redistribution of products among different ports trying to obtain the best benefits. In the current Portuguese territory, the impact of the commercial presence of the Phoenicians and the Greeks in the first Iron Age societies was felt in a scenario characteristic of societies in transition. The arrival of these goods, their acceptance and reappraisal varied according to both each community and the space-time coordinates.

---

## 419 **USING FORENSIC ARCHAEOLOGICAL APPROACHES TO INFORM THE PAST**

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Fry, Megan (University of Florida, Department of Anthropology) - Welty, S. (University College London, Institute of Archaeology) - McCrane, Samantha (University of Florida, Department of Anthropology) - Andersson, Karina (University College London, Institute of Archaeology)

**Format:** Session with presentation of 6 slides in 6 minutes

Forensic archaeology utilizes bioarchaeological methods to inform modern legal forensic casework. However, forensic archaeologists are better equipped to test emergent methodologies due to increased available funding, larger

accessible datasets, and better sample preservation than bioarchaeological researchers. Therefore, these advancements in forensic methods can be used to inform past populations, thus, allowing for insights that were impossible previously. This session highlights recent developments and challenges in forensic archaeology method and theory, and their applicability to both modern forensic approaches as well as archaeological samples. We encourage open discussions on isotopic analysis, aDNA, osteological analysis, spatial/GIS analysis, geometric morphometrics, taphonomy studies, and other related areas of research. Although the themes listed are not comprehensive, we encourage any research that is innovative and potentially collaborative which may be tangentially related to this topic, including pilot studies. Papers with diverse theoretical schools and viewpoints are encouraged and welcomed.

Collaborative efforts can be especially helpful in the development of more robust research questions and standardized analytical techniques. We hope this session will provoke future inter-institutional and interdisciplinary collaboration through open dialogue, as well as promote novel research designs. Although we do not expect all authors to have already participated in such labors, we do encourage authors to include a question or statement about future directions within their research project that will contribute to open discussions with this idea in mind. How can this work benefit from collaboration? Would my research benefit from cross-institutional data collection and/or analysis? Is this research technique applicable to both modern and past populations? What modifications can make my research more broadly applicable or rigorous?

## ABSTRACTS

### 1 VIABILITY OF AI AND MACHINE LEARNING IN FORENSIC ANTHROPOLOGY

**Abstract author(s):** Andersson, Karina - Rando, Carolyn (UCL)

**Abstract format:** Oral

Estimating sex from skeletal human remains is one of the primary goals while developing a biological profile in a bioarchaeological or forensic anthropological setting. Additionally, many techniques for establishing other aspects of the biological profile, such as stature and age, are reliant on an accurate sex estimation. Following the pelvis, the skull is viewed as one of the most accurate skeletal elements for sex as it displays differences in size and morphology. However, ascertaining sex from the cranium is often based on a visual evaluation of morphometric traits such as glabellar and nuchal crest prominence, size of the mastoid process, and gonial angle on the mandible. Unfortunately, recent studies have demonstrated that these visual methods are prone to inter- and intra-observer error and are highly subject to practitioner bias. In addressing these inherent shortcomings, artificial intelligence (AI) and machine learning are proving to be viable tools for minimizing bias and standardising visual sex estimation methods.

Machine learning is a type of AI that identifies patterns in large amounts of data in order to make decisions or predictions. Deep learning is a more advanced form of machine learning which uses neural network architectures that are based on the human brain, essentially consisting of layers that are organised into interconnected nodes. The input is fed through these increasing layers of complexity and learns the image features in order to produce a desired output. In the past few years, deep learning models have advanced to the point that they now routinely surpass human accuracy when performing tasks such as image classification. Therefore, this presentation will look at the validity of a multidisciplinary approach combining machine learning and established visual methods of sex estimation in bioarchaeology.

### 2 THE UTILITY AND APPLICABILITY OF PXRF ON COMMINGLED ARCHAEOLOGICAL SAMPLES

**Abstract author(s):** Fry, Megan (University of Florida, Department of Anthropology) - Welty, S. (University College London, Institute of Archaeology)

**Abstract format:** Oral

Abstract: Portable x-ray fluorescence (pXRF) spectrometry is a non-destructive multi-element analytical technique that provides chemical composition results instantly. This elemental analysis is also used archaeologically on material culture to source manufacture and is routinely employed in modern forensic contexts to separate comingled human remains, often in mass-grave or multiple burial scenarios. Less routinely, bioarchaeological material has also been examined, namely in the analysis of pathological conditions with varied results. Although its utility has been demonstrated regarding comingled remains, these individuals generally do not come from a single population, thus the affect homogeneity has on these readings has not been thoroughly explored. Here, these authors examine the Early-Medieval site of Worlabby, UK (W066) to assess what extent individual identities can be discerned from homogeneous archaeological populations. Nuanced explanations for the observed variation (e.g., age, health, sex, etc.) which might obfuscate individual identities are also explored. Worlabby has both known graves and comingled charnel remains for which to test the extent of pXRFs utility in multiple archaeological contexts. Several readings from each of the known graves were taken and averaged together in order to reduce the amount of possible inter-individual error. Because the charnel remains consist of over 900 individual elements, a subset was included here. Each sample was taken using standardized settings and a bone standard was used intermittently to ensure proper calibration. The

elemental composition of bone is reliant on physiological, environmental, and sociocultural factors. Careful consideration of these factors in a nuanced analytical approach can allow individual and group identity as well as mobility and community to be investigated.

### 3 THE EFFECT OF EDENTULISM ON DENTAL ARCH SHAPE ANALYSES

**Abstract author(s):** McCrane, Samantha - Meloro, Raphaela (University of Florida, Department of Anthropology)

**Abstract format:** Oral

Metric and nonmetric osteological shape analyses of the midfacial skeleton are often employed in forensic anthropology to estimate the ancestry of a decedent. These same techniques have also been applied within bioarchaeology to estimate the ancestry of individuals to inform facets of life such as community makeup, population admixture, and potential factors involved in status differences observed among burials. One feature that is commonly utilized for ancestry estimation is the shape of the dental arcade. However, pathology and normal age-related changes to the dental arch, most commonly antemortem tooth loss, have the potential to introduce additional error into ancestry estimation since remodeling of the bone, and the resultant altered biomechanical strains, can change the overall shape of the dental arcade. In this study, the shape of the maxillary and mandibular arcades of 50 individuals of known sex, age, and ancestry from the Terry Collection (25 edentulous individuals and 25 dentulous individuals) are evaluated nonmetrically from CT scan data collected by Dr. Lynn Copes using methods outlined in Gill 1998. These nonmetric assessments are utilized to estimate the ancestry for each individual, which are then compared to the known ancestry for each individual. Each individual in the sample is independently assessed by two forensic anthropologists, each working in the blind to minimize bias, and interobserver error is calculated for both groups (edentulous and dentulous). Although there is increased error whenever one utilizes a singular feature for ancestry estimation, this may often be necessary when examining bioarchaeological assemblages due to the high potential for taphonomic damage obscuring or obliterating features. As such, it is necessary to determine the reliability of individual methods. Our results inform how edentulism affects the reliability of this methodology, and suggest a need for broader studies on how ancestry, age, and pathology intersect to influence dental arcade shape.

### 4 PARAMETRIC MODELLING OF HUMAN CRANIA FROM POST-MORTEM HEAD CT DATA

**Abstract author(s):** Welty, S. (Institute of Archaeology, University College London) - Davidson, Marion (Institute of Archaeology, University College London; Department of Security and Crime Science, University College London) - Morgan, Ruth (Department of Security and Crime Science, University College London; UCL JDI Centre for the Forensic Sciences, University College London)

**Abstract format:** Oral

Open source computed tomography (CT) databases are increasingly used in both archaeological and forensic studies to obtain modern skeletal population data and reconstructions for osteological studies. These CT data are a useful tool to obtain 3D virtual models of contemporary human osteological specimens. While 3D virtual modelling has been used in the biomedical fields for years, applications of these methods in forensic and archaeological research is relatively new with few standardised workflows. In particular, adjustments to a number of variables has the potential to impact the morphology of the final model. By testing these variables, optimal parameters for model creation have been identified, taking into account the need for these models and the expected computer specifications available to in a professional practice setting.

This paper presents a comparative exploration of key parameters required in converting CT image stacks into 3D virtual models using 3D Slicer. Different parameter values are investigated to study their effect on reconstruction accuracy, reconstruction and rendering time, the number of vertices and faces, and file size. Multiple models were created using one fleshed head CT dataset from the New Mexico Decedent Image Database (NMDID), adjusting for threshold range, voxel size resampling, and smoothing. The models produced were compared using Cloudcompare to examine the extremes of each variable. Differences in parameter values result in models which may be more or less useful in different settings, depending on the intended analysis. It was identified that fine and thin areas of the osseous structures are subject to shape variation between model parameters, including psuedofoamina and difference in maximum boundary of cranial features. When using these modelling techniques, it is necessary to account for these parameters for an optimal pipeline.

## 5 OPEN ACCESS CT DATABASES: VALUE AND LIMITATIONS IN FORENSIC ARCHAEOLOGICAL AND ANTHROPOLOGICAL RESEARCH

**Abstract author(s):** Davidson, Marion (Institute of Archaeology, University College London; Department of Security and Crime Science, University College London; Centre for the Forensic Sciences, University College London) - Welty, S. (Institute of Archaeology, University College London)

**Abstract format:** Oral

Data availability is fundamental to advancing scientific methods, and anthropological methods applied to forensic archaeological contexts are no exception. The development and validation of forensic anthropological methods requires the examination of known and contemporary skeletal assemblages. However, these data are limited in number and will, over time, no longer accurately reflect the changing populations. To solve this problem, forensic anthropologists have begun exploring the employment of radiological data as a proxy for real human remains. Studies have already investigated the accuracy of measurements taken from three-dimensional models when compared to their physical, osteological counterparts, as well as assessed the application of non-metric methods when applied to human skeletal remains and their virtual three-dimensional bone model counterparts. However, the small number of existing datasets and the difficulties in accessing these data poses a barrier to methodological advancements.

This presentation discusses the existing computed tomography databases that can be examined to develop, validate, and improve forensic anthropological methods. By examining these databases, gaps and limitations in the existing data have been identified. Additionally, this presentation discusses the necessity of open source and easily accessible radiological datasets as a way to improve forensic anthropological methods, specifically in forensic archaeological contexts. Improving and expanding these databases has the potential to accelerate forensic archaeological and forensic anthropological research.

## 6 APPLICATIONS OF DIFFERENTIAL BURNING IN FORENSIC AND ARCHAEOLOGICAL CREMATIONS

**Abstract author(s):** Monetti, Lisa (UCL Institute of Archaeology; Drew University) - Rando, Carolyn (UCL Institute of Archaeology)

**Abstract format:** Oral

An integral component of the analysis of burned bone from forensic contexts is the consideration of differential burning. Through the observation of areas that are less affected by extreme heat, juxtaposed with those expressing greater degrees of heat-induced changes, information such as the directionality of the fire, the position of the body, or extracorporeal materials that increase or deflect heat can be realized. Forensic fires are more likely to produce differential burning with visual observations sufficient to distinguish levels of heat exposure, whereas archaeological funerary cremations are typically fully calcined, lacking outright differences in colour or burn pattern. This presentation will introduce a new method which considers differential burning in archaeological cremations, using computational morphometric analysis to identify more subtle changes across the body and between individuals. The first application of this methodology has revealed insight into differences in funerary practice between two geographically and likely culturally distinct regions of South-eastern Britain during the Roman period. The method is accessible, utilises open-access software, requires no specialized laboratory equipment, and could also be employed in contemporary forensic cases.

The statistical analysis for this method utilises an artificial intelligence algorithm to identify differences and find commonalities between and within groups. Because of this, it will benefit immensely from a larger dataset compiled through cross-institutional collaboration. The future application of this method more broadly could produce a larger-scale project, with an open-access dataset of morphometrics for burned bone across time and geography that researchers could access when considering smaller samples. This creates an opportunity for collaboration with the possibility of researchers re-investigating cremations in their institutional collections which may have already been analysed through traditional methods. Further, experimental cremations could improve the overall outcome of future directions as differential burning could then be linked to specific burning conditions and become less speculative.

## 7 TRIAL BY FIRE. OPEN-FIRE CREMATION AND STATE OF REMAINS PRESERVATION IN PREHISTORIC CREMATION GRAVES

**Abstract author(s):** Slusarska, Katarzyna (Uniwersytet Szczeciński)

**Abstract format:** Oral

As a ritual and process of bone tissue change, cremation is still not fully understood yet, despite much research. Some changes, e.g., bone color, recrystallization, shrinkage, can be understood as a result of specific temperatures affecting the tissue. This knowledge results from an experimental study on burning bones in a strictly controlled condition of the cremation furnace. However, the process of open pyre cremation is far from controlled experiments. The temperature ranges vary in different pyre areas resulting in uneven burning of the bones.

The Universities of Szczecin and Warsaw launched the "Trial by fire" project. The project aims to analyze the temperature distribution with an experimental open pyre with variables change: type of fuel (seasoned or dry wood), combustion duration, air temperature, air humidity, disturbed or non-disturbed cooling process. I want to present the outline of the project and preliminary experiments with open fire cremation.

The defleshed long bones with hooves were cremated on three birch wood pyres during the first one. We checked the temperature every 20 minutes at the base of the pyre and under the remains. The pig's fleshed front legs were cremated on two pyres during the second one. One was left without intervention, but we corrected the remains' position during the process and added some wood in the second one.

The samples are sent to FTIR ATR analysis (crystallinity index, microCT scanned (microstructure heat alteration). Preliminary results suggest that abrupt combustion or cooling phase interruption results in increased fragmentation. The collagen content will be checked within not fully mineralized fragments.

The same analytic methods are implemented to examine human remains from the Drawsko burial ground, site 1.

## **8 THE NEED FOR METHOD VALIDATION IN TAPHONOMY AND ARCHAEO-ANTHROPOLOGY: LESSONS FROM THE AUSTRALIAN FACILITY FOR TAPHONOMIC EXPERIMENTAL RESEARCH (AFTER)**

**Abstract author(s): Knusel, Christopher (Université de Bordeaux) - Schotsmans, Eline (University of Wollongong; Université de Bordeaux)**

**Abstract format: Oral**

Archaeo-anthropologists require understanding of human decomposition, material degradation and factors that influence decay and bone movement. Over the past 35 years, post-mortem decay has been studied at decomposition facilities to support forensic investigations. Unfortunately, to date, these facilities have not often been used for archaeoethanatomical research. Based on experiments at the Australian Facility for Taphonomic Experimental Research (AFTER) this 6-min presentation will highlight the following: (1) that human remains should be analysed in their broader depositional context; (2) that experimental research is highly valuable; (3) that methods should be validated before being applied and (4) that hypotheses and interpretations should be treated with caution. Therefore, it is important to gather data from burials and depositions of known form and context to support methodological studies as well as interpretations. The aim is to emphasise a critical use of terms and methods, and the importance of integrating interdisciplinary approaches such as forensic experiments.

## **9 ADVANCING THE ANALYSIS OF HUMAN REMAINS IN BOTH TRADITIONAL AND FORENSIC ARCHAEOLOGY THROUGH CONTROLLED HUMAN DECOMPOSITION EXPERIMENTS**

**Abstract author(s): Mickleburgh, Hayley (Linnaeus University; Forensic Anthropology Center Texas State University) - Kootker, Lisette (Vrije Universiteit Amsterdam; Co van Ledden Hulsebosch Center)**

**Abstract format: Oral**

In this presentation we will discuss the results of an ongoing forensic taphonomic research program that aims to improve the interpretation of human remains in both traditional and forensic archaeological contexts. This interdisciplinary program seeks to advance the analysis of (forensic) archaeological burials by collecting actualistic data on human body donors (obtained with consent) at the human taphonomy facility managed by the Forensic Anthropology Center at Texas State University (FACTS), and focuses on different variables affecting grave formation processes and human tissues (hair, nails, bone, teeth). The program includes two distinct medicolegal/archaeological burial contexts - individual and mass graves - in a series of experiments.

To date, the program has revealed new information on the processes of joint disarticulation and bone displacement, which are fundamental features used in the interpretation of past funerary practices in the field of archaeoethanatology. It has also provided new insights into the deleterious effects of diagenesis on the isotopic composition of different body tissues, the potential of biomarkers in bone to estimate time since death and biological age at death (proteomics, metabolomics, lipidomics), how the human microbiome changes throughout decomposition, and how microbial data can help with human identification. Furthermore, the program tests remote sensing and geophysical methods for detection of clandestine human graves.

While the body donors are studied throughout decomposition of the soft tissues during relatively short timeframes (up to three years), the results are promising for both older archaeological contexts and more recent medicolegal cases. In this presentation, we will highlight the value of such interdisciplinary approaches with two examples: 1) the effects of individual variation and insect activity on bone displacement patterns, and 2) the effects of diagenesis on the isotopic signatures in different body tissues collected from the same bodies.

## HOW CAN NECROSOL HELP TO FORENSIC ARCHAEOLOGY? A METHODOLOGICAL APPROACH

**Abstract author(s):** García-López, Zaira - Martínez Cortizas, Antonio (Cretus, EcoPast - GI-1553, University of Santiago de Compostela) - López-Costas, Olalla (Cretus, EcoPast - GI-1553, Archaeology, Faculdade de Xeografía e Historia, Universidade de Santiago de Compostela; Archaeological Research Laboratory, Stockholm University)

**Abstract format:** Oral

The interaction between human remains and sediments/soils starts just after inhumation. Body decomposition and the latter diagenesis of the skeleton result in physical and chemical changes that lead to the development of a particular type of soil known as Necrosol. Although soils from burial environments have been studied since the 1990s, little attention has yet been paid to their physico-chemical properties. Most investigations focus on few chemical properties such as pH and the organic matter (total C and N) content; when inorganic chemical constituents are analysed only a few elements (P, Ca, Sr, Fe, K, Mg, Al) are discussed. To date, Necrosol characteristic pedogenesis is scarcely known and there is not a standard protocol for its study – however, quite often the soil is key in Forensic Archaeology, especially when other remains are bad-preserved or missed.

In the present work we propose a methodological approach to the biogeochemical properties of Necrosol by combining Archaeology and Soil Science. This approach integrates the study of physical (grain size, colour) and chemical (pH; LOI; FTIR-ATR, XRF-32 elements, C and N) properties through a multi-sampling study. We present two examples from the Iberian Peninsula: 1) an archaeological context: Post-roman burial area in A Lanzada, Pontevedra (NW Spain) and 2) a forensic context: a Spanish Civil War mass grave from Barranco Viznar, Granada (S Spain). We identified similar pedogenetical processes: decalcification, melanization, acidification, neoformation of secondary minerals and enrichment in phosphorus. The latter is the most important and unique to Necrosol. Despite the chronological span between the two case studies, they share common processes, which seem to be more related to body decomposition and early diagenesis of bones. We conclude that Necrosol study can help us to understand aspects of past societies and provides valuable information in the context of forensic studies as well.

## WHAT HAPPENED IN KL TREBLINKA I? UNRAVELING WORLD WAR II ATROCITIES WITH THE USE OF INTERDISCIPLINARY FORENSIC SCIENCE METHODS

**Abstract author(s):** Drath, Joanna - Parafiniuk, Mirosław - Ossowski, Andrzej (Pomeranian Medical University) - Jarzęcka-Stąporek, Joanna (Museum of the Second World War)

**Abstract format:** Oral

Millions of people died in concentration camps as a result of the Second World War genocide. Most of those victims, who were buried in mass graves, have neither been exhumed nor identified and the reason for that is, among others, the hidden location of their burial places.

In the autumn of 2019, using non-invasive forensic archaeological methods, a clandestine mass burial was found on the grounds of a former forced labor camp, KL Treblinka I. Upon the decision of the National Institute of Remembrance's prosecutors, the exhumation process began. The burial pit contained the commingled remains of a minimum of forty-nine people. The forensic anthropological analysis was performed and the results showed that all the victims were males, aged from Infans II (6-14 years of age) to senilis (over 60 years of age), with stature between 145 to 180 cm, and of European ancestry. The majority of examined skulls had visible signs of perimortem trauma. The detailed trauma study showed that various weaponry had been used in the killing process or as body mutilation after the killing. The detected trauma types include gunshot trauma, blunt-force trauma and sharp-force trauma. The concentration of blunt force trauma on facial bones can indicate beating in the time surrounding the victims' death. The location of sharp-force trauma marks can indicate decapitation, which could have happened as a result of assassination method or as a dead body mutilation.

Before the mass grave exhumation, the only evidence of what had happened in the KL Treblinka I camp was the survivors' testimonies. Now, thanks to the collaboration between forensic archaeologists and anthropologists, the written testimonies are supported by osteological proof.



## A. FIRST TAPHONOMIC EVIDENCE OF PEDESTALING PHENOMENA MADE BY RODENTS ON ARCHAEOLOGICAL HUMAN REMAINS FROM EL MIRADOR CAVE (ATAPUERCA, SPAIN)

**Abstract author(s):** Marginedas, Francesc (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Àrea de Prehistòria, Universitat Rovira i Virgili - URV) - Rodríguez-Hidalgo, Antonio (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; IDEA - Instituto de Evolución en África; GIAP - Research Group in Prehistoric Archaeology - 970949, Department of Prehistory, Ancient History and Archaeology, Complutense University of Madrid) - Saladié, Palmira (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Àrea de Prehistòria, Universitat Rovira i Virgili - URV; Unit Associated to CSIC. Departamento de Paleobiología. Museo Nacional de Ciencias Naturales)

**Abstract format:** Poster

Rodents (order Rodentia) gnaw bones to wear down their upper and lower incisors, which grow continuously. These gnawing marks are conspicuous and have long been identified in the fossil record. Archaeological taphonomy studies link modifications made by rodents to weathered and dried bones. Forensic taphonomy studies indicate that rodents also act on fresh corpses, consuming flesh and other tissues as well as fresh bones. Although these two approaches are complementary, there is a lack of information on how rodents modify bones in states other than dry or fresh. This experimental study aims to fill this gap in the research, to describe modifications made by rodents (*Mus musculus*) to fresh, boiled, carbonized, calcined, and dry bones. Our results indicate that rodents modify bones regardless of their state, and that the most intense gnawing occurs on bones containing fat (fresh and boiled bones). During the study, the pedestaling phenomena emerged as a characteristic modification produced only on fresh and boiled samples. We applied our results to the study of the human remains from El Mirador Cave (Atapuerca, Spain) and identified pedestaling for the first time in the archaeological record. This modification may have been favored by the presence of fatty bones laying exposed on the surface of the site from two different contexts: a mass burial and boiled human bones consumed by other humans.

## B. CHARACTERIZING THE BUTCHERY PROCESS OVER THE NEW CANNIBALIZED HUMAN REMAINS FROM EL MIRADOR CAVE, ATAPUERCA, SPAIN

**Abstract author(s):** Marginedas, Francesc (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Àrea de Prehistòria, Universitat Rovira i Virgili - URV) - Saladié, Palmira (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Àrea de Prehistòria, Universitat Rovira i Virgili - URV; Unit Associated to CSIC. Departamento de Paleobiología. Museo Nacional de Ciencias Naturales) - Rodríguez-Hidalgo, Antonio (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Institute of Evolution in Africa - IDEA; GIAP - Research Group in Prehistoric Archaeology - 970949, Department of Prehistory, Ancient History and Archaeology, Complutense University of Madrid)

**Abstract format:** Poster

Human cannibalism is the act of consuming flesh, fluids, or other tissues from the human body by other humans. Taphonomic studies of prehistoric archaeological sites help us to identify and characterize this behavior. At El Mirador Cave (Atapuerca, Spain), during the excavation of a test pit in the center of the cave, 166 Bronze Age cannibalized human remains belonging to six individuals were found. These specimens showed cut and percussion marks, and peeling, along with human tooth marks and pot polishing. In addition, six skulls were found with signs of manipulation resulted in bowl shape-like, interpreted as ceremonial objects. New excavations in two other pits (SEC100 and SEC200) have contributed to a large sample of human remains found in several levels, most of them belonging to a Chalcolithic collective burial. The complete assemblage of human remains (NISP= 5,098) was examined using an OPTHEC HZ stereomicroscope with intense oblique light. Butchery activities were identified through the localization of cut marks and anthropogenic bone breakage. Among the specimens analyzed from the test pit, SEC100, and SEC200, 333 (6.6% NISP) exhibited at least one butchering mark. Long bones, ribs and vertebrae displayed abundant cut marks associated with defleshing, disarticulation and evisceration. Anthropogenic breakage can be related to marrow profit and the removal of the brain. Localization of butchery signals showed that these modifications display patterns consistent with the butchery of the bodies for consumption, instead of a funerary treatment of the cadavers, differentiating those specimens that belong to the cannibalism event that were buried without leaving any sign of manipulation.

**Theme:** 5. Climate Change and Socioenvironmental Perspectives

**Organisers:** Biehl, Peter F (University of California Santa Cruz) - Dalen, Elin (Norwegian Directorate of Cultural Heritage - RA) - Vandrup Martens, Vibeke (Norwegian Institute for Cultural Heritage Research - NIKU)

**Format:** Round table

Archaeology and cultural heritage are important to both human understanding and management of crises. Interdisciplinary research on responses of previous societies to similar crises can help us to develop resilience, mitigation and adaptation strategies to tackle these global big challenges in early 21st century. We have as background the results from the recently completed COP26 in Glasgow (November 2021), as well as statements on climate change and heritage released by the EAA 2021, Social Archaeology of Climate Change Summit (SACC 2021), and the Society for American Archaeology (SAA) (in progress, to be released Spring 2022), which all point to different important aspects on how archaeology and archaeologists can contribute.

This sixth roundtable organized by the EAA Community for Climate Change and Heritage (CCH) builds on the success of the previous ones and hopes to focus further on: (1) Internationalization, (2) Prioritization, (3) Strategies, and (4) Policies.

We will also invite representatives of key archaeology associations as well as specialists in climate change and heritage research as a sounding board for the CCH activities. In addition, the roundtable session will provide an update on the work done in and by the community since the previous meeting and discuss next steps for the Community to grow and extend its network and activities in a global climate crisis.

**Theme:** 2. [Re]integration

**Organisers:** Füzési, András (Hungarian National Museum) - Mesterházy, Gábor (Várkapitányság Nonprofit Zrt.) - Bánffy, Eszter (Römisch-Germanische Kommission) - Raczky, Pál (Eötvös Loránd University)

**Format:** Regular session

The integration of communities was played out against a complex background, a mesh of social, economic, technological, and cultural elements. The shifting perspectives in theoretical approaches led to the integration of overlapping studies, one of these being Bill Hillier's space syntax theory. In his view, creators and builders work under various types of control, and the created spaces also have a visible impact on their users. The behavior of communities, their social structures, subsistence and ritual practices are encoded in these culturally determined spaces, which are in turn reflected in spatial patterns. Through the application of GIS, the spatial information encapsulating various practices and processes can be integrated into a single interpretational framework.

Spatial analysis has a long history in South-East European prehistoric studies. John Chapman's article, 'The early Balkan village', can be regarded as the result of processual archaeology. His model was based on the dichotomy of natural space and familiar place. He interpreted the built environment through the ratio of built and unbuilt space and identified the primary structuring principles of the built environment both in the vertical (superimposed settlement layers) and horizontal dimensions, as well as on the intrasite and microregional level. Although archaeological scholarship has since moved beyond the general validities of the spatial patterns reflected in settlement networks and structures, the original goals are still relevant.

As Chris Gosden and Lambros Malafouris re-created the P-Arch, the archaeology of the built environment has gained a fresh perspective, aided by GIS and geophysics. Extensive and well-grounded research has confirmed the multicolor nature of unique cases; yet, we can discern a certain measure of uniformity in diversity. We look forward to receiving prehistoric case studies from Central and South-East Europe, which focus on intra-site and microregional analyses based on the spatial patterns of archaeological finds and features.

## ABSTRACTS

### 1 SPACE SYNTAX ON LANDSCAPE-SCALE: UNDERSTANDING SPATIAL CONFIGURATION OF IRON GATES

**Abstract author(s):** Mlekuž Vrhovnik, Dimitrij (University of Ljubljana; Institute for the protection of the cultural heritage of Slovenia)

**Abstract format:** Oral

Space syntax is a method of investigating spatial complexity to identify its particular structure that resides at the level of the entire configuration. Space syntax has developed techniques that allow the environment to be considered as an independent variable.

Space syntax is helpful in describing and analyzing the configuration at both the building and the urban level. It is thus concerned with various spatial problems such as: how can we measure the configurational properties of spatial systems? What is the role of configuration in movement, co-presence and higher-order social phenomena? What is the nature of the relationship between social organization and spatial configuration?

This paper is an attempt to apply the space syntax concepts for the study of larger spatial scales entire landscapes. Although traditionally developed and used on a building or urban scale, I argue that the same conceptual apparatus and tools can be applied on a landscape scale in order to understand the landscape as a spatial configuration and measure its topological properties. I argue that tools developed by space syntax can help us to better understand the cognitive import of physical properties of the landscape like complexity, visibility, legibility, and intelligibility.

The case study is focused on the Iron Gates Mesolithic-Neolithic transition as the specific character of the material culture and is often attributed to the particular geomorphological, ecological and spatial features of the Iron Gates gorge. I explore the role of landscape configuration in the understanding of complex social processes during the Mesolithic-Neolithic transition in the region, discussing the visual connectivity, legibility of the landscape and the role of spatial configuration in aggregation patterns and movement during the Mesolithic-Neolithic transition.

## 2 THE USE OF SPACE AND INTERNAL ORGANIZATION OF THE LATE NEOLITHIC SETTLEMENT AT DRENOVAC, SERBIA

**Abstract author(s):** Dimitrijević, Ivana - Obradović, Djurdja - Perić, Slavša - Bajčev, Olga - Savić, Ružica (Institute of Archaeology, Belgrade)

**Abstract format:** Oral

The site of Drenovac in central Serbia has been extensively researched through several projects from the 1970s to present. In recent years, application of geophysical survey significantly changed a course in the investigation of the use of space and spatial patterning. It provided means for targeted excavations and research of specific features – houses, non-domestic buildings, ditches, etc. Comparing different lines of evidence obtained through recent systematic excavations and geophysical surveying, we will present the complex history of the settlement and its internal organization.

Drenovac is a large and long-lived settlement inhabited in the Early (6100-5900 BC) and the Late Neolithic (5300-4700/4500 BC), with thick cultural deposits and complex stratigraphy. Detecting changes in size and internal organization of the settlement during this long occupation proved to be a difficult task. While data on the earlier phases of occupation are still limited, extensive research of the latest building horizon (Vinča-Pločnik phase) provided valuable data for research of the settlement's spatial organization and architecture. Thus the focus of this presentation will be on this phase. On the macro level, we will discuss the settlement's size, layout and internal organization. We will evaluate both natural and cultural factors that could affect the specific patterning of different features. On the micro level, we will turn to the individual houses and their immediate surroundings, and make some observations about space division and use.

## 3 BUILDING THE VILLAGES, BUILDING THE SOCIETY- LATE NEOLITHIC SETTLEMENT NETWORK IN SLAVONIA (EASTERN CROATIA)

**Abstract author(s):** Kalafatic, Hrvoje (Institute of Archaeology, Zagreb) - Šošić Klindžić, Rajna (University of Zagreb) - Šiljeg, Bartul (Institute of Archaeology, Zagreb)

**Abstract format:** Oral

Neolithic settlements (6th/5th millennium BC) encircled by ditch were widespread throughout Europe, including eastern Croatia, on which there is an extensive bibliography. Research conducted over the last several years have confirmed the existence of thus far unrecorded settlement types in eastern Croatia – twin enclosure settlements and multiple enclosure settlements. This new type of settlements was ascertained by means of remote sensing and magnetometry, while the results of field surveys of the sites so discovered have confirmed that they were generally multi-layered, long-term and attributed to the Sopot culture, so that they may be generally dated to the 5th millennium BC.

Recent progress in research last year which combined several methods that include the use of predictive modeling in GIS, remote interpretation and field survey, several settlement structures from the late Neolithic of circular and oval layout were discovered south of Bračevci village. The newly discovered settlements were observed in the context of the hitherto known network of late Neolithic settlements in eastern Croatia.

The settlement is located 6 km away from the complex of the circular Neolithic settlement in Preslatinci. The Ražište site in Podgorač is about 6.5 km away. It is about 10 km away from the complex of Neolithic settlements Gorjani Kremenjača and Topole.

All mentioned settlements have been determined as part of the network of settlements in which the mutual distance is from 3 to a maximum of 6 km. This network was in the north of the Đakovo region, and it was hypothesized that such a network also existed in the wider area.

#### 4 **MORE TO TELL: SPATIAL ANALYSIS OF THE LATE NEOLITHIC HERPÁLY SETTLEMENT COMPLEX OF CSÖKMŐ-KÁPOSZTÁS-DOB (EASTERN HUNGARY)**

**Abstract author(s):** Riebe, Danielle (University of Georgia) - Mesterházy, Gábor (Hungarian National Museum) - Gyucha, Attila (University of Georgia) - Argyriou, Athanasios (GeoSat ReSeArch Lab, Institute for Mediterranean Studies, Foundation for Research and Technology Hellas) - Sarris, Apostolos (The Archaeological Research Unit, DigHumanities GeolInfo Lab, Department of History and Archaeology, University of Cyprus) - Dani, János (Déri Museum) - Stibranyi, Máté - Pethe, Mihály (Hungarian National Museum)

**Abstract format:** Oral

The use of magnetometry has transformed the archaeologists' ability to investigate prehistoric sites. In some instances, magnetometry results have been used to dispute previous site delineations or notions about settlement complexity, or as seen with the case of Csökmő-Káposztás-domb, both aspects have been challenged. In 2013, the Prehistoric Interactions on the Plain Project (PIPP) began work at this Late Neolithic Herpály site, with more intensive investigations continuing from 2019 to present. Analysis of the multi-phase magnetometry results, combined with aerial imagery, LiDAR, and various surface collection, have produced new insights regarding the extent, layout, environmental setting, and growth/development of the site. This paper presents the data collected thus far and contextualizes these results within a broader regional framework. With a sprawling settlement complex covering more than 80 hectares to date, Csökmő-Káposztás-domb is becoming one of the largest Late Neolithic settlements on the Great Hungarian Plain and the new data from the site is providing both new questions and new theories about prehistoric settlement development and aggregation in the region.

#### 5 **IMPRINTS OF SOCIAL PROCESSES AND PRACTICES AT SZEGVÁR-TÚZKÖVES - SPATIAL ANALYSIS AND THEORETICAL INTERPRETATION OF A LATE NEOLITHIC SETTLEMENT**

**Abstract author(s):** Mesterházy, Gábor (Eötvös Loránd University; Hungarian National Museum) - Füzési, András (Hungarian National Museum; Eötvös Loránd University) - Szilágyi, Katalin (Christian-Albrechts-Universität zu Kiel; Eötvös Loránd University) - Bánffy, Eszter (Römisch-Germanischen Kommission des Deutschen Archäologischen Instituts) - Raczky, Pál (Eötvös Loránd University)

**Abstract format:** Oral

In 2019, the archaeological research project "Neolithic tells and their landscape along the Tisza River between 5000 and 4500 BC" was launched by the Römisch-Germanische Kommission des Deutschen Archäologischen Institut (RGK-DAI) and the Eötvös Loránd University (ELTE) to gain a better understanding of the Neolithic archaeological heritage of the southern Hungarian Plain. As part of this major project, new investigations were undertaken on the Late Neolithic tell settlement of Szegvár-Tűzköves.

In the light of the new results, the goal of this presentation is to examine intra-site patterns by focusing on the site's spatial layout and space utilisation. The large-scale geophysical survey of the single-layer settlement combined with coring, "excavation" and the analysis of earlier excavation datasets on the mostly destroyed tell was aided by a GIS-based assessment.

The findings of the spatial analysis will be interpreted within the theoretical framework of space syntax theory and process archaeology. By integrating the diverse expressions of multilevel human interaction with the environment, the social and cultural imprints of a Neolithic community can be contextualized on a wider environmental scale. In our case study, our goal is to reconstruct the scales of human activity on the Szegvár settlement complex, which resulted in a specific contingent development in the Late Neolithic of the Great Hungarian Plain. One of the most distinctive local manifestations of this development is the presence of burnt buildings in a centripetal arrangement on the settlement and the enclosure system ringing and bounding the entire lived space.

#### 6 **NEOLITHIC KNAPPING ACTIVITIES THROUGH THE LENS OF INTRA-SITE ANALYSIS FROM HUNGARY**

**Abstract author(s):** Farago, Norbert (Eotvos Lorand University, Institute of Archaeological Sciences)

**Abstract format:** Oral

Following the pioneering research of André Leroi-Gourhan, Palaeolithic archaeology has been investigating the social principle behind the spatial dispersal of stone tools for half a century. Although Leroi-Gourhan did not consider his results to be generalizable, only to be individual, localized traces of activities (témoins), since then numerous works have appeared which have sought to find the residential and economic units reconstructed at Pincevent on their sites and assemblages. Even his greatest critic, Lewis R. Binford, has attempted to develop a more general model of spatial organization for hunter-gatherer communities.

In recent decades, in the wake of Ulrich Boelicke, Jens Lünning attempts have also been made to develop a unified model of spatial organization for the first farmers of the Neolithic LBK communities. Interestingly, it is only in recent decades that we have witnessed contributions that have approached the problem from the point of view of individual observations made at individual Neolithic sites. Despite the obvious difficulties of the subject, such as the palimpsest nature of the long-standing sedentary lifestyle, the size of the excavated surfaces, or the feature-bound nature of the finds, we have been able to find intra-site studies from several sites in Western Europe. In more than one case, perhaps not coincidentally, the focus of investigations has been on knapped stone tools. The aim of this presentation, in line with recent intra-site investigations, is to provide further contribution for a future comprehensive framework through a few individual cases. The Hungarian examples presented here are spatially (Transdanubia and Great Hungarian Plain) and temporally (5400-4600 BC) representative of the greater part of the Neolithic. According to these results, the spatial organization of the knapping activity shows great variability from site to site, which suggest a strong local adaptation and makes any generalization rather problematic.

## **7 CONSCIOUSNESS, COMPLEXITY, SYMMETRY. SPATIAL ANALYSIS OF A BRONZE AGE SETTLEMENT**

**Abstract author(s): Szabó, Nóra (ELKH BTK; ELTE BTK)**

**Abstract format: Oral**

The basic concept of artificially manipulated space has an evolutionary explanation, reflecting on the creation of comfort zones, protection and conditions for group maintenance, in addition to environmental factors, representational and belief elements. These spaces are not simply places where social life unfolds, but also channels where relationships are formed and developed.

In the dimension of the internal structure of settlements, we can distinguish two significantly distinct units: the spaces inside and outside of the buildings, which are demarcated by a clear physical boundary, the structural elements of built structures. Alongside positive structures, negative phenomena such as ditches, which are often an integral part of the settlements, or networks of streets connecting spaces within settlements also have a boundary-marking function. Outside-and-inside, near-and-far, right-and-left directions and positions could all have had meaning for the daily life and functional operation of a prehistoric community.

The interpretation of Bronze Age settlements in the Carpathian Basin has undergone a major transformation in the last decade. The new results from excavations, remote sensing, and geophysics have not only led to a reinterpretation of the hierarchical relationships between settlements, but have also highlighted the complexity of the internal structure of settlements. The aim of this paper is to present a settlement with a complex, symmetrical structural system (double ditch, buildings, radial street network), which was found in the last year in the outskirts of Kunszentmárton, based on geophysical and field survey, and to interpret its internal spatial structures using GIS data analysis.

## **A. ORGANISING A NEW WORLD: EARLY ALFÖLD LINEAR POTTERY COMMUNITIES IN THE NORTHERN PART OF THE GREAT HUNGARIAN PLAIN**

**Abstract author(s): Füzesi, András (Hungarian National Museum / Magyar Nemzeti Múzeum) - Faragó, Norbert (Eötvös Loránd University, Institute of Archaeological Sciences) - Kalli, András (Hungarian National Museum / Magyar Nemzeti Múzeum) - K. Tutkovics, Eszter (Rétközi Múzeum)**

**Abstract format: Poster**

In addition to the main routes of European neolithisation through the Balkans and the Carpathian Basin, alternative paths have emerged in nearby regions that have led to the formation of distinct cultural groups. In this way, the Alföld Linear Pottery Culture (ALPC) developed in the Carpathian Basin, which were linked to the evolution of LBK in several ways. Although for historical reasons, archaeological research of the two cultural units could not be carried out in parallel, f.e. the pit-house concept has remained much longer in Hungarian research than in international research, that could relate to current European settlement archaeology. The first major breakthrough came with László Domboróczki's discovery at the Füzesabony-Gubakút. Large-scale excavations revealed contiguous settlement sections that fundamentally changed our perception of early ALPC communities. The settlements with a linear structure now form a network in the foothills of the North Hungarian Mountains.

Bill Hillier interpreted space as the result of the interaction of social actors and physical phenomena, strengthening the link between structure and process. This approach is well suited to archaeological investigations through the aspects of differentiated spaces, the pathways between them and the degree of spatial integration. Although the structure of several early ALPC settlement units has been published, the analysis and dissemination of the excavated assemblages, which are essential to study the processes, is currently at various levels. In this presentation Bük-kábrány-Bánya VII site will be examined based on the structure and the spatial distribution patterns of artefacts. Our observations suggest the cooperation of the local community in subsistence and ritual practices, moreover, they suggest long-term organized conditions, which were necessary for the development of the ALPC style. In the life of pioneer communities, the ordered settlement and the differentiated ceramic decoration were linked and reinforce each other as a physical base and communication message.

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Busset, Anouk (Université de Lausanne) - Sawicki, Jakub (Academy of Sciences of the Czech Republic)

**Format:** Session with presentation of 6 slides in 6 minutes

This now traditional session is aimed at postgraduate students and early career researchers whose interest focuses on Medieval Europe. They will have the opportunity to present their ongoing research during this session proposed by MERC. It offers a platform for speakers not only to present upcoming projects, but also connect with a wider community of early career researchers. Furthermore, it offers opportunities to discuss new and promising research avenues that will shape tomorrow's medieval archaeology, through short and dynamic talks of six minutes. The presentation of experimental or unprecedented work is also explicitly encouraged. We welcome papers tackling a wide variety of currently pressing as well as innovative themes, crucial concerns for the field, potential of new technologies, unexplored avenues, and new work on old subjects/materials. We aim to bring together a diverse group of early career scholars, therefore participants from all geographical backgrounds are encouraged to submit a proposal.

## ABSTRACTS

### 1 NEW METHODOLOGICAL PERSPECTIVES FOR THE STUDY OF THE MEDIEVAL PEASANTRY IN NORTHERN IBERIA

**Abstract author(s):** Rebollar Flecha, Luis (University of Oviedo)

**Abstract format:** Oral

The aim of this research is to study the medieval peasantry from the Early and High Middle Ages (eighth to thirteenth centuries) in the Northern Iberian regions of Asturias and Cantabria using an anthropological approach for its definition and characterization. However, the historiography on this subject matter suffers hitherto a series of problems, namely a lack of archaeological sources and a slanted reading of the written ones due to a historiographical praxis skewed towards the institutional, legal, and upper-class sectors of society. Thus, this research proposes to carry out a reread and reinterpretation, from an anthropological approach, of the written sources, continuing a line threaded by authors like Wendy Davis or Robert Portass for the Northern Iberian Peninsula focused in social and material aspects of the medieval peasantry. This new approach must be driven by questions posed by the archaeological record, which in turn can be itself the subject of reinterpretation.

This process entails the development of a new theoretical research frame and its application to our experimental setting by rereading the written sources, and the archaeological record carried out by our research team in Asturias, to reflect on the analytical tools and concepts used in the study of the medieval and general peasantries, and ideally further develop new ones in the process.

We can find previous examples of these theoretical tools that can be helpful in the 'anthropological history' works of E. P. Thompson and his 'moral economy of the crowd', the anthropological work of James C. Scott and his 'weapons of the weak', and specifically on the medieval, in the works of Rosamond Faith and Susan Kilby. Assessing the contributions and fitting of Archaeology in our task, we seek to coin new analytical-theoretical concepts like these to help in the task of rethinking the medieval peasant subject.

### 2 RECONSIDERING PEASANTRY AND LOCAL COMMUNITIES IN THE EARLY MIDDLE AGES THROUGH A GENDER(S) PERSPECTIVE

**Abstract author(s):** Carballido González, Elías (University of Oviedo)

**Abstract format:** Oral

The last decades marked a relevant step forward in the studies of the Early Medieval peasantry. The development of new methodologies, like the agrarian archaeology, facilitated a new approach that left behind the traditional consideration of this group as a homogeneous or without agency, following the elitist discourses.

However, it is still left to implement new approaches that could be able to explain how these communities were organized in terms of gender(s) and how difference was understood and produced within them. Focusing on two European areas in the Early Middle Ages, Northern Spain and Southern Scandinavia, we aim to explore the nature of gender in the peasant communities, deconstructing these groups as built on complex intersections of social status, races and genders and redefining the limits of the community as a space where gender difference might, as in other contexts, have been daily expressed and lived.

This research takes into account the last critiques to the use of gender as an analytical category and tries to complicate it stressing its fluidity, historicity and the unstable nature of the concepts formerly taken for granted. Thus, the Early Middle Ages, as a time marked by the fragmentation of the Roman World, the desegregation of the European

space and the absence of state structures that could ensure the imposition of normativities, become a site to explore disruption and alterity as well as other forms to produce, understand and live difference in the peasant communities.

### 3 RECONSTRUCTION OF MEDIEVAL FOREST DEVELOPMENT USING MINING TIMBERS FROM THE ORE MOUNTAINS

**Abstract author(s):** Ahlgrimm, Svenja (University Greifswald)

**Abstract format:** Oral

The Ore Mountains are one of the most important medieval mining areas in Europe. During excavations of 12th and 13th century mining complexes, thousands of construction timbers (*Abies alba* M., *Picea abies* L.) were collected and partly dendrochronologically dated. Permanent settlement in the mountain complex only started during this period. Thus, the numerous wood finds form a unique archive with the potential to provide information about a natural mountain forest before and during the first intensive human interventions.

Using a subset of these historical wood samples and samples of living silver fir and spruce from different elevation, our study will investigate the forest development of the medieval Ore mountains. Furthermore, the aim is to examine to what extent the use of the maximum latewood density (MXD) can thereby support the analyses. Not only tree ring width (TRW), but also the parameter MXD will be used for (i) cross-dating of tree ring samples, (ii) dendroprovenancing, (iii) detection of disturbance events and (iiii) investigation of climate-growth relationships and potentially climate reconstruction.

Since MXD is strongly dependent on summer temperatures, it is likely to provide a more robust signal than TRW and thus allow cross-dating of undated series. Considering the climatic differences along the altitudinal gradient, the use of MXD should also improve the accuracy of dendroprovenancing. Therefore, it can be assumed that the MXD parameter increases the reliability and informative value of the data set and provides further insights into the development of the forest in the medieval Ore Mountains.

### 4 NEW WORK ON OLD EXCAVATIONS. BRINGING TOGETHER RESULTS FROM OLDER AND YOUNGER EXCAVATIONS TO ENLIGHTEN WATER AND WASTE MANAGEMENT

**Abstract author(s):** Swensen, Elisabeth (NTNU University Museum)

**Abstract format:** Oral

In my PhD, I am working with water and waste management in medieval and early modern Trondheim, Norway. As a great number of archaeological excavations have been conducted in this town, it is interesting to use both old and new archaeological documentation to enlighten such infrastructure. In my studies, I work with a set of excavations spanning from 1928 to 2016. Using ArcMap and Microsoft Access I sorted and visualized qualitative and quantitative information to aid the archaeological analysis. Georeferencing old and new excavations results together can problematize modern assumptions and add to the understanding of the town. The old excavations have contributed to an added understanding of the location and construction of wells, drainages, and waste pits, even though they are not C14 dated, or stratigraphically dated. Not up to modern standards (still everchanging), the older excavations can still add useful information to present archaeological analyses. This is especially true when the material on certain constructions is scarce, as on drainage constructions, and the old excavations more than double the material to work with. In this session, I present some of my material and how the methods described have made a difference to the understanding of past practices in Trondheim.

---

## 424 ACTORS, NOT SPECTATORS. COMMUNITY REPRESENTATION IN ARCHAEOLOGY AND CULTURAL HERITAGE IN THE 21ST CENTURY

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Organisers:** Beaulieu, Kiara (University of Antwerp) - Thomas, Suzie (University of Antwerp) - Axelsen, Irmelin (University of Oslo) - Jamieson, Jordan (Mississaugas of the Credit First Nation)

**Format:** Regular session

A shift in public and community archaeology and the way communities are engaged has resulted in numerous publications on how to actively involve various citizens in the entire research process. Despite the increased focus on participatory archaeological research and citizen science worldwide, projects are still often aimed at the "comfortable" audience. The dutiful spectator that obliges with "official" definitions, legislations, and heritage practices, such as "responsible" metal detectorists in many countries. Yet, detectorists and other parts of the public are still routinely by-passed in the citizen scientist realm because of the way they choose to engage with heritage; often hands-on, not within the museum setting nor in the passive role as a spectator. Due to this, they are frequently denied access to the archaeological field, and painted as a potential threat. In addition, there are the individuals who do not always conform with the normative views of an archaeological participator: the non-white, disabled, Indigenous, neurodi-

vergent, LGBTQ+, those of ethnic and religious minorities. Specifically, people who are commonly denied access to their past and to be an actor in this narrative.

Across the world, individuals, communities, stakeholders, knowledge keepers and other members of the public are demanding to be allowed to not only view the end process of archaeology. They want to have access; to be actively involved in the heritage-making process and have a say in how the archaeological heritage is displayed and used. This session welcomes those who seek to challenge our view of what true participation can or should be. We particularly encourage individuals from the LGBTQ+ communities, citizen scientists, Indigenous persons, and people who can present on case studies, offer practical examples or theoretical approaches to these exclusionary practices in archaeology and heritage studies.

## ABSTRACTS

### 1 COMMUNITY-PARTICIPATORY ARCHAEOLOGY IN THE MATANUSKA WATERSHED, ALASKA

**Abstract author(s):** Krasinski, Kathryn (Adelphi University) - Seager-Boss, Fran - Wade, Angela (Chickaloon Village Traditional Council)

**Abstract format:** Oral

Here we present a case study of collaborative community-participatory archaeology where the descendant community members are active in research design from the inception of a research question to managing grants, project personnel, and interpreting discoveries. Our recent fieldwork in the Talkeetna Mountains within the Matanuska Watershed has provided physical evidence corroborating Dene Native Alaskans oral history that the mountains were an integral part of Dene life for millennia. The discovery of new archaeological sites shows a positive correlation with Dene place names. Fieldwork has also promoted recalling oral history and Dene place names that were previously not recorded. Further, fieldwork corroborated how nexus points within the Talkeetna Mountains facilitated subsistence, trails, and social networks. While the alpine zone continues to be poorly inventoried our collaborative fieldwork indicates the Talkeetna mountains were an integral part of Dene past and current life. These results would have been impossible to achieve without relationship building and the collaborative approach guided by culture bearers.

### 2 THE GOOD CREDIT INDIANS: ARCHAEOLOGY FROM AN INDIGENOUS PERSPECTIVE

**Abstract author(s):** Jamieson, Jordan (Mississauga of the Credit First Nation)

**Abstract format:** Oral

I look to share from personal experience the difficulties and obstacles of becoming involved in the archaeological process, as well as the benefits and tremendous upsides it brings. For many indigenous communities there is an unseen cost of entry when trying to become involved in their cultural materials, and it comes in the form of compromising on their values from a cultural perspective.

To begin I will outline some of the foundational differences between the indigenous perspective and the western perspective. I examine how heavily influenced the outlook on cultural materials are viewed through that western lens, supported by legislation that stems from colonialism. Next, the importance of building relationships to the descendant communities, in whose cultural materials we work in. Not only that but pushing to evolve the relationships into meaningful change and building the capacity in which communities can become in control of their cultural materials.

As we look to better understand the past through archaeological materials, it's imperative that we begin to recognize the disparity and open the conversation of how we view, curate and interpret those cultural materials and remains."

### 3 DECOLONISING ARCHAEOLOGY IN THE SCHOOL CURRICULUM

**Abstract author(s):** Godfrey, Evelyne (Uffington Heritage Watch)

**Abstract format:** Oral

Decolonisation and anti-racism are a major issue of our time. It is important that professional archaeologists who are doing research on the subject of decolonisation and culture, place, identity and migration, have the opportunity not just to contribute to the discussion, but to take the lead in formulating an archaeology curriculum for the 21st century.

The status that we still see today associated with the more 'important' Roman and Anglo-Saxon periods was framed in Victorian times and served to justify and normalise British colonial activity. The narrative reinforced in the primary school curriculum in England today remains one of the Romans bringing "civilisation" to Britain. British prehistory is held by convention to have ended at a precise point in time, 43 AD, the year of the incorporation of most of southern England into the Roman empire.

This concept is paralleled in North America, with the British in turn bringing civilisation to a savage new world; the truism in Canada and the United States is 'History begins when the Europeans turn up'. Classical Greek and Roman art and archaeology are taught at secondary school through university level in North America as part of the history



of Western Civilisation, perceived as the inheritance of the majority white European descent population, while Indigenous cultural heritage remains marginalised.

An approach to decolonising the school curriculum will be outlined briefly, with examples drawn from archaeology teaching in England and in Mi'gmaq land in south-eastern New Brunswick, Canada.

#### 4 ARE WE ASKING THE RIGHT QUESTIONS? LEARNING FROM METAL DETECTORISTS AND OTHER HOLDERS OF PORTABLE HERITAGE OBJECTS

**Abstract author(s):** Thomas, Suzie (University of Antwerp)

**Abstract format:** Oral

It has been the case in many countries already that the potential of metal-detected finds has been realised (e.g. Oksanen and Lewis 2015) or at least recognised (Beaulieu 2020), for enhancing the amount of data available to scientists for creating the archaeological record. Yet the archaeological life of objects is only one part of their long history, and what happens to them once they have been found is also potentially very interesting, especially for questions about heritage and social values, senses of identity and questions of stewardship of these remains of the past.

Building upon a small pilot ethnographic project carried out in 2022 in the Flanders region of Belgium, in this presentation I explore the values associated with archaeological heritage, especially small portable heritage objects. I present my results and impressions from object-based interviews with Flemish metal detectorists, and suggest that there are more facets available for what we can learn from portable heritage objects discovered through, and kept because of, metal detecting. In this way I aim to shed light on the multitude of perspectives that objects inspire in non-archaeologists (see also Axelsen 2021), and challenge the received wisdom that the archaeological knowledge production is the most important informational potential that such objects (and their stewards) hold.

References

- Axelsen, Irmelin. 2021. What's the deal with old things? An exploratory study of attitudes and practices towards certain old things among archaeologists and metal detectorists in Norway. PhD Thesis, University of Oslo.
- Beaulieu, Kiara. 2020. Raging Against the Machine: Archaeology, Metal Detection and Municipal Legislation in Ontario, Canada. *Archaeologies*, 16(1): 120-136.
- Oksanen, Eljas, and Lewis, Michael. 2015. Medieval Markets and Portable Antiquities Scheme Data. *Medieval Settlement Research*, 30: 54-9.

#### 5 MATERIAL CULTURE IN A DIGITAL WORLD - ARCHAEOLOGY IN 280 CHARACTERS OR LESS

**Abstract author(s):** Jaffe, Gali (Freelance Lecturer/Researcher)

**Abstract format:** Oral

In this presentation I will present a personal story about how my individual Twitter account grew into a much-followed archaeological community mini-blog.

It began when I posted interesting archaeological anecdotes on Twitter to let people know who I am and come hear my archaeology lectures. From there it snowballed very quickly.

One tweet led to another, and then they grew into threads (a number of connected tweets which allow writing longer posts on Twitter, bypassing the 280-character limit of a single tweet). Then the threads became a daily event and I found myself researching more and more archaeological topics, sites and finds in order to write threads.

Then I understood, the Twitter format, and the way Twitter works is an advantage. Utilizing these limitations forced me to write short, understandable posts, which in turn led to the content being highly accessible even to people who knew nothing about archaeology before.

One of the most popular reactions to my threads was, and still is, "I never knew archaeology could be so fascinating", as a woman who is dedicated to bringing archaeology to the masses, there is no bigger compliment.

I will use my story as an example of how digital humanities can help to remove academic layers and jargon from our research, in order to make archaeological finds and discoveries much more accessible to the masses.

In the end we must ask ourselves one simple question, if we found an amazing find, but have not brought it to the public light, have we actually fulfilled our purpose and mission as archaeologists? Whose intention is, at the end of the day, to expose the past? Social media offers a unique opportunity to speak directly to an interested audience. Here, we will discuss some examples of good practice for archaeological engagement.

## 6 THE DISCREPANCY IN THE ONLINE AND REAL-LIFE RELATIONSHIPS BETWEEN ARCHAEOLOGISTS AND METAL DETECTORISTS

**Abstract author(s):** Bjerga, Ingvild (University of Oslo)

**Abstract format:** Oral

When researching the history and current state of public archaeology in Norway, a somewhat unexpected detour was the many archaeology-focused Facebook posts and plethora of exchanges and unfiltered opinions between certain parts of the public and a few archaeologists. The discussions made it evident that there is a discrepancy between what researchers conclude in academic studies of the heritage management's interactions with certain parts of the public, and how some professionals actually interact with them online.

In Norway, there are seemingly two factions that actively participate in a majority of the digital debates: those who are positive toward metal detecting and those who focus on the negatives. Both frequently misinterpret interactions and statements as attacks. There is a knee-jerk reaction of always assuming the negative, even if the intent of the author, of either the academic paper or the online post, was likely neutral, or even positive.

Survey and excavation reports indicate that the attitudes of (some) archaeologists in Norway is shifting towards a more positive attitude to including amateurs on their projects. In some parts of the country, hobby metal detectorists are routinely invited to take part in the uncovering of the physical remains of the past. So, why do the online forums seldom reflect this collaboration? Is the generally blunt behaviour of people on Facebook the cause for the sometimes-toxic online relationship? And do these opinions stay where they were formed: online? Are these interactions doing more harm than good by upholding or even creating mistrust? In this paper, I explore and answer these questions by utilising comparative and textual analyses to investigate the relationships between the country's hobby metal detectorists and parts of its archaeological heritage management, and the difference in their online relationships versus the one presented in academic studies.

## 7 WHERE ARE THEY, WHO FOUND THEM, WHERE DID THEY GO AND DOES ANYONE CARE?: TWO INDIGENOUS COPPER ARTIFACTS IN ONTARIO

**Abstract author(s):** Beaulieu, Kiara (Universiteit Antwerpen)

**Abstract format:** Oral

The study of citizen scientists (metal detectorists) in Ontario, Canada and their role in heritage is very new, and as such very controversial. When compared to countries who have been inundated with detectorists for decades, our investigation of their role, the legalities, their position in the heritage landscape and ethics is very grassroots. One thing that Canada has that most European countries do not is the Indigenous presence and their rights over their own ancestral heritage. Best practice when an Indigenous artifact is found in Ontario, Canada is to bring it to the closest Indigenous nation—a practice unknown to much of the general public. There can be some challenges as some members of the public want objects to be visible for future generations of Canadians—something they believe may not happen if they are given to an Indigenous nation.

In order to explore these concerns this paper will examine two very similar copper Indigenous artifacts which were located within a few months of each other by two separate detectorists near Sault Ste. Marie. These finds were uncovered in two different locations; one on Crown Land (government held land) and the other in a stream (public/private land). This paper will examine how they were found, and what were the outcomes and attitudes surrounding them. These objects, the lack of knowledge on what steps should be taken, the question of who owns such heritage, and what is the ethical responsibility in their activity of detecting and encountering Indigenous artifacts will be explored. By examining these two finds and the many issues that arose this paper will show how citizen scientists can directly affect heritage policy and how their contribution to archaeological knowledge can help change it to be more inclusive—if heritage professionals will open the door.

## A. THE IMPORTANCE OF COMMUNITY ENGAGEMENT WHILE RESEARCHING CILLÍNÍ (IRISH UNCONSECRATED CHILDREN'S BURIAL GROUNDS) IN RURAL COUNTY FERMANAGH

**Abstract author(s):** Mundt, Courtney (Queen's University Belfast)

**Abstract format:** Poster

Community archaeology and engagement are becoming more common across Ireland in the 21st century as archaeological research expands out of the larger cities and into less urbanized areas. Rural communities are the keepers of knowledge that often cannot be found without speaking directly with community members, especially when it comes to lesser-known archaeological monuments. One such monument type in Ireland are cillíní, unconsecrated burial grounds for unbaptised and stillborn children used from the late medieval period into the mid-20th century. These sites are often found in older archaeological monuments, such as ringforts/raths, abandoned ecclesiastical sites, deconsecrated burial grounds, and megalithic tombs, the locations of which are often only known of by locals. While there are about 1700 cillíní recorded across Ireland, these sites are not well researched due to a lack

of information regarding their locations and usage. Given the complicated emotions associated with these sites, this knowledge tends to stay within local communities until it fades out of memory, which make cillíní more vulnerable to destruction by agricultural and development activities. The main goal of the fieldwork conducted in summer 2021 across County Fermanagh in Northern Ireland was to discuss potential unrecorded or misrecorded cillíní locations in order to properly record these sites and preserve them. Potential sites were identified by analysing Ordnance Survey (OS) maps and through information calls posted in Fermanagh newspapers and Irish magazines before fieldwork was conducted over a two-week period. With the knowledge and help of Fermanagh locals, the sites and history of six new cillíní were recorded, showing how important community engagement is for the research and preservation of rural Irish archaeology.

---

## 426 FROM ISOTOPE RATIOS TO NARRATIVES: EXPLORING THE WAYS THAT BIOGEOCHEMICAL STUDIES ARE IMPACTING EURASIAN ARCHAEOLOGY

**Theme:** 6. A Decade after the 'Third Science Revolution in Archaeology'

**Organisers:** Kiss, Viktória (Institute of Archeology, Research Centre for the Humanities) - Pospieszny, Lukasz (School of Earth Sciences, University of Bristol) - Cavazzuti, Claudio (Department of History and Cultures, University of Bologna)

**Format:** Regular session

As biogeochemical applications in archaeology have increased dramatically over the years, isotopic studies are being used to address a wide range of questions related to prehistoric human (and animal) behaviour. Larger, multi-isotope and multi-site/cemetery datasets have shifted the focus from site-level analyses to much broader narratives related to trade patterns, subsistence strategies, migration, and social organization. These studies are often collaborative, multidisciplinary, and integrated with several other lines of data (such as aDNA, skeletal data, material culture, radiocarbon dating, etc.). This integration of scientific techniques at large scales has been associated with a 'Third Scientific Revolution' in the field of Archaeology whereby theoretical paradigms (i.e. processual and post-processual approaches) may be reexamined and reimaged.

In this session we invite papers that reflect on the ways that isotopic studies are currently being used in archaeological interpretations and narratives in Eurasian prehistory. Specifically, we seek studies that have used isotopic data to go beyond local versus non-local dichotomies, and either generate or test models of prehistoric human behaviour at regional or multi-temporal scales. Questions to consider include: in what ways can isotope data uniquely contribute to our current understanding of human movement and interaction in the past? How have these data been successfully (or unsuccessfully) coupled with other lines of evidence? What are the continued challenges and limitations to biogeochemical approaches? In what ways have isotopic studies impacted the theoretical orientation of Eurasian Archaeologists?

### ABSTRACTS

#### 1 WILD WOMEN OF THE HILLS OR CHATELTS FOR MARRIAGE? INTERPRETING FEMALE MOBILITY IN THE LINEARBANDKERAMIK (LBK) THROUGH STRONTIUM ISOTOPES

**Abstract author(s):** Bickle, Penny (University of York)

**Abstract format:** Oral

This paper will explore the complex interplay of interpreting environmental and social factors on our understanding of LBK mobility. Strontium isotope analysis has suggested that women were more likely to have moved during their lifetime than men. The favoured interpretation to date has been patrilocal, though the implications of this both in terms of the bioavailable strontium variation in the environment and for the social lives of women have not been fully explored. Despite this, patrilocal is now widely accepted for much of prehistory, and models of social change through the period based on an assumptions about how patrilocal, and indeed patrilineal, societies are organised. I will argue that we need to be critical of this approach from two perspectives. First, anthropology demonstrates that marriage and kinship rules are far more complex and cannot be reduced to a simple hierarchy between the genders. Second, such data need careful consideration in light of multiple sources of Archaeological evidence. In conclusion, the paper proposes an integrated approach, which does not separate environmental context from social practices. It argues this is necessary in building interpretative models of strontium isotope ratios that do not unthinkingly repeat modern perceptions of binary gendered lifeways.

## AN ISOTOPIC PERSPECTIVE ON “MOBILITY” DURING THE 3RD AND 2ND MILLENNIUM BC IN HUNGARY

**Abstract author(s):** Giblin, Julia (Quinnipiac University) - Dani, János (Déri Múzeum) - Fábíán, Szilvia (Hungarian National Museum) - Hajdu, Tamás (Eötvös Loránd University) - Köhler, Kitti - Kulcsár, Gabriella - Melis, Eszter (Institute of Archaeology Research Centre for the Humanities ELRN) - Szabó, Géza (Wosinsky Mór Museum) - Szeverényi, Vajk (Déri Múzeum) - Kiss, Viktória (Institute of Archaeology Research Centre for the Humanities ELRN)

**Abstract format:** Oral

A growing number of isotopic and archaeogenetic case studies have identified high percentages of non-locals in European Bronze Age burial contexts leading to a renewed interest in the importance of migration for understanding prehistoric cultural changes. Moreover, the combination of isotopic, archaeogenetic, radiocarbon, and archaeological data at micro-regional scales has allowed for researchers to model smaller scales of mobility that can reflect social and kinship patterns such as residence and marriage customs across multiple generations.

In this paper, we present isotopic data (strontium, oxygen, and carbon) from inhumation burials from 14 archaeological sites from Hungary that represent several phases and regions of the Early and Middle Bronze Age in Hungary – a period of one thousand years, between 2500 and 1500 BC. These sites are associated with the Bell Beaker, Kisapostag (or the earliest Transdanubian Encrusted Pottery culture), Vátya, Füzesabony, and Tumulus Grave archaeological traditions. This region, situated within the Carpathian Basin, sits at a crossroad between Western, Northern, Eastern and Southern Europe, and the origins of many of these groups has been attributed to newcomers from surrounding areas due to similarities in material culture.

Using a multi-isotope dataset, we will address to what extent human movement (versus local processes) contributed to Bronze Age patterns of social organization in Hungary and will compare these patterns to contemporaneous groups in other regions of Europe. Finally, we will reflect on the ways that isotopic research influences our understanding and interpretation of archaeological narratives about mobility and culture change in Bronze Age Hungary.

## 3 SUBVERTING GRAND NARRATIVES? STRONTIUM ISOTOPES, ADNA, AND EQUESTRIAN MOBILITY IN THE BRONZE AGE

**Abstract author(s):** Kanne, Katherine (University of Exeter; Northwestern University)

**Abstract format:** Oral

This paper presents the results of a comparative study of equestrianism of the Bronze Age of Hungary, which integrates strontium isotope analysis of horses from seven tell settlements, with the analysis of human and horse remains and their bridle bits. Strontium isotope analysis was a key component in establishing mostly regionally local horse production, but a that few horses were either ridden or traded into tell societies far from their birthplace. This supports increased equestrian interconnectivity at a supra-regional level, which is discussed in light of the most recent horse ancient DNA (aDNA) results. Used alone, this could support existing theoretical models of the European Bronze Age. However, when included with all lines of research, the isotope evidence supports local use, travel on, and trade in horses that was not under the auspices of an elite class of warrior rulers. In this case, the methodological integration of stable isotope analysis with multiple lines of evidence forces a re-examination of Bronze Age narratives of human-horse relationships that have particular consequences for expressions of political authority. This confirms the need to have a detailed comparative and contextual understanding of the animals and humans involved in biogeochemical studies when used in the formation of broad narratives of European Prehistory.

## 4 TRANSFORMATIONS OF POPULATIONS AND LIFESTYLE IN THE 2ND MILLENNIUM B.C. IN THE GREAT HUNGARIAN PLAIN - A BIOARCHAEOLOGY PROJECT

**Abstract author(s):** Hajdu, Tamas (Eötvös Loránd University) - Szeniczey, Tamás (Department of Biological Anthropology, Faculty of Science, Eötvös Loránd University) - Fülöp, Kristóf (Research Centre for the Humanities, Institute of Archaeology) - McCall, Ashley (Independent Researcher) - Horváth, Anikó - Palcsu, László - Major, István - Molnár, Mihály (Isotope Climatology and Environmental Research Centre, Institute for Nuclear Research, Debrecen) - Dani, János (Déri Museum, Debrecen) - Kiss, Viktória (Research Centre for the Humanities, Institute of Archaeology)

**Abstract format:** Oral

Archaeological research of the material culture of the Hungarian Late Bronze Age in the Carpathian Basin has revealed several examples of transitions from one culture to another. The appearance of the Tumulus Grave Culture around the end of the Hungarian Middle Bronze Age and the beginning of the LBA (1500-1450 B.C.) is particularly important, as it is a rare example of a Bronze Age period in Transdanubia and the Great Hungarian Plain when a relatively unified archaeological culture can be observed in both areas.

It is not yet entirely clear whether the expansion of the Tumulus Grave Culture is a consequence of immigration, or it is a cultural transition of the local populations, or maybe the combination of both. According to traditional archaeological interpretations the appearance of the Tumulus Grave Culture, however, resulted in the abandonment of the

former system of tell-settlements as well as a gradual increase in the number of horizontal settlements. It has not yet been clarified whether preference was a shift from farming to animal husbandry or the changes of the settlement system is not related to the transformation of subsistence strategy.

The aim of our study is to show our newly started multidisciplinary project – and the preliminary results – on human skeletal remains from the Middle and Late Bronze Age from the territory of Hungary. The planned investigations will seek to answer the above questions and will also attempt to elucidate what everyday circumstances or difficulties Bronze Age populations were faced with, what diet or lifestyle, and health condition they had.

This paper was supported by the Hungarian Scientific Research Fund (OTKA FK 128013) and the Momentum Mobility research project (Institute of Archaeology, Research Centre for the Humanities) granted by the Hungarian Academy of Sciences (Project Nr. LP 2015-3).

## 5 MOBILITY IN THE EARLY/MIDDLE BRONZE AGE COMMUNITIES ALONG THE DANUBE IN CENTRAL HUNGARY BASED ON ISOTOPE DATA OF CALCINED BONES

**Abstract author(s):** Cavazzuti, Claudio (University of Bologna; University of Durham) - Csányi, Marietta (Damjanich János Múzeum, Szolnok) - Vicze, Magdolna (Hungarian National Museum) - Horváth, Anikó - Palcsu, László (ICER Centre, Institute for Nuclear Research) - Hajdu, Tamás (Eötvös Loránd University) - Lugli, Federico (Università di Bologna, Alma Mater Studiorum) - Cipriani, Anna (Università di Modena e Reggio Emilia) - Kiss, Viktória (Hungarian Academy of Sciences)

**Abstract format:** Oral

Thanks to recent methodological advances, strontium isotope analyses can now be applied to cremations. Successful tests on the technique have also been performed in the framework of extensive  $^{87}\text{Sr}/^{86}\text{Sr}$  analyses on Bronze Age urnfields in Italy and Hungary. These achievements allow us to explore the theme of human mobility among Hungarian Bronze Age groups, which practiced cremation as their funerary ritual at large. Our paper will present the first results of isotopic analyses from two sites of the Vátya culture (c. 2100-1500 BC, Szigetszentmiklós-Úrgehegy, Százhalombatta-Belső-Újföldek), complemented by two other cemeteries from Kelebia (Vátya culture) and Jánoshida (Tumulus culture) in cooperation with J. Giblin. The sampling strategy has targeted cremations and (few exceptional) inhumations at Szigetszentmiklós and Százhalombatta, also individuals of different sex, age and social status in order to investigate human mobility within their social context. The case of the richly furnished grave n. 241 from the Late Nagyrev/Vátya urnfield of Szigetszentmiklós is of particular interest. The urn contains the cremated bones of an adult woman and two 7 to 8-month-old foetuses, as well as remarkably prestigious goods. Using  $^{87}\text{Sr}/^{86}\text{Sr}$  analysis of different dental skeletal remains, which form in different life stages, we were able to reconstruct the potential movements of this high-status woman over almost her entire lifetime, from birth to her final days.

This paper was supported by the Hungarian Scientific Research Fund (OTKA FK 128013) and the Momentum Mobility research project (Institute of Archaeology, Research Centre for the Humanities) granted by the Hungarian Academy of Sciences (Project Nr. LP 2015-3).

## 6 CHALLENGES AND LIMITATIONS OF THE BIOARCHAEOLOGICAL STUDY OF BELGIAN CREMATIONS FROM THE NEOLITHIC TO THE EARLY MEDIEVAL PERIOD

**Abstract author(s):** Snoeck, Christophe (Vrije Universiteit Brussel - VUB) - Capuzzo, Giacomo (Université Libre de Bruxelles - ULB) - Dalle, Sarah (Ghent University; Vrije Universiteit Brussel - VUB) - Hlad, Marta (Vrije Universiteit Brussel - VUB; Université Libre de Bruxelles - ULB) - Sabaux, Charlotte (Ghent University; Université Libre de Bruxelles - ULB) - Saesle, Kevin (Masaryk University, Brno) - Stamatiki, Elisavet (Vrije Universiteit Brussel - VUB; Université Libre de Bruxelles - ULB) - Veselka, Barbara (Vrije Universiteit Brussel - VUB) - Vercauteren, Martine (Université Libre de Bruxelles - ULB) - De Mulder, Guy (Ghent University)

**Abstract format:** Oral

More than 2000 human cremations are being investigated within the CRUMBEL project (Cremation, Urns and Mobility – Ancient population dynamics in Belgium) to investigate changes in demography, migrations patterns and landscape use as well as variations in funerary practices in Belgium from the Neolithic to the Early Middle Ages. This project combines osteoarchaeological analyses with a wide range of analytical techniques (isotope analyses, infrared spectroscopy, radiocarbon dating, etc.). New developments in osteoarchaeology allow for an increase in the success rates of sex and age assessment of cremated human remains (which are currently very low, around 20%). Strontium elemental concentrations and isotope ratios are combined to look at changes in landscape use and mobility while carbon and oxygen isotope ratios are used, together with infrared analyses, to reconstruct funerary practices.

This presentation addresses the challenges and limitations encountered in this project from the acquisition of the samples to the interpretation of the results and discusses how large-scale projects can provide new opportunities for understanding past populations.

## 7 ANIMAL ISOTOPE NARRATIVES AND THE MORE-THAN-HUMAN PAST

**Abstract author(s):** Brusgaard, Nathalie (University of Groningen)

**Abstract format:** Oral

Stable isotope analysis has become a staple of zooarchaeological research, providing increasing insight into past animal diet, mobility, ecology, and human management. However, often these insights into the lives of individual animals in the past still serve primarily as a proxy for human behaviour, with limited focus on animal narratives. This paper discusses the potential of stable isotope research for exploring animal agency and the more-than-human past, in particular when used in multi-proxy approaches. It does so through the discussion of two case studies from prehistoric Netherlands. The first centres on the transition from hunting-gathering to animal husbandry in the Dutch wetlands in the fifth millennium BC. This paper discusses how the study of animal diet in this period through stable carbon and nitrogen isotope analysis can shed light on animal behaviour and interactions with humans. The second focuses on the exchange of cattle in the Bronze Age (2000 – 800 BC), examining the use strontium isotopes in the study of the socio-economic significance of livestock. Through these two case studies, this paper debates the use of stable isotope research for exploring animal narratives in human-animal interactions, contending that understanding these is essential for reconstructing a more-than-human past.

## 8 NEW INSIGHTS INTO LONG-TERM DIET IN NEOLITHIC SOUTHERN ITALY. A STABLE CARBON AND NITROGEN ISOTOPE APPROACH

**Abstract author(s):** Tafuri, Mary Anne - Soncin, Silvia - Panella, Sofia (Sapienza University of Rome) - Robb, John (Cambridge University)

**Abstract format:** Oral

The introduction of domesticated plants and animals in Southeastern Europe from Southwestern Asia is bracketed between the 7th and 6th millennia calBC, following a known longitudinal dispersal. In Italy, the earliest appearance of domesticated crops and ungulates outside their natural climatic zone concentrates in the southeastern regions and corresponds to a progressive increase in human occupation along the Adriatic coast. Stable carbon and nitrogen isotope studies in prehistoric Italy have relatively grown in the past decade improving our understanding of dietary practices throughout the Peninsula. However, this is hardly systematic, with some geographical areas and chronological phases dramatically understudied. In particular, what is hard to reconcile is the generally homogenous economic background of Neolithic Southern Italy with its corresponding fragmented cultural environment. There is a general consensus on a widespread model of exploitation of recently introduced domesticated crops and animals, but we appear to maintain a clear separation in the patterns of exploitation of raw materials or pottery traditions. One way to overcome this conflict is to explore food practices as further evidence of cultural complexity. In this direction, here we attempt to provide an exhaustive neolithic isoscape of Southern Italy using stable carbon and nitrogen analysis of human and animal collagen from a large number of Neolithic sites, of early, middle and late phases. A general picture of "local" traditions within a larger model appears to be confirmed for Neolithic southeastern Italy. Here, the heterogeneity of dietary habits between communities living in similar environments suggests that socio-cultural factors might have played a key role in food choices and/or farming and herding practices regardless of local availability and proximity to other communities.

## 9 CHILDREN'S NUTRITION AND LIFESTYLE IN THE NEOLITHIC ACCORDING TO THE STABLE ISOTOPE ARCHAEOLOGICAL EXAMINATION IN THE EASTERN PART OF HUNGARY

**Abstract author(s):** Somogyvári-Lajtár, Eniko (Institute of Archaeological Sciences, Eötvös Loránd University; Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences) - Demény, Attila - Gugora, Ariana (Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences) - Hajdu, Tamás (Department of Biological Anthropology, Faculty of Science, Eötvös Loránd University) - Nagy, Emese (Déri Museum) - Pap, Ildikó (Department of Biological Anthropology, Faculty of Science, Eötvös Loránd University; Department of Biological Anthropology, Faculty of Science and Informatics, University of Szeged) - Anders, Alexandra (Institute of Archaeological Sciences, Eötvös Loránd University)

**Abstract format:** Oral

Children have long been an invisible part of human communities in archaeological research. With the development of bioarchaeology, biosocial archaeology, and stable isotope archaeology in recent decades, we have been able to answer a number of important questions about the lifestyles of children who once lived. In this study, we searched for answers to questions related to nutrition and lifestyle by isotope chemistry of non-adult members of the populations of three Middle and Late Neolithic (5500-4500 BCE) sites in the Eastern part of Hungary in the Great Hungarian Plain (Hajdúnánás-Eszlári út, Polgár-Ferenci-hát, Polgár-Csőszhalom). The main questions were: How long did the breastfeeding last and when did the weaning begin? What was the general nutrition of the children like? Where was the children's place in the community based on their dietary habits? Finally, we had the opportunity to observe the burials in a complex way which is based on the comparison of the results from the archaeological, isotope chemistry,

and anthropological studies. Stable carbon and nitrogen isotope data from bone and tooth dentin collagen and stable carbon and stable oxygen data from tooth enamel apatite were used to determine breastfeeding signals and weaning ages. For juvenile stable carbon and nitrogen isotope data from bone and tooth collagen and stable carbon and oxygen isotope data from bone and tooth enamel apatite were used to examine the dietary habits. The present work is the first to systematically address the lifestyle of children in the Neolithic in the Carpathian Basin. Furthermore, the three sites cover about 1000 years in time, and thus we were able to observe both temporal and spatial changes. The project is financed by a grant from the National Research, Development and Innovation Fund (Grant K124326).

## 10 **NEW RADIOCARBON DATES FROM THE USATOVO CULTURE SUGGEST A RE-EVALUATION OF THE CULTURE'S CHRONOLOGY**

**Abstract author(s):** Nikitin, Alexey (Grand Valley State University) - Lillie, Malcolm - Budd, Chelsea (Umeå University) - Potekhina, Inna - Ivanova, Svetlana (Institute of Archaeology, National Academy of Sciences of Ukraine) - Patterson, Nick (Broad Institute of Harvard and MIT) - Reich, David (Harvard Medical School; Harvard University)

**Abstract format:** Oral

Usatovo is one of the kurgan cultures of Eneolithic southeast Europe, occupying a strategic crossroads between the eastern Balkans and the Ponto-Caspian steppe. Usatovo is considered to be related to the farming cultures of southeastern Europe as well as to the pastoralist groups of the North Pontic. Usatovo currently dates to the second half of the 4th millennium BCE, based on C14 measurements obtained on pottery and charcoal using the scintillation method, as well as through ceramic typologies. Recent AMS radiocarbon dates obtained on human remains from the Usatovo site of Mayaki fall within the second half of the 5th millennium BCE. Stable isotope values ( $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ ) obtained on human remains are atypical for farming or hunter-gatherer communities of southeast Europe and imply a heavy input from freshwater and/or marine resources in diet. Stable isotope ratios suggest the presence of Reservoir Effect (RE) potentially offsetting the dates from the human remains, although its quantification is difficult to establish due to the lack of contextual faunal remains. Even with the RE taken into account, the discrepancy between the scintillation C14 dates/ceramic typology and absolute AMS dating may still remain. Both anthropological and ancient DNA data are consistent with Usatovo being an admixture of farmer and steppe ancestries. The timing of this admixture may help refine the Usatovo chronology.

## 11 **NEOLITHIC DIETARY PRACTICES: COMPARISON OF STABLE ISOTOPES AND DENTAL MICROWEAR**

**Abstract author(s):** Kvetina, Petr (Institute of Archaeology of the Academy of Sciences of the Czech Republic) - Dřtikolova Kaupova, Sylva (Department of Anthropology, National Museum) - Jarosova, Ivana (Anthropos Institute, Moravian museum) - Hrnčíř, Václav (Department Linguistic and Cultural Evolution, Max Planck Institute for Evolutionary Anthropology, Leipzig) - Tvrđy, Zdenek (Anthropos Institute, Moravian museum) - Pokuřta, Dalia (Department of Archaeology and Classical Studies, ARL Stockholm University) - Trampota, František (Institute of Archaeology of the Academy of Sciences of the Czech Republic)

**Abstract format:** Oral

The aim of the paper is to reconstruct Middle and Late Neolithic dietary practices in the area of today's Czech Republic and Lower Austria with a help of complementary evidence of stable isotope and dental microwear analysis. From a total of 171 individuals, carbon and nitrogen isotopic values were measured in bone collagen of 146 humans, accompanied by 64 animals, while 113 individuals were included into buccal dental microwear analysis. The samples were divided into two newly established chronological phases: Neolithic B (4900–4000 BC) and Neolithic C (3800–3400 BC) based on frequency occurrence of radiocarbon data. A small but statistically significant shift in human carbon isotopic values to higher  $\delta^{13}\text{C}$  was observed during the Neolithic C, reflecting probably the underlying change of plant growing conditions. Based at dental microwear result, a tendency to higher meat consumption could be observed in adults during Neolithic C, which was however not reflected in nitrogen isotopic values. The positive correlation between nitrogen isotopic values and dental microwear characteristics of meaty diet observed in adult sample suggest meat rather than milk was a dominant source of animal protein. We believe that the documented shift represent change between the early Neolithic way of live and the new economy and new social structures of the later period.

**Abstract author(s):** Varkuleviciute, Karolina (Institute for Pre- and Protohistory, Christian Albrechts University, Kiel; ROOTS Cluster of Excellence) - Makarewicz, Cheryl (Institute for Pre- and Protohistory, Christian Albrechts University, Kiel)

**Abstract format:** Oral

Central Asia was a crossroads for ancient east-west exchange of plant cultivars and animal domesticates, a process facilitated by mobile pastoralists who engaged in seasonal transhumance to meet the dietary needs of their livestock. We present new stable isotope data of over 300 humans and animals from Bronze Age and Iron Age contexts across Kazakhstan, adding to the large corpus of isotopic data already available in order to further trace the regional and temporal differences in human dietary dynamics – especially the consumption of millet, as well as animal herding strategies – including pasturing and/or foddering practices of caprines, cattle and horses. We identify regional differences in human dietary intake throughout the steppe regions, which is likely associated with variation in the consumption of millet as well as species-specific livestock herding strategies. When this isotopic data is considered in a wider zooarchaeological, archaeobotanical and archaeological context we begin to outline a more complex intersection between environmental dynamics, livestock husbandry and human subsistence that moves beyond the reconstruction of individual dietary choices.

**Theme:** 2. [Re]integration

**Organisers:** Polanyi, Tamas (Sandbox Archaeology) - Szeverényi, Vajk (Déri Múzeum)

**Format:** Regular session

Archaeology is well equipped to study history either as sequences of transformative events, or as a continuous process of everyday life where time serves as a function of cultural persistence. On a macro-scale, sweeping reconfiguration of human-material relations marked by events and interpreted as cultural change have been at the center of archaeological practice since the first descriptions of 'cultures' as convenient analytical and spatio-temporal units for the analysis of past societies in the early 20th century. Wars, migrations, far-reaching effects of economic innovations have been considered the primary motors and signatures of change at the center of archaeological narratives, marked by an overwhelming focus on socio-economic and political systems. Alternatively, the archaeology of everyday life to study the material residues of cumulative and repetitive action became a central topic of archaeological practice in the 1980's. Within narratives of everyday life, emphasis shifted to the mundane, to the multivocality and multidirectionality. Corresponding to the decreasing scale of analysis and interpretive context, the struggle became to present the ways in which people's repetitive day-to-day practices mattered and figured into great chains of historical events. With no attention paid to their complementary character, these approaches developed to involve different interpretative strategies, necessitate different narrative modes, rely on different properties or analytical assessment of material evidence, require different methodologies, and are linked to different spatio-temporal scales.

The aim of our session is to facilitate a discussion focusing on processes of becoming, the ways in which the messiness of humanity unfolds, and leads to recognizable patterns of historical transformation. Whether using fractal replication, eventful history, theories of structuration, or iterations of the Annales School, we invite participants that seek to establish a connection between agency and structure, and bridge the scalar gap between micro- and macro-levels of observation and interpretation in their case studies.

## ABSTRACTS

### 1 INTERREGIONAL INTERACTION IN THE EARLY BRONZE AGE CARPATHIAN BASIN: A BOTTOM-UP APPROACH

**Abstract author(s):** Szeverenyi, Vajk (Déri Múzeum)

**Abstract format:** Oral

Interregional interaction – the mobility of people, objects and ideas – was a major force of social change throughout the Bronze Age in western Eurasia. The study of such contacts is coeval with the study of prehistory in Europe. However, while such contacts have been studied intensively in the past as well, they were usually embedded either in a traditional culture-historical approach, where the focus was on chronology or on interpretations involving migrations or some form of untheorized diffusion, or in top-down approaches such as world-systems theory or wealth finance in chiefdoms. While these latter approaches are theoretically much more elaborate, they still fail to take into account the actions, practices and agency of people during such cross-cultural encounters. The aim of the present paper is the bottom-up study of the impact of interregional interaction on local social development in the Early Bronze Age of the Carpathian Basin. The main questions are 1) how people during their everyday life encountered such cross-cultur-



al impacts – foreign objects, people and ideas, 2) how through these personal interactions, reactions and decisions they adopted, rejected or reinterpreted according to local cultural logic such foreign elements, and 3) how these elements in turn led to local social changes.

## 2 **CIRCUITS OF REPRODUCTION: THE OPPORTUNITIES AND POWER TO CHANGE IN BRONZE AGE SOCIETY**

**Abstract author(s): Polanyi, Tamas (Independent scholar)**

**Abstract format: Oral**

How does macro-level change come about in society? What role do individuals play in such transformations? What is the efficacy of human agency? These are critical questions anthropologists, historians, political scientists are grappling with. These are questions lurking behind most archaeological narratives of past societies framed in ideology and theory that rarely become clarified. Various models of change have been described and employed generally categorized as top-down or bottom-up approaches. Practice theory, habitus, theories of structuration are important avenues for constructing bottom-up narratives of how societies are organized and change over time, but the context, visibility, and mechanisms of scalar effects of the everyday are often assumed but not explored rigorously. In this paper I outline an approach centering on the politics of death and Anthony Giddens' largely overlooked 'combustion engine' of social change, the circuit of reproduction. I use the example of central Hungarian Bronze Age to develop the argument linking the local, the contingent, the interpersonal with scales of the regional and supra-regional, where transformations become visible and detectable in archaeological narratives. I then conclude that as a context of interlaced structural domains populated by conscious and intentional actors engaging in public processes of materialization, funerals are indeed circuits of reproduction, where the efficiency of human agency becomes traceable and visible marking the trajectories of social change.

## 3 **TRANSFORMATIVE CHANGE IN BRONZE AGE TRANSYLVANIA**

**Abstract author(s): Quinn, Colin (Hamilton College)**

**Abstract format: Oral**

Every transformative change in social organization emerges out of the constant small-scale changes in daily lives. What distinguishes transformative change from other kinds of change, and what are the consequences for archaeologists seeking to understand social dynamics in the past? I employ a framework that centers the recursivity between human action and institutional organization to better understand how transformative changes occur. As a case study, I focus on emergent inequality in Bronze Age Transylvania (2700-1320 BCE). Through an examination of settlement, mortuary, chronological, and artifactual evidence, I argue that inequality became institutionalized only during the Late Bronze Age, centuries later than previously assumed. Throughout the Early and Middle Bronze Ages, there was dissonance across multiple institutions in how inequality was made, marked, and masked. Many institutional changes that occurred throughout the Early and Middle Bronze Age set the stage for Late Bronze Age social transformations. In particular, the expansion of long-distance trade, diversification of burial rites that emphasized intra-community difference, and an increase in the venues for signaling provided the opportunities for Late Bronze Age communities to reorganize hierarchically. These institutional changes were incremental and unintentionally set the stage for events to precipitate transformative change.

## 4 **CONTRASTING EXAMINATIONS OF THE FUNERARY ARCHAEOLOGY OF THE EVERYDAY AND THE ATYPICAL AS A SOLUTION FOR THE STRUCTURE: AGENCY IMPASSE**

**Abstract author(s): McSparron, Cormac - Murphy, Eileen (Queen's University Belfast)**

**Abstract format: Oral**

For several decades archaeology has oscillated between materialist studies of society and its structure and studies of individuals and their agency. Funerary archaeology has perhaps typified this debate with many archaeologists taking entrenched positions: processualist versus post-processualist. This lecture will suggest that archaeologists must be able to talk about both structure and agency when discussing ancient societies. It will examine six unusual burials of children and adolescents of the single burial tradition of the Irish later Chalcolithic Period and Early Bronze Age, in the context of a wider study of social structure of that era. It will use these atypical burials to give nuance, and as a counter balance, to the results of larger statistical studies which, by definition, look at typical practices, and focus on structure, at the expense of personal agency and the individual. These burials, which may witness unexpected, uncommon or possibly even tragic events, add texture to an era about which we know more at a societal level than at the level of the individual.

## “HANDS-FREE”! A NOVEL EMBODIED EXPERIENCE LED TO A COGNITIVE REVOLUTION – FINGERS!

**Abstract author(s):** Lindstrom, Torill Christine (University of Bergen, Norway) - Zubrow, Ezra (University at Buffalo; University of Toronto)

**Abstract format:** Oral

Our cousins, the big apes as well as monkeys, have hands with fingers as well as opposable thumbs. They also have large smart brains, and some of them use and make simple tools. Yet, they do not have the human culture. There are many general theories regarding what triggered human evolution. Some are: bigger brains caused better tools; better tools caused bigger and better brains; material engagement caused both; environmental crises caused or forced development; affluence caused or gave room for development. All are relevant, but none of them are conclusive. We suggest that “The Hands-Free hypothesis of human evolution” is most productive and inclusive. We propose a cascade hypothesis for the development of hand free hand use. Initially, the tree orientation facilitated the use of hands for a “holding” preference. Next comes a preferred hand use for visually guided object acquisition. The preference for acquisitions concatenates into a preference for uni-manual and then bi-manual manipulation. Free hands on the ground increases accessibility to various materials. Free hands can do many more manipulations (shaking, hammering, squeezing, to-mouth actions, even transfer actions to the other individuals). Thus, sensori-motor circuits of hands use, become circuits of acquisition, and become circuits for acting on, or transferring objects. This move, to become grounded and hands-free, was risky, challenging, and exciting. This paper explores the consequences of that novel “hands-free” situation.

## PERCUSSIVE OSSEOUS INDUSTRY A HUMAN REVOLUTION BETWEEN PRE-FORMATION AND WASTE SELECTION [PAM]

**Theme:** 6. A Decade after the ‘Third Science Revolution in Archaeology’

**Organisers:** Thun Hohenstein, Ursula (University of Ferrara) - Veffese, Delphine (IPH. Museum national histoire naturelle Paris) - Marín Hernando, Juan (IPHES)

**Format:** Regular session

Archaeologists have developed a growing interest in the study of the bone industry related to percussion, particularly for Palaeolithic periods. This type of industry became frequent, notably such as the manufacture of bone retouchers, but not only, and recent papers highlight the possible use of some bone fragments as hammer or anvil. Most of these tools were originated from herbivore long bones, although some specific elements as tusk fragments, teeth or antlers were common too. The cross-application analyses with new methodologies and more classical ones specific to archaeozoology allow to bring answers to essential questions about this type of bone industry:

1. the origin of the bone tools and pseudo bone tools;
2. the place in the technical equipment of the hunter-gatherers;
3. the blank selection: pre-formation of the blank during the butchering process or selection after, among the butchery waste;
4. the in situ used or possible transport, regarding the delay after butchery process and use and finally the abandonment.

In this session, we wish to bring together researchers working across the broad field of the osseous industry. We propose studies from different points of view:

- Morphometric and geometric analyses (blanks);
- Statistical analyses (blanks and marks);
- Archaeological experiments (neo-taphonomy);
- Functional and use analyses (traceology over bones);
- Raw material (teeth, tusk, bone);
- Typology and nomenclature of the marks;
- Proteomic and DNA (taxonomy).

Instead of focusing on one method, this session aims at exploring how different methodologies may complement each other within and between case-studies and projects to provide a more nuanced understanding of the technical behaviours related to the bone industry through the Palaeolithic and the diverse humanities. Papers may focus on case-studies, theoretical frameworks and the development of specific methodologies related to the percussive osseous industry.

## 1 BONE FRAGMENTS OR NEANDERTHAL BONE TOOLS? INTERDISCIPLINARY RESEARCH ON FAUNAL ASSEMBLAGE FROM ABRIC ROMANÍ (CAPELLADES, SPAIN)

**Abstract author(s):** Mateo Lomba, Paula (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Cáceres, Isabel (Universitat Rovira i Virgili, Departament d'Història i Història de l'Art; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA) - Ollé, Andreu (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Marín, Juan (UMR-7194-Histoire Naturelle de l'Homme Préhistorique - HNHP, Museum National d'Histoire Naturelle; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA) - Chacón, M. Gema (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art; UMR-7194-Histoire Naturelle de l'Homme Préhistorique (HNHP), Museum National d'Histoire Naturelle) - Vallverdú, Josep - Saladié, Pamira (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art; Unit Associated to CSIC, Departamento de Paleobiología. Museo Nacional de Ciencias Naturales)

**Abstract format:** Oral

Bone breakage by human groups during the Middle Palaeolithic was an activity aimed at the exploitation of their nutritional resources and, eventually, at the manufacture of bone tools. However, taphonomic studies have also highlighted the presence of pseudo-tools accidentally originated by different agents in faunal assemblages. Certain morphologies, the presence of removal scars, some bone surface modifications in specific areas, among other features, can mimic some minimally modified bone tools.

Abric Romaní is a Middle Palaeolithic rock-shelter with a sequence in which different types of occupation and subsistence strategies are documented. Specifically, level J (ca. 50 ka) shows intense exploitation of ungulate carcasses during seasonal occupations and a high degree of intentional anthropic bone breakage. In addition, some bone tools have been identified, but up to now they had not been the subject of a detailed study. This work aims to analyse these elements and to identify new tools within the assemblage. The study method employed consists of an interdisciplinary approach. On the one hand, the fracturing patterns of the bone remains are taphonomically analysed, incorporating geometric morphometry to the classical methodology. In addition, the tools are described from a technological and traceological perspective. This information is compared with an extensive experimental program that reproduces: (1) the obtaining of the raw material through the intentional fracturing of long bones, (2) the manufacture of the tools and (3) their use in different activities.

The results obtained allow us to present an assemblage of bone tools and pseudo-tools, but also complement the knowledge about the management of faunal resources performed by these Neanderthal groups.

## 2 FRESHNESS OF BONE-RETOUCHERS: AN EXPERIMENT TO DISCRIMINATE USE OF BONE WITH DIVERS DEGREE OF TIME EXPOSURE TO RETOUCH LITHIC TOOLS

**Abstract author(s):** Vettese, Delphine (Muséum national d'Histoire naturelle, Paris; University of Ferrara; Grupo EvoAdapta, Santander) - Arzarello, Marta - Muffillo, Brunella - Thun Hohenstein, Ursula (University of Ferrara)

**Abstract format:** Oral

Long bones fragments were used as retouchers during the middle Palaeolithic. Their morphology and the characterisation of the marks left by the work of lithic tools are well studied. Some studies focus on the use of fresh or dry bone fragments to retouch lithic tools to highlight the dry bone have lost the elasticity and seem to be less efficient. This problematic of the use of fresh bone as retouchers is important because it influence the identification of intentional and controlled production of blank or the use of butchery waste.

We performed an experiment using shaft fragments of long bones to manufacture and retouch lithic tools. To test the freshness of the bone fragments, we expose to the weather one sample during one year and one sample used a few times (one week) after the animal death. To avoid an inter-individual variation, only one lithician used all the bone tools. We would like to verify the hypothesis of the lesser efficiency of the dry blanks than the fresh ones. Besides, as the typology of the retouch marks are well known, our study focus on the morphology of the traces depending on the freshness of the blank. Our preliminary results show main differences regarding the retouch marks and areas, both on morphology features and traces numbers. We observe more scaled areas on the dry bone fragments. In this study, we attempt comparing our results on experimental retouchers with archaeological ones from Riparo Tagliente, Italy (MIS 4-3) to identify if retouchers used were fresh or dry. This comparison could bring some evidence of the specific cognitive behaviour regarding bone tools and probable preformation of the blank.

### 3 A USEFUL TAXON. THE EXPLOITATION OF CERVIDAE LONG BONES AS RETOUCHERS IN THE MOUSTERIAN LEVELS OF RIPARO TAGLIENTE

**Abstract author(s):** Perez, Andrea (University of Trento) - Vettese, Delphine (IPH - Museum national histoire naturelle Paris) - Thun Hohenstein, Ursula (University of Ferrara)

**Abstract format:** Oral

Bone retouchers are one of the first bone tools used during the Lower and Middle Palaeolithic. Their presence highlights a complex human behaviour showing the reuse of bone waste or a predetermination of the support. In this study, we focus on bone retouchers identified in the Mousterian levels 40–42 of Riparo Tagliente, a rock shelter in the Northeast of Italy (MIS 4-3). According to the relative abundance of these bone tools in the assemblages (2%), our work aimed at understanding if the supports of these retouchers had been selected in a particular way according to the species available and the element transported into the site. After both anatomical and taxonomical determination of each support, we characterized each modified area recording the features of marks. Our results show that bone retouchers are mainly long bones diaphysis fragments (85%) manufactured with *Cervus elaphus* and *Capreolus capreolus* bones. Regarding the unidentified remains, the middle and small sized ungulates were preferred. These species dominate the faunal spectrum of the levels studied. This similarity could show an opportunistic reuse of the butchery waste remains to manufacture retouchers. We identified a selection of tibias (6%) and metapodials (9%) due to the morphological features of these bones, with straighter plane surfaces. Our results show both a use of the butchery waste regarding the taxa and the selection of specific long bones, to obtain specific raw material useful for the production of retouching tool. The comparison of our results, with the analyses of the other Mousterian levels of Riparo Tagliente highlights a wide range hunting, technical and economical behaviours of Neanderthal groups throughout the Mousterian stratigraphic sequence.

### 4 RETOUCED BONE TOOLS IN MIDDLE PALAEOOLITHIC LAYERS AT COMBE-GRENAL (DORDOGNE, FRANCE)?

**Abstract author(s):** Bernard, Emma (Doctorante, TRACES - UMR 5608) - Costamagno, Sandrine (Directrice de Recherche CNRS, TRACES - UMR 5608) - Discamps, Emmanuel (Chargé de recherche CNRS, TRACES - UMR 5608) - Faivre, Jean-Philippe (Chargé de recherche, PACEA - 5199) - Tartar, Élise (Chargé de recherche CNRS, TRACES - UMR 5608)

**Abstract format:** Oral

Although the last decades have been a prolific period for research on Neanderthal's technical systems, our knowledge of their bone industries remains limited. While some retouched tools are recorded, the origin of some scars is particularly difficult to identify. If they could stem from butchering activities or taphonomical processes, there is a possibility that they were produced intentionally by flaking the bones. A better knowledge of Neanderthal material culture is essential to this issue, which can only be resolved through an exhaustive and diversified approach of technical systems.

An interdisciplinary approach associating archaeozoology, microwear analysis and experimental archaeology has been developed since the discovery of bone flakes with enigmatic removals during new excavations at the Middle Paleolithic site of Combe-Grenal (Dordogne, France). In the framework of a PhD project, the examination of Discoid levels has revealed the presence of nearly 200 pieces with series of removals. Each fragment is recorded by the criteria classically acknowledged in archaeozoology (TIPZOO database; Discamps, 2020) with the addition of specific informations on removal scar (e.g. size, depth, position on the support, notch and termination description). Each lateralized fragment is then drawn on a bone template using "QuantumGIS" (version 3.16.16). The location of cortical and medullar flakes and common impact points are recorded to reach quantitative data of these marks. In this communication, we will present the first results of the morphometrical and technological study of archaeological pieces, as well as preliminary analysis of experiments designed to test whether removals on bone flakes were produced intentionally or as a consequence of bone fracturation for marrow extraction. In the future, microwear analysis will offer complementary data for a better understanding of the nature of these particular bone remains.

### 5 BEYOND DIET: THE ANALYSIS OF BONE AND ANTLER TOOLS AND THE ROLE OF DEER IN HUNTER-GATHERER GROUPS FROM SOUTHERN BRAZIL

**Abstract author(s):** Martinez Okumura, Maria Mercedes (University of Sao Paulo) - Mingatos, Gabriela (Federal University of Rio de Janeiro)

**Abstract format:** Oral

The Tunas site (PR-WB-16), located in Parana state (Brazil), is dated from 11,158 - 10,752 cal. B.P. cal. to 7836 – 7666 cal. A.P.. In addition to human remains and lithic materials, the excavation of the site also yielded artifacts made of bones and antlers. Such artefacts have interesting specificities related to the choices of raw material and their manufacture by ancient human groups. The technological and typological analysis indicates a preference for the use of a specific part of the metapodials of deer to make the tools. The remains of anatomical parts transported to the site, especially long bones of the upper and lower limbs, represent a potential selection of these anatomical parts to be used as raw

material for making tools. The analysis of such bone artifacts using an experimental archaeology approach revealed part of the stages of debitage and façonnage of these instruments. The use of flint, previously observed as a raw material for the manufacture of lithic points, was also inferred in the raclage technique to make bone tools. The antler fragments were found in the early Holocene layers where lithic points were also observed, suggesting the use of such antlers as tools for pressure flaking of lithic points. The use of deer bones and antlers as raw material for making tools suggests a role of such animals beyond the diet, permeating the economic and symbolic spheres.

## 6 THE EARLIEST OCCURRENCE OF ANTLER HAMMERS IN THE EUROPEAN PALAEOLITHIC RECORD. NEW DATA FROM SOUTHERN ITALY

**Abstract author(s):** Thun Hohenstein, Ursula - Muffillo, Brunella - Arzarello, Marta - Peretto, Carlo (University of Ferrara)

**Abstract format:** Oral

The use of tools made of animal hard tissue, such as bone, antler, tooth and ivory – generally labelled 'bone tools' or 'osseous tools' – represents a key issue for research on human cultural evolution.

Bone tools were used as both raw materials to be shaped or as tools for shaping, mostly deer antlers or distal epiphysis used as hammers or percussors.

Among the earliest bone tools, antler hammers are known to have played a key role for the manufacture of finely-flaked handaxes.

The bone tool technology is now well defined and described in European Middle and Upper Palaeolithic assemblages. However, evidence for the use of antler hammers is generally rare. Among others, a reason could be envisaged in the difficulties of identifying knapping damage on antlers.

For this reason is essential to integrate the taphonomic and zooarchaeological studies with the results of lithic analysis.

In this paper we discuss the state of the art of the earliest evidence for antler hammers in Palaeolithic Europe, in the light of the new data recovered in the acheulean site of Guado San Nicola (southern Italy).

## 7 SMALL NEEDLE PRODUCTION AND USE DEVELOPMENT DURING NEOLITHIC PERIOD IN JORDAN

**Abstract author(s):** Abuhelaleh, Bellal (Al Hussein Bin Talal University)

**Abstract format:** Oral

Jordan Neolithic farming villages present evidence of human development during the Neolithic period. These sites reveal complicated social life system organization and daily demands.

Researcher classified bone industry regarding to the shape and size of these tools and many of them have been unfortunately remain without any particular analysis or experimental work to explain their use or production technique.

We have new particular discovery of small needles which rear found in the middle east as well, maybe in the world during the Neolithic period which go far of 6000 BC. It has a sophisticated work and not only for clothes industry as many researchers thought that was one of its main use only.

Our paper takes attention for needle production and classification and new possible use regarding to typology and shape, size and presence of perforation (EYE). As well to open new possible discussion about human demands during the Neolithic period.

---

## 432 LOGISTICS AND NATURAL RESOURCES: SUPPLY AND TRANSPORTATION THROUGH TIME (5TH CENTURY BC – 5TH CENTURY AD)

**Theme:** 4. Polis, Empire, League and Beyond – Living in Interconnected Societies

**Organisers:** Vanderhoeven, Timo - Kars, Eva (EARTH Integrated Archaeology) - Bongers, Toon (SDEP - Ghent University) - Kienzle, Peter (Landschaftsverband Rheinland - LVR – Xanten) - Delencre, Florent (University of Tours / UMR 6298 ARTEHIS)

**Format:** Regular session

Research on logistics and distribution is a tool to unravel the organization of ancient economies and trade relations. Unfortunately, research on logistics is often restricted to the distribution of small finds like pottery, glass and metal objects. They show exceedingly long and far trade links for small and precious goods. However, the scale of the trade in heavy building goods, such as timber, stone, lime and ceramic building material, has always been way bigger in volume as well as in financial turnover. Because of the bigger impact of this trade, it requires a higher organizational level and an extensive infrastructure. Therefore, to understand the organization of logistics it is important to look in particular at heavy goods such as stone and timber. Above all settlement sites, which were not conveniently located close to quarries, forests and building lime sources required a constant supply of materials, not only for building purposes but also for alterations and repair work. The way, logistics is organized reflects the internal organization of a society and, thus, is never static or universal. As societies change, the organization of trade and logistics will change

as well. This session will discuss the logistics of bulk transport and the organization of the construction of roads, forts and public buildings. The focus will be on trying to highlight the differences of this organization within Northern Europe and its changes through time (5th century BC - 5th century AD).

This session is co-organised by the "Structural Determinants of Economic Performance in the Roman World" (SDEP) Scientific Research Network, funded by the Research Foundation Flanders (Belgium) (FWO).

## ABSTRACTS

### 1 LONG-DISTANCE TIMBER TRADING IN THE ROMAN EMPIRE

**Abstract author(s): Bernabei, Mauro (National Research Council)**

**Abstract format: Oral**

Throughout antiquity wood was the most important raw material and energy source. In contrast to other archaeological finds e.g. pottery, stone tools and metal, the in general poor preservation conditions for organic material make archaeological records of wood very rare. It is preserved over a long period of time only in very humid or very dry locations. Hence archaeological wooden remains are of particular interest for research: they provide insight into former environmental conditions, wood technology and ancient economic history. In addition yield annually resolved dendrochronological data that allows precise dating of archaeological features. During an archaeological excavation in the center of Rome 24 oak (*Quercus* sp.) planks were found as part of the foundation of a richly decorated portico, in a vast and wealthy property. Due to waterlogged conditions wood was remarkably well-preserved and the processing traces are still clearly visible. Most of the material belongs to a single lot of timber and shows no signs of reuse. Dendrochronological analyses were performed in order to date the structure. Further researches regarding the wood provenance were possible through statistical cross-dating. Our results demonstrated that the oak trees had been felled between 40 and 60 CE in the Jura Mountains of north-eastern France. It is most likely that the wood was transported to the Eternal City on the Saône and Rhône rivers and then across the Mediterranean Sea. This rare dendrochronological evidence from the capital of the Roman Empire gives fresh impetus to the ongoing debate on the likelihood of transporting timber over long distances within and between Roman provinces. This study reconstructs the administrative and logistic efforts required to transport high-quality construction timber from central Europe to Rome. It also highlights an advanced network of trade, and emphasises the enormous value of oak wood in Roman times.

### 2 LONG-DISTANCE TRANSPORTS OF ROMAN MILITARY BUILDING CERAMICS

**Abstract author(s): Schmidts, Thomas (Römisch-Germanisches Zentralmuseum)**

**Abstract format: Oral**

The Roman military units which were stationed in the Germanic provinces were particularly involved in the production and transport of building materials. This production and logistics primarily served to supply military installations, but governmental and civic construction projects were also supported. The most common evidence of military building material is brick and tile stamps. Also, they can be assigned to troop units and often to brickyards.

For the private sector, the transport of bricks over long distances is only rarely verifiable in Roman times, which is quite understandable due to the weight and the transport costs involved. Military bricks, on the other hand, were delivered over relatively long distances. Rivers, especially the Rhine, played a special role as transport routes. This is already indicated by the position of the army brickworks. However, there are clear differences in the distribution of military bricks in the two Germanic provinces. The lecture focuses in particular on the involvement of the Roman army in the build-up of cities and residences. Examples are the provincial capital Colonia Claudia Ara Agrippinensium-Cologne and the late antique imperial residence Treveris-Trier, where governmental building projects were realised with a high proportion of military bricks.

### 3 (INTER)NATIONAL LOGISTICS OF ROMAN BUILDING MATERIAL: A CRITICAL REASSESSMENT OF OUR RESEARCH

**Abstract author(s): Vanderhoeven, Timo - Kars, Eva (EARTH Integrated Archaeology)**

**Abstract format: Oral**

Since 2000 the authors have been investigating Roman heavy goods (ceramic and stone building material) deriving from about 40 commercially excavated sites in the Netherlands. From every site reference samples are collected, documented and stored. The ultimate aim of the project is to connect fabrics with producers and ascribe stones to quarries and discern the provenance of the natural resources. Through the years a large reference collection has been built up. The research has revealed various production regions and distribution patterns. In recent years, the authors have published a large number of studies and given presentations at various national and international conferences about their groundbreaking research. In this presentation a critical reassessment of the research will be given and discussed. The authors will discuss how the research should be conducted and who should conduct the

research. How should this investigation be continued? And how can the research be conducted in an international context?

#### 4 **BUILD LOCAL – THINK ROMAN. THE DESIGN OF THREE CRAFTSMEN’S HOUSES AT THE LVR-ARCHAEOLOGICAL PARK AT XANTEN, GERMANY**

**Abstract author(s): Kienzle, Peter (LVR-Archaeological Park Xanten)**

**Abstract format: Oral**

The Colonia Ulpia Traiana was the second most important settlement in the Roman province of Germania Inferior (lower Germany), located a 100 kilometres north of Cologne at the banks of the river Rhine in the Lower Rhine flatlands. There are no local quarries for building stone and lime. In the open landscape, used for pastoral herding since iron-age, few trees grew and these trees were irregular and bended in the windswept landscape.

For major official building projects financed by the government or individual donors stone, building-lime and straight timber was shipped on the river Rhine. This was expensive and, consequently, local inhabitants had to draw upon the resources available on site. Thus, the houses of local residents within the city walls of the colonia were made of rammed earth and timber framing. The foundations were made of broken roof tiles, reused from the abandoned military camp close by, and only few stones were used at particularly places. Furthermore, the ground plan of the dwellings indicate structural systems employing short timbers.

Obviously, the bulk materials to build walls, floors and the roof were taken from local sources but all the houses were plastered and painted. The roofs were covered with tiles which were made locally or slate imported from the middle Rhine area. It was left to some details, such as limestone doorsteps or glazed windows, to show the owners prosperity. Thus, the outer appearance of the houses was distinctively Roman and hardly distinguishable from stone buildings but archaeological evidence shows, that the prohibitive cost of bulk transport determined the local design.

#### 5 **EPIGRAPHY AND SUPPLY LOGISTICS: FIRST ANALYSIS OF INSCRIBED STONES OF BESANÇON-VESONTIO, CAPUT CIUITATIS OF THE SEQUANI**

**Abstract author(s): Delencre, Florent (UMR 6298 ARTEHIS) - Delferrière, Nicolas (Université de Bourgogne-Franche-Comté) - Janin, Marie-Anaïs (Université de Bourgogne-Franche-Comté; UMR 6298 ARTEHIS)**

**Abstract format: Oral**

Stone appears to be a material support of prime importance for Roman epigraphic inscriptions, most of which came to us more or less fragmented. A thorough inventory of these inscriptions, as part of project I-Site BFC Sequania: territorial identity and patrimonial dynamics (Sequania ID), shows that the raw material was mainly extracted from the ancient area of Sequania, located in the East of modern France, organized around the caput ciuitatis Besançon-Vesontio.

The characteristics of these stones allow us to look further into the correlation between choices of materials and local availability, or lack thereof, of exploited resources, especially concerning epigraphy and iconography. Our own research in this particular project aims to try to evidence the existence of a link between the text itself, its expression in Gallo-Roman civic life and the selection of luxurious and/or expensive materials. As they concern the identity of the characters belonging to this geographical area and stone resources exploited to produce inscribed stones, these natural and cultural elements allow us to define the Sequani territory through insight into its organization and its management, as well as understanding how these dynamics and interactions are implemented.

Our corpus, comprised of around twenty-five inscriptions collected in the caput ciuitatis Besançon-Vesontio, contains items of widely varied origins due to their use mostly in funerary and religious spheres. Heavy monolithic blocks, of important dimensions would have needed transportation, the methods of which seem to differ from the routes taken by Roman building materials, hinting at particular supply logistics. In order to set up a common database, the participation of several specialists working on various aspects, including the study of stonemason workshops and their influence in shaping the morphology of the inscribed stones, is essential.

#### 6 **AD FLUMEN. SPATIAL NETWORK ANALYSIS OF THE ROMAN-ERA TRANSPORT SYSTEM OF THE SCHELDT AND MEUSE BASINS**

**Abstract author(s): Bongers, Toon (SDEP - Ghent University)**

**Abstract format: Oral**

Very little systematic research has been done on the role of rivers and waterways in the Roman transport system (exceptions are, e.g. Adams 2009, Campbell 2012, Jansma et al. 2017, Franconi 2014/2016/2020). However, both ancient authors and present-day researchers agree that waterways constituted an effective means of transportation. Research on the Scheldt basin (Bongers 2020) indicated that the region was well connected to the larger Roman transport network and that this was, at least partially, due to the presence of navigable waterways.

This presentation aims to introduce the results of a PhD study on the role of the rivers Scheldt and Meuse in the Roman-era transport system (50 BCE – 410 CE). We applied GIS-based spatial network analysis (following de Soto 2019)

to construct cost-distance, transport time, and accessibility maps for the early, middle, and late Roman periods. Doing so for both the Scheldt and Meuse basin allows us to compare two distinct regions: one connected to the coastal area of the North Sea and one connected to the Rhine region. Integrating settlement, economic, and epigraphical data (agents, organisations and networks) allows us to evaluate our results.

These results highlight more and less connected (sub)regions while also analysing the multi-modal transport system as a whole, including (minor) evolutions through time. Furthermore, for the first time, we will provide quantified and grounded calculations of transport values (i.e. cost, time, accessibility) for the Meuse basin. Regrettably, the study is constrained by a general lack of (published) data. Nonetheless, our results provide a framework for future logistical studies of northern Gaul and Germania.

## 7 **INVISIBLE BORDERS: THE DISTRIBUTION OF STONE BUILDING MATERIALS IN VENETIA ET HISTRIA (ITALY) THROUGH THE CASE STUDY OF ROMAN VERONA**

**Abstract author(s):** Bridi, Eliana (Università degli Studi di Padova)

**Abstract format:** Oral

Regio X - Venetia et Histria is characterized by a territory rich in stone materials, extensively exploited for building purposes, especially since the Roman age. This is confirmed by evidence of quarrying activities and by the large use of local stone (mostly limestone) in structures and infrastructures of the main urban centres and of their territories. Stone building materials were traded not only within Regio X but also in the nearby regions, thanks to a dense network of roads, navigable rivers, and maritime routes. The considerable amount of material transported in and out of the region depicts, indeed, a well-structured trade network.

In this framework, the Roman city of Verona provides an interesting point of view. The city exploited local building materials of good quality thanks to its strategic position, very close both to the quarries and to the river Adige, facilitating transport. Imported building materials are rarely documented in the city. Conversely, Verona extensively exported the so-called marbles carved in the near Valpolicella and Valpantena valleys, particularly appreciated for their aesthetic qualities. Indeed, several urban centres in the nearby regions display architectural decoration, structures or single artefacts made of marbles of Verona.

The case study of Verona offers the opportunity to consider the supply of stone in Regio X in terms of economic systems structured on several scales; trade in stone building materials was organized in several sub-markets, each depending on municipal demand. This created an economic organization based on self-sufficiency wherever natural resources were quantitatively and qualitatively suitable. The invisible borders of municipia were crossed only by few materials, used for those specific architectural or ornamental/aesthetic necessities which could not be met by local stones.

---

## 434 **CREATION OF EUROPEAN IDENTITIES – FOOD, TEXTILES AND METALS IN THE IRON AGE BETWEEN ALPS, PANNONIA AND BALKANS**

**Theme: 3. The Carpathian Basin: Integration, Mobility and Diversity**

**Organisers:** Gleba, Margarita (Department of Cultural Heritage, University of Padua) - Potrebica, Hrvoje (University of Zagreb, Department of Archaeology)

**Format:** Regular session

Our theme are formative elements of the identity of the Iron Age communities. This was the period, which immediately preceded the emergence of those communities on the historical stage, when they became, together with the Mediterranean world and the continental Europe, an essential element of a much wider picture of the European cultural dynamics. The selected region is the key link connecting three broad cultural zones of Europe: the Central Europe, Mediterranean and Eastern Europe. Due to its position, this relatively small region is of a key importance for our understanding of much broader processes of creation and change of identities in a much wider European framework. The identity of a prehistoric community is complex concept, whose definition requires an interdisciplinary approach. Of the many factors involved, this session will focus on three: food, textile and metal. Although the first two are basic life needs, the way in which those needs are fulfilled reflects a choice, which determined the way of life of the Iron Age communities, and is strongly correlated with their perception of the world and of their own identities. On the other hand, metals – primarily bronze and iron – were the main driving force behind setting up contacts and communication among diverse cultural groups, which paved the way for cultural transfer and alteration of identities of individual communities. We welcome papers, which will offer alternative to current paradigms of identity of Iron Age communities, such as the cultural group. The aim is to bring fresh ideas into discussion on individual and/or complex identities of the Iron Age communities between Alps, Pannonia and Balkans.



## ABSTRACTS:

### 1 YOU ARE WHAT YOU WEAR? ARCHAEOLOGICAL TEXTILES AS ELEMENTS OF IDENTITY AND PROXIES FOR MOBILITY IN THE CENTRAL BALKANS

**Abstract author(s):** Gleba, Margarita (University of Padua)

**Abstract format:** Oral

Recent research on ancient Mediterranean textiles by the ERC project PROCON has demonstrated that since at least the Bronze Age, Italy and Greece developed two highly distinctive textile cultures. While twills dominate in Italy, in Greece only tabbies and weft-faced tabbies are found. The differences between the dominant weaves in Greece and Italy also exposed a larger regional pattern whereby Italy's textile culture has close affinity with central and western Europe (Hallstatt Culture) where twills prevail, while Greece's is closer to that of the Western Asia where tabbies are ubiquitous. Central Balkans stand out against this general pattern: preliminary investigations show that both twills and weft-faced tabbies are present in this region during the Early Iron Age, often at the same sites. The growing number of archaeological textile finds provides an opportunity to get the first, preliminary view of local textile sub-cultures and their development during the Iron Age in this region. Textiles are not only indicative of diverse expressions of identity among the local communities but also demonstrate that the area was an important crossroads for the exchange of textile technological knowledge through human mobility and interaction.

### 2 HALLSTATT PERIOD TEXTILES FROM THE BALKANS IN THE COLLECTION OF THE NATURAL HISTORY MUSEUM VIENNA

**Abstract author(s):** Groemer, Karina (Natural History Museum Vienna) - Lau, Ronja (Ruhr-Universität Bochum)

**Abstract format:** Oral

The Natural History Museum Vienna houses a rich collection of Iron Age textiles – among them items from the saltmine Hallstatt in Austria, but also mineralised textiles from Slovenian and Croatian cemeteries of the Hallstatt Period.

The textiles found at Slovenian cemeteries of the early Iron Age/Hallstatt period (800-400 BC) have been contextualised and analysed using a variety of methods in the course of a master thesis by Ronja Lau (Freie Universität Berlin). The archaeological sites of Magdalenska Gora, Brezje and Podzemlj represent settlements and cemeteries of the so-called Dolenjsko group in southeast Slovenia. The research discusses the methods that are important and what can be learned from very small textile fragments. Gaining information from Experimental Archaeology, international overview and textile tools are just a few methods shown within this research.

An overview of the textile production of the Hallstatt Culture is also one of the aims. Slovenia and Croatia are part of the so-called eastern Hallstatt territory and can be compared with other sites, e.g. with Hallstatt saltmine as well as with others. The similarities are probably no coincidence, as the main use of twill, twist patterns and quality are seen throughout the eastern Hallstatt regions. Another interesting observation is the existence of plied yarn in woven textiles in the three Slovenian sites. Just a few fragments build a connection to the western Hallstatt region, where plied yarn was frequently used.

### 3 TEXTILE NEWS FROM DONJA DOLINA – TEXTILE PRODUCTION TOOLS FROM THE IRON AGE

**Abstract author(s):** Fileš Kramberger, Julia (Department of Archaeology, Faculty of Humanities and Social Sciences, Zagreb)

**Abstract format:** Oral

The site of Donja Dolina is located on the right bank of the Sava River in northern Bosnia and Herzegovina. It is one of the most notable prehistoric sites in the Sava Valley region due to the results of archaeological excavations conducted for over a century. This site is considered to have been a prominent settlement and river crossing, and even a possible distribution and communication centre between the Alps, Pannonia and the Balkans during the Bronze (13th – 8th centuries BC) and the Iron Age (8th – 3rd centuries BC). Even at the beginning of archaeological research in the early 20th century, alongside various material finds such as vessels, tools, weapons and personal objects, textile production tools from Donja Dolina were always presented as a separate and surprisingly numerous category. Tools such as spindle whorls, loom-weights and spools have been found throughout the settlement at the Iron Age Gradina hillfort, mostly within unclear archaeological context, although some were located within the confines of pile-dwelling structures, and several spindle whorls were found in graves (probably female) at the nearby cemetery.

A total of over two and a half thousand ceramic textile production tools, kept at the National Museum of Bosnia and Herzegovina in Sarajevo, have been analysed and the preliminary results of the analysis will be presented in this paper. The research of textile production tools, among other approaches to archaeological textiles, can not only help in determining the textile production process of any given site, but may also be a source for the research of production organization, textile use and distribution within the community. Furthermore, based on the funerary ritual, it is possible

to address the topic of symbolism represented by textile production and the identity of its producers, especially when compared to synchronous sites in the vicinity.

#### 4 MILLET DRINK IN URNFIELD PERIOD BAVARIA AND HALLSTATT PERIOD CROATIA - CASE STUDIES OF BIOMOLECULAR ANALYSIS AND ITS CONTEXT

**Abstract author(s): Metzner-Nebelsick, Carola (Inst fuer Vor- und Fruehgeschichtliche Archaeologie, Provinzialroem Archeologie) - Loznjak Dizdar, Daria (The Institute of Archaeology Zagreb) - Rageot, Maxime (University of Tübingen)**

**Abstract format: Oral**

We will present two cases of millet consumption in a sepulchral context. The first features an elite burial in the late Urnfield cemetery of Künzing, Bavaria dating around 1000 BC. Two individuals were buried in an urn placed in the center of a large grave precinct. The intentionally smashed urn contained fragments of additional pottery vessels and one of the most unusual assemblages of metal objects in its time. Biomolecular analysis has revealed that one of the fragmented vessels in the urn grave contained traces of millet, attesting for the consumption of a millet beverage or mush. In addition, the sherds of two other vessels revealed traces of conifer (probably juniper) tar/oil, which could represent an early and rare case for the use of fragrances in a burial ceremony.

The second example dates to the early Hallstatt period and is located 850 km down the Danube in Sotin in eastern Croatia. Sotin is a late Urnfield and Hallstatt cemetery with over 100 excavated graves dating to the 9th -7th centuries BC. Grave 78, excavated in 2011 and dating to the 1st half of 7th century BC, contained an urn with cremated remains. Six vessels represent the additional inventory. The urn was probably wrapped in some organic material because a fibula was placed on the shoulder. East of the urn three bowls and a kantharos were found. Biomolecular analysis revealed traces of millet inside the kantharos. Organic residue analysis was applied for the first time in the area to investigate the content of the kantharos. The result represents the first evidence of millet consumption in association with a specific vessel type, usually interpreted as a container for liquids. Near it, unburnt animal bones as the remnant of a meat offering were deposited.

#### 5 DOWN BY THE RIVERSIDE – EATING AND LIVING IN PILE DWELLING SETTLEMENTS OF RIPAČ AND DONJA DOLINA

**Abstract author(s): Šoštarić, Renata (Department of Biology, Faculty of Science, University of Zagreb) - Pravidur, Anđrijana (National museum of Bosnia and Herzegovina, Sarajevo)**

**Abstract format: Oral**

Multilayered localities - pile dwelling settlements of Ripač (on the banks of the Una River) and Donja Dolina (on the banks of the Sava River) were discovered at the end of the 19th century and most of the significant archaeological excavations were made soon after the discovery organized by the National Museum in Sarajevo. Remains of the settlement and a large amount of archaeological and biological material were discovered, partially analyzed in parallel or soon after the excavation, and were part of the permanent museum exhibition. Large quantities of found material from both sites have been stored in the repository of the National Museum in Sarajevo, and some of the findings are still being analyzed and researched. This review presents the results of the latest archaeobotanical research on both sites, which includes analyzes of hitherto unprocessed plant remains and a revision of earlier finds from the Early Iron Age. At both localities, the finds are dominated by carbonized cereals with a share of over 90%, and the most common is emmer (*Triticum dicoccum*), which is in line with the first analysis published in 1896. In smaller quantities, legumes are present, primarily beans (*Vicia faba*), and occasional weeds. Wild fruits collected in the vicinity of the settlements have a significant share in the findings, and the most numerous in previous analyzes proved to be Cornelian cherry (*Cornus mas*) from Donja Dolina. Various mixtures of cereals and legumes were also found, which most likely were the basis of the diet. If we add to all of the above large quantities of found bones of domestic and wild animals, we can assume that the diet of the inhabitants was varied and high quality.

#### 6 SV. KRIŽ IN LIGHT OF NEW RESEARCH

**Abstract author(s): Mavrović Mokos, Janja (University of Zagreb Faculty of Humanities and Social Sciences Department of Archaeology) - Fileš, Mislav (Institute of Archeology) - Šejić, Laura (University of Zagreb Faculty of Humanities and Social Sciences Department of Archaeology)**

**Abstract format: Oral**

The site of Sv. Križ is an Iron Age site (7th - 5th century BC) situated on a hill 300 m above sea level overlooking the confluence of the Sutla and Sava rivers. The site complex consists of a settlement and an accompanying necropolis. First excavations were carried out in the late 80es and mid 90es. This paper aims to present the latest research on this site in 2019 and 2021 and provide interpretation and parallels to some of the older excavations.

The phenomenon of the rich princely burials with weapons, horse-riding gear and even horses show a pattern on many of the Hallstatt period sites and is well documented in the princely grave of Sv. Križ. This presentation will focus

on the princely grave excavated on the site in 2001 and show how it fits into the pattern of similar rich graves in the region and a much further geographical area.

Furthermore, a detailed investigation of a house excavated in the last three years shows an exciting overview of Iron Age identities marked by several artefacts. Finds such as an awl and a small iron knife found near the hearth in the house, along with a spear fragment and fibulae were discovered. Distribution of the artefacts within the house might also mark several areas within the household based on gender identity. Mapping similar artefacts in the region will show us how the distribution networks changed in this period such as the fibulae of the Certosa type, which mark a clear connection with the area spanning from the eastern Alpine regions in Slovenia to the heart of the Carpathian basin along the Sava River. Finally, we would like to present all the finds from Sv. Križ in a broader context of contacts and distribution networks in the region.

## 7 "SOMETHING OLD, SOMETHING NEW, SOMETHING BORROWED, SOMETHING BLUE" - ECLECTIC IDENTITIES OF THE IRON AGE

**Abstract author(s):** Potrebica, Hrvoje (Dept of archaeology)

**Abstract format:** Oral

Some cultural groups in the contact zone between Central and Southeastern Europe, such as the Dolenjska (Lower Carniola) Group demonstrate not only standardised visual identity in their graves but also impressive persistence of that identity even through fundamental changes of burial ritual. However, this cultural model is not universally applicable to the other parts of the Eastern Hallstatt Circle where cultural groups were defined using quite different sometimes almost arbitrary criteria. So-called Balkan groups, on the other hand, are often product of cultural-historical school of thought which persisted in this area almost to this day, partially as result of local theoretical and political background and partially because of constant references on this area in Roman and Greek sources. To go beyond these categories, we have to study individual communities and enhance resolution of research to individuals to fully understand the structure of communal identity. In our analysis of contacts between 'Hallstatt world' and 'Balkan' Iron Age cultures, we realised that result of these contacts was wide variety of grave inventories in each of these groups. Beside local component those assemblages would contain imported objects from different regions compiled in almost unique but always complementary functional sets. The situation is even more complicated with diachronical perspective of these sets since in many cases some of the grave goods is significantly older than the burial. If we perceive grave inventories as form of visual markers of identity, we could argue that eclectic nature of these sets is actually standard that defines their identity on the level of communities in question.

---

### 436 GENERAL SESSION

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Chair:**

**Format:** Regular session

### ABSTRACTS

## 1 CROSSING BOUNDARIES FOR NEW PERSPECTIVES FOR HOARDS RESEARCH

**Abstract author(s):** Maciejewski, Marcin (Institute of Archaeology Maria Curie-Skłodowska University)

**Abstract format:** Oral

For decades, hoards of metal artefacts from the Bronze Age and the Early Iron Age were "functioning beyond space." Researchers who focused on typological analyses were overlooking various aspects related to the location where the artefacts had been deposited, referring solely to basic contextual information. This changed approximately at the beginning of the 21st century when viewing landscape as a cultural category (a text) has inspired a number of research projects. Studies conducted in Poland indicate that hoards were frequently deposited on the borders of settled areas. The interpretation of this phenomenon is based on similarities between the symbolism of borders/boundaries and metal.

Pinpointing the meaning of hoards in a landscape is one of the boundaries, the crossing of which provides the researchers with a new perspective on many aspects of the act of depositing metal goods. Artefacts having similar meaning in a landscape are often distinctive in terms of—variously defined—inventory (typological and functional divisions, results of the use-wear research, and archaeometallurgical analyses) as well as possible structures related to the act of deposition. What thus plays the key role: is it the location in a landscape, the inventory, the immediate context of storing metal goods, or the cultural significance of metal? How may one decide on that, given that three thousand years have passed? This paper offers a solution to this epistemic dilemma, simultaneously enriching the perspective on artefacts, borders and boundaries in historic communities.

## 2 IBERIAN SHIPBUILDING DOCUMENTS, DATABASES, AND WORLDWIDE RESEARCH

**Abstract author(s):** Silveira Martins, Adolfo António (Universidade Autònoma de Lisboa, CICH; Centro de Geocên-  
cias. Universidade de Coimbra; Instituto Terra e Memória) - Martins, Adolfo Miguel (CFE, Centre for Functional Ecology  
– Science for People & the Planet, Department of Life Sciences, University of Coimbra, at the NOVE University)

**Abstract format:** Oral

The reconstruction attempts from known shipwrecks have supported a deeper analysis of their surviving remains. Most of these studies rely on the analysis of archaeological material. Although these pieces of evidence are highly limited, as just a small percentage of ships' remains survived across the centuries.

Therefore, it is required the use of different source material such as contemporary documentation i.e., shipbuilding treatises and ship' depictions. Referring to the contemporary documentation, much has been argued about the reliability of the Iberian shipbuilding treatises produced by clerics, architects and non-shipwrights.

Questions arose, during this investigation, such as: which is the level of influence/veracity contained in these treatises regarding shipbuilders' contemporary practices; Were the authors' former masters at the Iberian shipyards; Was the shipbuilders' knowledge factual documented; and, Considering the contemporary required secrecy at the shipyards, how much information was allowed to include in the treatises.

This study aims to: Unravel the value of each shipbuilding treatise under a scheme that privileges data sharing between History, archaeology and Heritage management; Process scientific data and disseminate it using accessible to different audiences; The development of a digital bilingual cooperative database that can be feed by worldwide researchers, containing a detailed glossary; and, to encourage a more inclusive participation from different levels of society.

This Project means the creation an open database of collaborative tools online, which allows to have an overview of the shipbuilding practices in wood, as well as an in-depth view on specialized data of ship construction elements, acquired in textual sources and materials that can be thus related.

## 3 HOW THE HILLFORTS BECAME THE MOST FAMOUS ARCHEOLOGICAL HERITAGE SITES IN LITHUANIA?

**Abstract author(s):** Virsiliene, Jurgita (University of Klaipeda)

**Abstract format:** Oral

Today, Lithuania is seen in the heritage aspect as a land of hillforts. In 2017. the Seimas (parlament) of the Republic declared the Year of hillforts. How was that achieved?

In the independent Republic of Lithuania which was established in 1918, was no protection of heritage. About 600 hillforts were known before the First World War and only 8 of them were excavated. In the 1920s, P. Tarasenska became interested in the hillforts and started to popularize them. The State Archaeological Commission, which took care of the heritage, in 1934-1936. began to actually protect the hillforts. Scientific knowledge of hillforts and protection revived in the 1950s. In 1967 after the adoption of the Law on the Protection of Monuments and the establishment of an organization carrying out heritage accounting, the protection of hillforts became more active. From the beginning of the 1970s, they began to be managed and adapted for visiting. The research was carried out more in hillforts, which were managed or damaged by natural forces.

In independent Lithuania positive experiences of hillfort research and management were inherited from the Soviet period. The Department of Cultural Heritage in 1991–2004 carried out a program for the preservation of Lithuanian hillforts damaged by natural forces. During it, the threat of an emergency situation was eliminated for 73 hillforts, and investigations were carried out in 21 hillforts.

At the beginning of the 20th century, the hillforts were only known to local people. The state's efforts to preserve them have intensified and maintained public interest in them. The research of the hillforts and the individual personalities who popularized them also contributed to this. These were the main factors that made Lithuanian hillforts the most famous type of prehistoric heritage.

## 4 WE ALL NEED AN EU HERITAGE AND HISTORIC ENVIRONMENT DIRECTIVE WHICH INCLUDES LICENSING FOR THOSE WHO WORK IN IT

**Abstract author(s):** Forrestal, Colin (Independent Researcher)

**Abstract format:** Oral

At Barcelona 2018, session 778 proposed Examining the different approaches, methodologies and legislatively there is both culturally and in the application to European Commercial Archaeology, to paraphrase. With the pandemic and continuing global turbulence this paper is arguing that what is needed in the archaeological and historic sector is an EU directive that promotes Heritage and the Historic Environment and provides a cohesive framework for those in the EU and those that wish to coalesce around.

With the Covid-19 pandemic and the rise of more populist nationalist government gaining power around the world it has never seemed more important to protect our inherited culture and heritage, regardless of colour, creed or beliefs from ourselves. Therefore we should be pushing organisations such as the EAA to persuade the EU as a prominent global standard setter to take on this proposal as a matter of urgency.

This paper proposes that there should be an agreed minimum level of expertise before one can call oneself an archaeologist, that this limits what your authority and ability is. Experience and ability should allow progress to more responsible roles. It should be policed either nationally or regionally. It should be subject to legal punishment (including jail) and should apply to academic and commercial professionals and organisations with equal severity.

This would also enable all to work across the EU and know the law and have accepted levels of confidence in their abilities and hopefully lead to a Global accepted set of standards.

## 5 CULTURAL HERITAGE THAT CREATES IDENTITY IN THE FACE OF CLIMATE CHANGE

**Abstract author(s): Sozer Kolemenoglu, Selma (Universidad Empresarial De Costa Rica)**

**Abstract format: Oral**

Along with the change, the effect of the technological big power plant emerged in Covid-19 with its dehydration in human metabolism. Human in the pharaoh structure, together with the bio-archeological socio-environmental actors, feminizing the human, injecting the demonization stone-worship cult into human blood with technological sanctions, distorting identities. The compelling negative metaphorical power of technological reactors produces the minimalist view that consciously leads the world balance to non-existence with the rapid cycle of the whole soul. In sustainability, the perverse malice that comes from the nafs powerhouse can be cut and prevented by the will power and unity of humanity. Pharaoh creates metaphorical chaos that pushes human rights, mixes identities that remove borders with exquisite migration. The tangible cultural heritage figurines we see in geoarchaeological formations also explain climate change with historical complaints. Man, created from a blood clot from the earth, is geopolitical. Climate change slows down the living system and adjusts the balance of the breath.

## 6 RECYCLING THE “SLOW APOCALYPSE”: CONFLICT, HERITAGE AND THE ARTS OF LIVING ON A DAMAGED PLANET

**Abstract author(s): Breithoff, Esther (Birkbeck, University of London)**

**Abstract format: Oral**

From 1964-1973, during an event known as the “Secret War”, the USA dropped 2.1 million tons of bombs on Laos, turning the latter into the most heavily bombed country (per capita) and one of the most UXO-contaminated places on earth. Fifty years on, the rice fields, jungle and villages of rural Laos remain littered with live mines and unexploded cluster bombs, ready to explode at the slightest movement. As a result, whole areas have been rendered uninhabitable, hindering social and economic progress, and impacting the lives and landscapes of those that exist amongst the debris of armed conflict.

This paper is a material account of this large-scale destruction and its aftermath as “slow apocalypse” – a viscous, all-infiltrating process that has lingered long after the fighter planes left. Using Laos’ “bomb villages” as a case study, this paper aims to explore how recycling practices and other local responses to conflict heritage tell global stories of conflict as a 20th century Anthropocene hyperobject (Morton 2013; Breithoff 2020). As such, they constitute creative spaces in and through which to learn what Anna Tsing and co-authors refer to as the “arts of living on a damaged planet” (Tsing et al. 2017).

## 7 APOCALYPSIS AND OTHER DISASTERS IN THE MESOAMERICAN NARRATIVE: FROM THE PAST TO THE PRESENT DAY

**Abstract author(s): Moragas, Natalia (University of Barcelona)**

**Abstract format: Oral**

A first approach to the archeology of the various Mesoamerican cultures shows us a whole series of mythical events that tell us about great apocalyptic phenomena both as part of creation and destruction processes. The ancient Mesoamerican societies had a series of mythologies that explained great moments of apocalypse and destruction and that are presented in the material culture as part of a real narrative that supported a complex system of beliefs but also collective attitudes towards crises. The phenomenon of collapse encompassing various cultures within a wide territory is well known by archaeologist from the beginning of the archaeology in this area. Finally, the Conquest itself is an apocalyptic end whose consequences remain until today. In this presentation we intend to reflect on how this vision has been built from the Academia to the society remaining as part of a popular and collective narrative and its survival at many levels of today’s society. Since the second half of the 20th century with the generalization of television, cinema and today social networks, this apocalyptic vision of cultures remains present.

## 8 THE HYDROGRAPHIC NETWORK: A BARRIER PREVENTING THE EXPANSION OF PREHISTORIC POPULATIONS?

**Abstract author(s):** Ibrahim Hassan, Tayiba - Degioanni, Anna (Aix-Marseille Université, Ministère de la Culture, CNRS, Lampea, Aix-en-Provence)

**Abstract format:** Oral

Human migrations have been, and still are, influenced by several factors (economic, health, environmental, etc.). As part of this study, we are interested in understanding and evaluating the impact of the hydrographic network on the migration of prehistoric populations. We focus on the arrival of anatomically modern humans in Europe around 60,000 years ago. Rivers constitute a physical barrier, a limit that is often difficult to cross, but they can as well be elements that facilitate dispersion. The presence of hydrographic networks is an indicator of the presence of fauna, in particular large herbivores (mammoth, horse, auroch, etc.), essential for the survival of hunter-gatherer populations. Rivers can establish preferential corridors for migrants following the gradient of abundant resources.

Therefore, we test two hypotheses (the first considers the river as a barrier, while the second tends to regard it as a landscape that eases human diffusion) by analyzing the distribution of European sites of the first Homo sapiens compared to the distance and locations of hydrographic networks. Through statistical analysis and regression models (linear and logistic), we assess whether the distance between the stream and the presence of the site are correlated. Then, using a migration model (based on the minimum convex polygon MCP), we evaluate if the expansion pattern of our population pursues the hydrographic network.

## 9 A MULTITEMPORAL TALE OF MONUMENTALITY IN THE NECKAR VALLEY

**Abstract author(s):** Verdonkschot, Jadranka (Universität Tübingen)

**Abstract format:** Oral

This presentation sets out to discuss the monumentality of the Neckar Valley in Baden-Württemberg, in southwestern Germany. Several megalithic monuments are known from this area; menhirs that were assumed to be from the Bronze Age or pertaining to the context of an Iron Age necropolis. Nevertheless, a much earlier date could be closer to the truth. Based on the pictorial decoration and parallels to other megalithic evidences it is suggested that these monuments were rather created as early as the Neolithic. Taking this into account, a far more dynamic situation emerges, suggesting the re-use of monumental elements over and over in posterior ages.

The aim of the presented research is twofold; on one hand, this continuity in monumentality could shed new light on life in the Neckar Valley, and the diachronic processes it encompassed. On the other hand, in an attempt to expand this view, the inclusion of new data from settlement contexts is suggested.

## 10 COIN HOARDS FROM HISPANIA AS DEMOGRAPHIC PROXY

**Abstract author(s):** Diez Castillo, Agustín - Martínez-Chico, David (Universitat de València)

**Abstract format:** Oral

This contribution explores the potential of coin hoard as demographic proxies. We approach our methodology after working with open data from Coin Hoards of the Roman Empire Project (Oxford). We intend to analyse the extension of the Hispanic cities and their phases of occupation. It seems evident that the greater the number of cities, the greater the number of inhabitants, just as the greater size of each of these cities, the greater the number of people in each of them. The data we are working on in R are the total number of cities in Hispania, their size (ha) and the Roman Empire Treasuries (opening/closing) found in Hispania, ordered chronologically by reigns or dynasties. This project uses open data to determine whether the coin hoards are a priori related to demography. In the case of Hispania, most of the hoards belong to late dates, specifically in northwestern Hispania (Gallaecia). Obviously, hoards such as Tomares (with more than 50,000 coins in 19 local amphorae of the Tejarillo I type) show that we still have a very partial view of reality. We must therefore look, on the one hand, at the number of cities (and at this stage, tentatively, at the villas), and, on the other hand, at our monetary treasures. One of the main challenges is that the size of the city has to be estimated every 50 years over six centuries of Roman presence in Hispania.

## 11 DRESS TO HEAL? NATURAL DYES AND DYE-PLANTS AS HERBAL REMEDIES IN THE ROMAN TIMES

**Abstract author(s):** Pásztokei-Szeoke, Judit (freelance archaeologist)

**Abstract format:** Oral

Shortly after the accidental, but revolutionizing discovery by William Perkins in 1856, mass-produced bright and cheap synthetic textile dyes had glutted both the textile industry and trade. By the 20th century they crowded out the plant-based natural dyes finally and due to the industrialized production of these colourful textiles in our consumer societies, the colour of garments and textiles is simply regarded as decorative, occasionally symbolic, even by researchers of pre-industrial societies.

Two textile refurbishing workshops in Roman Savaria and Siscia yielded an abundant corpus of textile tools and inscribed commercial lead tags. Tools in general are a very useful source for the textile technologies applied locally by the workers. The tags were used as ID-labels for valuable garments entrusted by clients to the care of this workshop for refurbishing (e.g. mending, cleaning and redyeing) them.

Based on the recent research on these workshops, the proposed paper would argue for the functionality of some plant-based natural textile colours beside just being socially symbolic and also emphasize the interdependence and vital importance of corporeal and sartorial hygiene in densely populated regions, such as urban areas or military camps and the tragic consequences of the absence of hygienic practices in the past.

## 12 THE ECONOMY DURING THE IV-VI CENTURIES IN DARDANIA

**Abstract author(s):** Shipoli, Elza (Pázmány Péter Catholic University)

**Abstract format:** Oral

Late Antique period that includes the IV-VI centuries resulted in noticeable changes in Roman provinces. Western Roman empire provinces during this period faced enough challenges from trying to maintain power and dominance that started to meet a new threat from lots of factors. This period brought many changes like building new defense systems and difficulties in commerce, yet Roman Empire tried to keep with their all capacities and not to let fall the empire, which at the end resulted in a weakened empire that lost the battle with new populations that started to settle to Roman provinces. Commercial networks during the Late Roman period especially, to the West, did not lose their importance while the exchange of cultures, following the benefits of trade, and other supplies were the main reasons.

While transformations affected the Roman Empire, they also influenced Moesia Superior provinces. In Dardania, this period started with considerable changes, especially in the economy, architecture, and settlements.

This paperwork will intensify the challenges in ancient Dardania, respectively, today's territory of Kosovo, with the main focus in the economy with main coin circulations and pottery during late antiquity.

## 13 FROM A MONUMENTAL CITY TO A RURAL SETTLEMENT: TEOTIHUACAN IN EARLY COLONIAL TIMES

**Abstract author(s):** Torras Freixa, Maria (Universitat de Barcelona; Boston University) - Moragas Segura, Natalia - Bosque Canton, Cristina - Alvaro Rueda, Maria Karen - Pecci, Alessandra (Universitat de Barcelona)

**Abstract format:** Oral

The pre-Hispanic urban center of Teotihuacan (1-650 C.E.) was unique in contemporary Mesoamerica for its size, 125,000 inhabitants living in an area of 20 km<sup>2</sup>, and its perfectly designed grid plan dominated by monumental buildings and two large avenues. After the city collapsed, the urban landscape was progressively abandoned and transformed depicting a ruralization process. Even though the urban settlement was abandoned and then rather anarchically reoccupied, pyramids and monumental architecture of Teotihuacan continued to exist mainly as forgotten ruins.

During the 16th and 17th centuries a bulk of historical sources were provided by the implementation of the new government and the creation of the Cacicazgo of Teotihuacan. Also, a narrative was constructed by the indigenous population reflected in ethnohistorical sources. These written sources describe the lands of the Cacicazgo mentioning crops, rivers, but also the remains of the buildings and other constructions.

It is essential to study and analyze the main ethnohistorical and indigenous sources and the archaeological remains to observe the narrative and description of the process of abandonment and ruralization of the space previously occupied by the ancient city. Thus, the primary aim of this contribution is to describe our first results using this methodology and explain the role played by the ruins and its perception by population in Early Colonial times.

## A. ARCHAEOLOGY, ARCHAEOLOGICAL HERITAGE AND THE LOCAL COMMUNITY IN BALTIC SEA REGION - ARCHAEOBALT PROJECT CASE STUDIES

**Abstract author(s):** Czonstke-Swiatkowska, Karolina (University of Gdańsk; Archaeological Museum of Gdańsk) - Caretta, Nicolas (Bornholms Museum) - Maddox, Timmis (University of Wisconsin-Milwaukee) - Świątkowski, Bartosz (University of Gdańsk) - Thorsen, Michael (Bornholms Museum)

**Abstract format:** Poster

Archaeology and anthropology can help us locate and build up local and regional identities that can result in wider social bonds and pride in heritage. Archaeological heritage projects can support the local and regional community identities and economies by linking and promoting archaeology and culture heritage with sustainable tourism but also help to build the feeling of community on a local and regional level.

This focus on the "local" has become even more important, especially in the pandemic situation in which people were restricted in their movements but wanted to be involved in cultural activities and needed the feeling of community.

The ArchaeoBalt project spans three Baltic countries - Poland, Denmark and Sweden. Different experiences and traditions in public archaeology activities various levels of social awareness related to archaeological heritage are an advantage and, at the same time, a challenge to the project partners who are trying to create a coherent narrative about the region.

## **B. "WHY AM I HANGING LIKE THAT?" EXECUTION SITES IN LOWER SILESIA AS A SPECIFIC FORM OF SPACE LIMITATION**

**Abstract author(s):** Swiatkowski, Bartosz (University of Gdańsk) - Wojtucki, Daniel - Wojtucka, Karolina (University of Wrocław) - Leśniewska, Dominika (University of Gdańsk) - Mucha, Natalia (Nicolaus Copernicus University)

**Abstract format:** Poster

Post medieval execution sites are a specific form of limited spaces, especially in Silesia. A unique feature in Lower Silesia is stone and brick-built gallows which used to tower over public execution sites. They were prominent elements of the topography of early modern towns and villages. They were usually well exposed and were a visible threat and warning against breaking the law. They were also a space that was to separate law-abiding citizens from criminals.

In the early modern age, the area closest to the gallows was used as a site of the burial of the remains of the executed and viewed as - faulx atre – a false cemetery. This was the final resting place of the bodies of felons who had been executed on the gallows or next to it and condemned to eternal damnation. The convicts had no right to dispose of their bodies. Dishonourable burials of this sort are usually referred to in the written record as sepultura asina, Eselsbe-gräbnis. The group of 'the dishonourable' (unehrllich) included condemned felons who had been refused Christian burial in the sentence passed by the court of law and suicides. Their burial was relegated by town authorities to the executioner or his assistants.

An important issue is also the internal division of space near the gallows, with a clear separation of prisoners' quarters from areas intended for burying suicides.

---

## **437 REINTEGRATION IN MEDIEVAL ARCHAEOLOGY (MERC FORUM)**

**Theme:** 2. Reintegration

**Chair:** Pluskowski, Aleks (University of Reading; MERC)

**Format:** Other - forum

This year's MERC forum draws on one of the annual meeting's key themes – reintegration. Presentations from Central European medieval archaeology will address this theme from different perspectives, with an emphasis on interdisciplinarity and methodological reflections, including the reintegration of historical narratives into archaeological source material, as well as the role and reuse of different paradigms within medieval archaeology. The discussion will consider the theme more broadly, including processes of re-integration in the past and present. This aim of the forum is to highlight the contribution of medieval archaeology to understanding this key theme.

---

## **438 EUROPE'S MEDIEVAL PAST: A MANIFESTO (MERC ROUND TABLE)**

**Theme:** 1. Archaeologists and Archaeology Here and Now

**Chair:** Citter, Carlo (University of Siena; MERC)

**Format:** Round table

The manifesto lays out our vision for a socially-engaged medieval archaeology, one with potential to enhance cultural value all across Europe. The document demonstrates the significance of the legacy and contemporary relevance of the medieval and early modern, and illustrates 'Why Medieval Archaeology Matters'. The Manifesto builds upon the Burra Charter and highlights the guiding principles needed to foster and develop social value in the context of medieval archaeology. Case studies that embody one or more of these guiding principles are presented as examples of best practice.









# Index of Authors

(SESSION ORGANISERS AND MAIN AUTHORS)

	SESSION		SESSION		SESSION
<b>A</b>		Antenhofer, Christina	27	Barrett, Gerard	243
Aarsleff, Esben	327	Antonosyan, Mariya	331	Barruezo-Vaquero, Pablo	218
Å. Granell, Carmen	225	Arampatzis, Christoforos	298	Bartík, Jaroslav	403
Abdykanova, Aida	350	Araujo, Astolfo	287, 372	Bartosiewicz, László	174, 226
Abonyi, Zsanett	396	Araujo, Renata	372	Basso, Patrizia	369
Abrunhosa, Ana	248	Arboleda, Pablo	39	Batanina, Olga	339
Abuhelaleh, Bellal	430	Arciero, Roberto	215, 225	Batiashvili, Magda	331
Aceró Pérez, Jesús	222	Armigliato, Alessandro	239	Bauer, Lisa	252
Adewumi, Opeyemi	180	Armit, Ian	402	Baumanova, Monika	126
Ágnes, Novothny	283	Armstrong, Felipe	176	Baysal, Emma	176
Agolli, Esmeralda	102	Armstrong-Oma, Kristin	383	Beach, Alison	406
Aguirre, Amaia	267	Arniz Mateos, Rosa	267	Beaujean, Bas	192, 207
Aguraiuja-Lätti, Ülle	226	Aspoeck, Edeltraud	273	Beaulieu, Kiara	424
Ahlgrimm, Svenja	422	Attema, Peter	347	Beck, Anna	39, 274
Aidonis, Asterios	284, 339	Attorre, Tiago	239	Beck, Malene	170
Aitchison, Kenneth	257, 275	Attout, Antoine	417	Becker, Hilary	390
Albarella, Umberto	102	Aulsebrook, Stephanie	90, 254	Becker, Katharina	366
Albero Santacreu, Daniel	39, 241	Austvoll, Knut Ivar	274, 402	Bede, Ádám	16
Albert, Rosa María	180, 374	Axelsen, Irmelin	424	Bedic, Željka	339
Albris, Laurine	385	Ayán, Xurxo	39	Beek, Nicky	126
Albris, Sofie Laurine	385	<b>B</b>		Been, Ella	344
Alcaraz-Castaño, Manuel	224	Babić, Staša	129, 362	Bejenaru, Luminita	298, 339
Alexander, Michelle	51, 373	Baca, Martin	86, 382	Bejko, Lorenc	102
Alexandridou, Alexandra	192	Baci, Erina	206	Belarte, Maria Carme	345
Alinezhad, Khadijeh	404	Bacvarov, Krum	394	Belford, Paul	305
Allard, Pierre	252	Badreshany, Kamal	254	Belmar, Carolina	358
Allison, James	287	Bak, Judyta	12	Belyaev, Leonid	127
Almansa-Sanchez, Jaime	102	Balasescu, Adrian	109	Ben-Yosef, Erez	331
Alonso, Natàlia	93	Balbi, Jose	32	Benediková, Lucia	306
Alonso-Eguiluz, Mónica	180, 374	Bandiera, Mario	187	Benetti, Francesca	286
Alterauge, Amelie	100	Banerjea, Rowena	51, 284	Benjamin, David	218
Álvarez, Samuel	223, 225	Bánffy, Eszter	337, 421	Benkert, Helene	349
Álvarez Fernández, Noemi	239	Banica, Costina	353	Bentsen, Silje	336
Alvarez-Fernández, Esteban	98, 291	Bantavanou, Panagiota	67, 345	Bergerbrant, Sophie	376, 392
Alves-Cardoso, Francisca	256	Bar-Yosef, Daniella	336	Bergstol, Jostein	109
Ameen, Carly	349	Baragona, Anthony	390	Bergsvik, Knut Andreas	327
Amirova, Saltanat	27	Barakat, Sarah	378	Berihuete Azorín, Marian	358
Amjadi, Motahareh	231	Baraliu, Sedat	206	Berio, Alessandro	32
Andersson, Karina	419	Barbiera, Irene	35	Berna, Francesco	180
Andreeva, Petya	305	Barkmeier, Jonathan	304	Bernabei, Mauro	432
Andreu Diez, Oriol	180	Baron, Justyna	263	Bernard, Emma	430
Andrianou, Demi	177	Barreiro, David	194	Bernard, Loup	399
Andriiovych, Marta	280	Barrera-Cruz, María	252	Bernardo-Ciddio, Leah	362
Anfinset, Nils	402	Barresi, Paolo	324	Berrica, Silvia	127
Angourakis, Andreas	326, 367			Berrocal-Rangel, Luis	354
				Berryman, Duncan	243

SESSION		SESSION		SESSION	
Bertin, Ingrid	358	Breithoff, Esther	353, 436	Carracedo Recasens, Robert	153
Bertini, Camilla	187	Březinová, Helena	195	Carrero-Pazos, Miguel	112
Berzina, Diana	237	Bridi, Eliana	432	Carta, Arianna	285
Bethard, Jonathan	304	Brinkmann, Johanna	112	Carvajal Lopez, Jose	127
Bettencourt, Ana	381	Brisset, Elodie	215	Carvalho, Antonio F.	280
Bews, Elizabeth	304	Brite, Elizabeth	350	Carvalho, Milena	321
Biagetti, Stefano	239, 309	Britton, Kate	35, 378	Carver, Jay	257
Bianco, Sabrina	45	Brown, Peter	83	Carver, Martin	337
Bickle, Penny	86, 426	Brownlee, Emma	35, 162	Casanova, Emmanuelle	221
Biehl, Peter F	420	Brozio, Jan Piet	376, 381	Casimiro, Tania	223, 260
Bielich, Mário	338	Bruch, Angela	374	Castañeda, Nuria	252
Bieńkowski, Rafał	184	Brummack, Sven	149	Castelluccia, Manuel	184
Biliaieva, Svitlana	127	Brusgaard, Nathalie	108, 426	Castiello, Maria Elena	309
Billo-Imbach, Marta	341	Bruvoll, Hallvard	298	Castro Moreno, Gonzalo	365
Bird, Darcy	404	Brzozowska-Jawornicka, Aleksandra	324	Castorao Barba, Angelo	51
Bis, Magdalena	338	Buckley, Gina	378	Cataj, Lea	149
Bivolaru, Alexandra	230	Bugarski, Ivan	250	Caval, Saša	51, 395
Bizzarri, Giulia	134, 223	Bühler, Birgit	343	Cavazzuti, Claudio	389, 426
Bjerga, Ingvild	424	Burandt, Boris	396	Cechura, Martin	243
Bjørnevad-Ahlqvist, Mathias	291	Burke, Clare	271	Celhar, Martina	206
Blanc, Guillaume	198	Bursak, Daniel	213	Celma Martínez, Mireia	358
Blanz, Magdalena	378, 383	Busset, Anouk	395, 422	Cerevková, Alžbeta	109
Blasco Martín, Marta	263	Büster, Lindsey	366	Chadburn, Amanda	275
Blaszczyk, Dariusz	378	Bustos-Pérez, Guillermo	372	Chamel, Berenice	231
Blažková, Gabriela	260	Byrnes, Emmet	275	Chang, Claudia	126, 407
Blobel, Mathias	10	Byszewska-Lasinska, Agata	130	Chatzikonstantinou, Ioannis	100
Bobbe, Christin	269			Chaudesaigues-Clausen, Solveig	53
Bodružić, Mario	298	<b>C</b>		Chaumont Sturtevant, Elisabeth	366
Boethius, Adam	109	Cabrera-Lafuente, Ana	195	Chikunova, Irina	12
Bóka, Gergely	149	Çakırlar, Canan	342	Chlon, Marcin	283
Bolohan, Neculai	254, 305	Calandra, Ivan	197	Cholakova, Anastasia	187
Bonacchi, Chiara	325	Calgaro, Ilaria	254	Choyke, Alice	263
Bongers, Toon	432	Camacho, Miriam	339	Christakopoulou, Olga	157, 359
Borake, Trine	274	Cámara Manzaneda, Javier	280	Christidou, Rozalia	263
Borbély, Noémi	304, 339	Campanacho, Vanessa	256	Chroni, Athina	315
Borel, Antony	197, 283	Campbell, Gillian	342	Chu, Wei	283, 403
Borgia, Elisabetta	275	Campos-Lopez, Teresa	27, 142	Ciampagna, María Laura	358
Boric, Dusan	321	Cana, Sinan	355	Cianciosi, Alessandra	269
Bors, Corina Ioana	284, 397	Cañadillas, Elías	416	Ciarrocchi, Barbara	346
Botic, Katarina	230, 271	Canós-Donnay, Sirio	157	Cipolato, Andrea	369
Botica, Natalia	273, 381	Cantillo Duarte, Juan Jesus	381	Citter, Carlo	223, 312, 438
Bousnina, Monia	407	Capasso, Giusy	341	Civilyte, Agne	38, 330
Bouwmeester, Jeroen	243, 305	Caple, Zac	174	Cobo Sánchez, Lucía	367
Bowyer-Kazadi, Emily	315	Carballido González, Elías	27, 422	Cocozza, Carlo	373
Boyd, Michael	359	Carbonell, Arnau	347	Cohen, Edward	382
Brami, Maxime	17, 154	Carbonell Pastor, Sonia	416	Collin, Jean-Philippe	252, 405
Branco, Gertrudes	397	Cardoso, Jessica	213	Coloru, Omar	181
Brandolini, Filippo	309	Carlsson, Stine	264	Coltofean-Arizancu, Laura	17, 392
Brasoveanu, Casandra	374, 401	Carlton, Richard	260	Conati Barbaro, Cecilia	248
Brattinga, Joris	366	Carman, John	211, 353	Connolly, Rory	267
Braun, Ádám	16	Carozza, Jean-Michel	51	Constantinescu, Mihai	339
Bravermanova, Milena	195			Conway, Melissa	257

## SESSION

Corpas, Nekbet	39
Cortell-Nicolau, Alfredo	267, 291
Cortese, Francesca	93, 309
Costa Vaz, Filipe	45
Costeira, Catarina	232
Costello, Eugene	83
Covataru, Cristina	394
Crabtree, Pam	331
Cranfield, Jack	340
Crawford, Courtney	274
Creighton, Oliver	349
Črešnar, Matija	306
Criado-Boado, Felipe	241
Cringaci Tiplic, Maria Emilia	10, 233
Crist, Walter	162
Cristiani, Emmanuela	321
Cristina, Giovanni	134, 323
Crutcher, Megan	143
Csáky, Veronika	371
Csippán, Péter	149, 154
Cuello del Pozo, Paloma	416
Cuozzo, Mariassunta	285
Cvitkusic, Barbara	176
Czajlik, Zoltán	306
Czére, Orsolya	365
Czerniak, Lech	280
Czerwinski, Sambor	180
Czifra, Szabolcs	306, 351
Czonstke-Swiatkowska, Karolina	436
Czuppon, Tamás	316

## D

D'Agostini, Francesca	309
D'Alisera, Alexander	289
D'Aprix, Michael	218
Daems, Dries	367, 388
Dahle, Kristoffer	162, 397
Dahlström, Hanna	274
Daim, Falko	250
Dal Martello, Rita	350
Dalen, Elin	420
Danelatos, Dionysios	248
Dani, János	16
Danielisova, Alzbeta	378
Danthine, Brigit	273
Darie, Adelina	149
Daróczy, Tibor	229
Darvill, Timothy	170
Davidde Petriaggi, Barbara	324
Davidson, Marion	419
Davis, Izzy	196

## SESSION

Davoudi, Hossein	221
Dawson, Helen	416
De Bernardin, Michela	237
de Camargo, Paulo	134
De Coster, Maura	213
de Groot, Beatrijs	254
De Groot, Julie	27
De Juan, Jorge	51
de Lara, Juan	198
De Moor, Jos	230
de Neef, Wieke	347
de Oliveira Teixeira, Luisa	32
De Smedt, Philippe	397
de Torres Rodríguez, Jorge	127
de Vos, Julie	320
de Vries, Karen	274
de Waal, Maaïke	143
Deák, Balázs	16
Deckers, Pieterjan	368
Defranould, Elsa	252
Degryse, Patrick	187
Delencre, Florent	432
Delfino, Davide	330
Demarchi, Beatrice	406
Demelenne, Marie	229
Demina, Alisa	126
Demoule, Jean Paul	225
Dendievel, André-Marie	230
Denel, Elif	359
Denis, Solène	252
Denk, Olivia	407
Denker, Ahmet	315
Desiderio, Anna Maria	285
Detry, Cleia	45
Dévai, Kata	187
Di Meo, Andrea	315
Diachenko, Aleksandr	382
Diaconu, Vasile	298
Dias, Rita	267
Díaz Pérez, Clara	416
Díaz-Bonilla, Sara	280
Díaz-Guardamino, Marta	381
Díaz-Guardamino Uribe, Marta	254
Díaz-Zorita Bonilla, Marta	416
DiBattista, Adam	263
Diez Castillo, Agustín	291, 417, 436
DiFabio, Christina	274
Dikkaya, Fahri	83
Dimitrijevic, Ivana	421
Dimitriou, Vasiliki	359
Dimopoulou, Sotiria	284
Dinckal, Ada	180

Dinu, Georgiana	232
Dissais, Maud	198
Dittmar, Jenna	264
Dix, Brian	229
Djerbi, Hatem	309
Djukic, Ksenija	339
Dobat, Andres	400
Dobek, Mikolaj	134, 274
Dobos, Alpár	35, 250
Dobos, Janos	400
Dobрева, Diana	369
Dobrovolskaya, Maria	93
Dolbunova, Ekaterina	280, 327
Dolfini, Andrea	86, 90
Domines Peter, Pio	362, 416
Dominguez, Adolfo	417
Doyle, Ian	275
Drath, Joanna	419
Dresler, Petr	233
Dreslerova, Dagmar	161
Drob, Ana	271, 298
Droß-Krüpe, Kerstin	210
Drtikolová Kaupová, Sylva	264
Drummer, Clara	211, 401
Dudek, Michal	180
Dupuy, Paula	350
Durczak, Kinga	100
Đuricic, Ana	345
Dzbynski, Aleksander	241
Dziechciarz, Pawel	27, 86

## E

Ebert, Claire	373
Edinburgh, Marija	325
Effros, Bonnie	289
Eger, Jana	221
Eichert, Stefan	162, 250
Elahi, Moizza	181
Emmenegger, Lea	401
Ensor, Bradley	143, 154
Eramo, Giacomo	248
Ercoles, Isabella	213
Eriksen, Marianne Hem	203
Erkske, Aija	366
Erlendsson, Egill	309, 404
Ernyey, Katalin	12
Errickson, David	201
Erwin, Gáll	250
Escribá Ruiz, M <sup>a</sup> Pilar	280
Eshel, Tzilla	254
Espinosa, Isaac	130, 153

	SESSION		SESSION		SESSION
Esposito, Carmen	341	Fort, Joaquim	367	Gavan, Alexandra	154
Estalrrich, Almudena	321	Fossile, Thiago	196	Gaydarska, Bisserka	142, 392
Estanqueiro, Marta	230, 381	Foster, Sally	208	Gebauer, Anne Birgitte	170
Esteban, Irene	374	Fouriki, Stavroula	359	Gémes, Anett	339
Etu-Sihvola, Heli	128	Francés, Marta	280	Gentile, Valerio	86
Evans, Daniel	257	Franco Valle, Rebeca	203	George, Nebu	239
Everett, Sarah	45	Franjic, Ana	187	Georgiadou, Angeliki	213
Everhardt IV, Charles	143	Frank, Anja	378	Gerber, Dániel	149
		Frank, Geza	396	Gergác, Rebeca	27
<b>F</b>		Frankovic, Filip	254, 359	Gerling, Claudia	341
F. Romhányi, Beatrix	379	Frascella, Selene	39	Germanidou, Sophia	233
Fábián, Szilvia	271, 351	Fredh, Erik Daniel	309	Gerritzen, Carina	378
Fallu, Daniel	180	Fregel, Rosa	416	Geser, Guntram	273
Farago, Norbert	252, 421	Fregni, Elpidia Giovanna	330	Gheorghiu, Dragos	12, 345
Farese, Martina	378	French, Katherine	243	Giaccari, Matteo	213
Farina, Emma	320	Frieman, Catherine	17, 86, 225	Giamakis, Christos	362
Farr, Sarah-Jane	257	Froehlich, Thomas	346	Giardino, Claudio	90, 196
Fasser, Nicolò	98	Fry, Megan	419	Giblin, Julia	426
Fedorina, Anastasia	316	Fuertes García, José Manuel	326	Gigante, Melania	341
Feike, Timo	135	Fulminante, Francesca	210, 312	Gimatzidis, Stefanos	206
Fejer, Eszter	384	Fülöp, Kristóf	345	Giovanelli, Riccardo	237
Felício, Catarina	222	Fülöp, Réka	250	Girardi, Virginia	406
Fenucci, Lisa	10	Furlan, Guido	369	Giroto, Chiara	326
Fera, Martin	102	Fusco, Marianna	224	Giudice, Elvia	417
Ferenczi, Laszlo	365	Füzesi, András	271, 421	Giudice, Filippo	417
Fernandes, Lara	223	<b>G</b>		Gkouma, Myrsini	180
Fernandes, Ricardo	373	Gábel, Sára	283	Gleba, Margarita	434
Fernández García, Mónica	321	Gal, Emily	130, 284	Glomb, Tomas	382
Fernández-López de Pablo, Javier	375	Galán López, Ana Belén	98	Gluitz, Alicia	381
Fernández-Palacios, Enrique	374, 416	Galán López, Ana Belén	98	Gnecchi Ruscone, Guido Alberto	371
Ferrara, Vincenza	358	Galat, Michael	206	Godfrey, Evelyne	424
Ferrer, Merixtell	285	Galilea, Diego	130	Godinho, Ricardo Miguel	339
Ferrer-Martín, Meritxell	207, 285	Gáll, Erwin	250	Gogaltan, Florin	86
Ferri, Margherita	223	Gallo, Giulia	345	Göhring, Andrea	378
Ferrier, Catherine	198	Gameiro, Cristina	224, 375	Goldberg, Martin	157, 381
Fileš Kramberger, Julia	434	Ganiatsou, Elissavet	213	Goldstein, Avner	289
Filipović, Dragana	254, 309, 376	Ganz, Kathrin	230	Goldstein, Lynne	330
Finley, Judson	404	Garay Palacios, Blanca	336	Golembnik, Andrzej	229
Fioretti, Giovanna	248	García, Marcos	51	Golubinski, Michal	371
Fischl, Klára	154	García-Contreras, Guillermo	51	Gomart, Louise	271, 280
Fisher, Michael	373	García-Contreras Ruiz, Guillermo	51	Gomes, Francisco	207, 232, 285
Fleming, Robin	289	García-Escárcaga, Asier	267, 321	Gómez-Puche, Magdalena	273
Flexner, James	225	García-López, Zaira	419	Gonçalves, Célia	267, 284
Floquet, Marie	359	García-Martínez De Lagrán, Íñigo	280, 291	Gonzalez Fortes, Gloria	389
Florindi, Silvia	344	García-Puchol, Oreto	291	González Rabanal, Borja	321
Fonseca, Sofia	284	García-Vázquez, Ana	362, 384	González-García, Antonio César	32
Font, Ágnes	263	García-Ventura, Agnes	12, 210	Gori, Maja	206, 362
Fontana, Federica	327	Gares Molero, Alejandro	417	Gourgouleti, Eleni	126
Forgia, Vincenza	267, 347	Garrido Cordero, José Ángel	176	Govantes Edwards, David	127, 187
Formichella, Giulia	373	Gasparini, Eleonora	324	Gralak, Tomasz	32, 176
Forrestal, Colin	436	Gattiglia, Gabriele	223	Gramsch, Alexander	218
				Grau, Ignasi	45

	SESSION		SESSION		SESSION
Green, Katie	257	Hamwi, Rahaf	127	Holmqvist-Sipilä, Elisabeth	128
Greifelt, Tim	213	Hanscam, Emily	35	Holtorf, Cornelius	208, 241
Griffith, Jacob	378	Hansen, Gitte	162, 316	Hope, Brita	340
Griffiths, Mark	27	Hansson, Jim	340	Hoppál, Krisztina	162
Griffiths, Seren	218	Harangi, Flórián	195	Horcajada Campos, Patricia	130
Grimberg, Daniela	345	Harder, Matthew	312	Horejs, Barbara	206
Grimm, Sonja	327, 375	Harris, Susanna	195, 254	Horn, Christian	402
Grisales, Daniel	51	Harrison, Eleanor	86	Horváth, Ádám	250
Groemer, Karina	232, 434	Harrison, Ramona	128	Host-Madsen, Lene	12, 286
Gronenborn, Detlef	149, 287	Hartvig, Anders	385	Hostettler, Marco	401
Groß, Daniel	108, 109	Hattori, Márcia	39	Howes, Hilary	256
Grosskopf, Birgit	67	Haughton, Mark	174	Howle Outlaw, Carolyn	143
Großmann, Ralph	108	Hausmair, Barbara	353	Hoxha, Zana	289, 395
Groza, Vasilica-Monica	339	Hawkins, Kayt (Kathryn)	392	Hueglin, Sophie	102, 233
Grunwald, Lutz	369	Haws, Jonathan	98	Huggon, Martin	243
Grupa, Malgorzata	374	Hayne, Jeremy	285	Humphrey, Kenneth	201
Gucsi, László	271	Heddell-Stevens, Phoebe	378		
Guðmundsdóttir, Lísabet	128, 358	Hegedus, Zsuzsa	271		
Guglielmi, Sandra	339	Hegewald, Julia	181		
Guillemot, Pierre	403	Heilmann, Daniela	362	Iacono, Francesco	126, 355
Gullbrandsson, Robin	243	Heinonen, Tuuli	323, 385	Ialongo, Nicola	254
Gullo, Ilaria	341	Heit, Ilia	331	Iancu, Alina	232
Gulyás, Bence	250, 371	Heitz, Caroline	274	Ibáñez, Juan José	197
Gur-Arieh, Shira	309	Hermes, Taylor	350	Ibrahim Hassan, Tayiba	436
Gurova, Maria	248, 298	Hernández Gómez, Cristo	416	Ibsen, Timo	354, 399
Guscika, Elina	358	Hernández Robles, Alicia	127	Ifantidis, Fotis	12
Gutay, Mónika	283	Hernández-Casas, Yaiza	51	Iglic, Sara	126, 353
Gutierrez, Eléa	213	Hernández-Tórtoles, Alicia	346	Ignat, Theodor Aurelian	243
Gutiérrez Frías, Ismael	176	Herrero-Otal, Maria	358	Ilves, Kristin	128, 239
Gutiérrez-Rodríguez, Mario	180	Herrick, Hannah	180	Incio-del-Río, Cristina	39
Gutsmiedl-Schuemann, Doris	142, 210	Herrscher, Estelle	213	Intxaurbe, Iñaki	198
Gyenesei, Katalin	339	Hessing, Wilfried	211	Iraeta Orbegozo, Miren	389
Gyucha, Attila	206	Heyd, Volker	16	Iršenas, Marius	12, 53
Gyuris, Balázs	371	Higginbottom, Gail	112, 198	Iserlis, Mark	331
		Higham, Richard	397	Ismayilova, Narmin	331
<b>H</b>		Hill, David	323, 347	Iva, Stojevic	286
Haak, Arvi	260	Hillerdal, Charlotta	128	Iversen, Rune	376
Hadji, Athena	12	Hinterdorfer, Peter	269	Iwaniszewski, Stanislaw	32
Haggren, Georg	340	Hinton, Peter	211	Izeta, Andres	273
Haidle, Miriam	287	Hinz, Martin	287, 388		
Haita, Constantin	239	Hiss, Alina	371	<b>J</b>	
Hajdu, Tamas	339, 426	Hiyama, Satomi	195	Jabbour, Firas	331
Hajnal, Zsuzsanna	260	Hlad, Marta	392	Jackson, Mark	406
Hakansdotter, Lina	316	Hladikova, Katarina	35	Jackson, Veronica	339
Halbrucker, Éva	321	Hlásek, Daniel	254	Jadric-Kucan, Ivana	187
Hall, Derek	260	Hoare, Sally	345	Jaeger, Mateusz	384
Hall, Rachael	213	Hoffmann, Robert	376	Jaffe, Gali	424
Halsted, John	257	Hofmann, Daniela	149	Jakubcinová, Miriam	338
Hamari, Pirjo	315	Hofmann, Robert	271, 394	Jakucs, János	271
Hamburg, Jacek	184	Hofmanová, Zuzana	371	James, Hannah	213
Hamon, Caroline	154	Högberg, Anders	241		
		Holleville, Marion	264		



SESSION		SESSION		SESSION	
Jameson, John H	12	Kauhanen, Riku	320, 353	Kovács, Gabriella	154, 174
Jamieson, Jordan	424	Kawashima, Takamune	260	Kovács, Gergo	351
Jancar, Mojca	243	Kay, Andrea	404	Koval, Vladimir	316
Jané, Oscar	126	Kay, Kevin	142, 274	Kramberger, Bine	149
Janek, Tomáš	401	Kedar, Yafit	198	Krapf, Tobias	206
Janeš, Andrej	365	Keenan, Samuel	260	Krasinski, Kathryn	424
Jankovic, Ivor	344	Kelemen, Zsófia	396	Kraus, David	149
Janković, Ivor	339	Kerig, Tim	254	Krauss, Raiko	291, 362
Jankovits, Katalin	254	Kerr, Sarah	83, 243	Kreiter, Attila	271
Janovská, Viktorie	385	Khalilli, Fariz	12	Kremmer, Anne	264
Janovský, Martin	162	Kharobi, Arwa	231	Kristuf, Petr	170
Jansens, Nicolas	162	Kholov, Vohid	215	Kroonen, Guus	389
Jaouen, Klervia	378	Kidd, Fiona	350	Kubica, Olga	181
Jarosz, Pawel	16	Kiddey, Rachael	225	Kufel-Diakowska, Bernadeta	327
Jarrett, Greer	203	Kienlin, Tobias	154, 218	Kulcsár, Gabriella	16, 384
Jarvis, Charlotte	143	Kienzle, Peter	324, 432	Kurisoo, Tuuli	343, 400
Jasiak, Krzysztof	134, 395	Kim, Alexander	109	Kurzawska, Aldona	298
Jaskulska, Elzbieta	67	Kiosak, Dmytro	252, 291	Kvetina, Petr	426
Jastrzebska, Emilia	256, 268	Király, Attila	403	Kwaspen, Anne	177
Jiménez Hernández, Enrique	130	Kirgis, Pauline	100	Kyle, James	211
Jiménez Ruiz, Luis	98, 248	Kis, Luca	339	Kyriakidis, Evangelos	311
Jiménez-Puerto, Joaquín R	291	Kiss, Krisztián	339	Kyritsi, Maria	192
Johannsen, Jens	376	Kiss, Viktória	426		
Johannsen, Niels	149	Klassen, Sarah	305		
Johanson, Kristiina	180, 327	Klecha, Aleksandra	86, 157	<b>L</b>	
Johns, Samuel	83	Klein, Astrid	195	Lacher, Laura	371
Johnson, Andrew	135, 395	Klevnäs, Alison	35	Lackinger, Aaron	86
Jones, Cara	275, 380	Klontza-Jaklova, Vera	349	Lafe, Ols	305
Jones, Jennifer	383	Kmosek, Matej	343	Laforest, Caroline	231
		Knipper, Corina	371, 378	Lagarde, Bruno	248
		Knusel, Christopher	231, 419	Laguna-Palma, David	359
		Koch, Tabea	248, 336	Lakshminarayanan, Ashwini	181
		Kocic, Miroslav	206	Lamesa, Anais	407
		Köhler, Anne	230	Lamotte, Agnès	283
		Koivisto, Satu	109, 327	Lancelotti, Carla	93, 309, 325
		Kökner, Nuray Nisan	359	Lane, Dominik	382
		Kokotovic, Tea	339	Langer, Christian	315
		Kolář, Jan	17, 404	Langkilde, Jesper	260
		Kolenc, Magdalena	206	Langova, Michaela	384
		Kolláth, Ágnes	135, 305	Larrauri Redondo, Sergio	130, 153
		Komar, Paulina	184, 369	Larsson, Annika	195
		Komori, Tünde	223	Larsson, Asa	273, 325
		Komoróczy, Balázs	343, 400	Larsson, Lars	170, 327
		Koncz, István	371	Larsson, Mikael	374
		Korczyńska, Marta	376	Lash, Ryan	233, 395
		Korten, Meghan	232	László-Mateovics, Orsolya	100, 339
		Kouka, Ourania	359	Laszlovszky, József	379
		Koumari, Marta	343	Látos, Tamás	351
		Kovacic, Ana	260	Lätzer-Lasar, Asuman	407
		Kovacik, Joseph	154	Laue, Francisco	365
		Kovács, Ágnes	343	Lauzikas, Rimvydas	93
		Kovács, Bianka	10, 305	Lazarides, Anton	128, 305

## K

Kačar, Sonja	252
Kairiss, Andris	237
Kaiser, Jessica	273
Kalábková, Pavlína	96, 170
Kalafatic, Hrvoje	86, 421
Kalantzopoulou, Tina	347
Kaliszewska, Agnieszka	184
Kalmring, Sven	135
Kalnins, Marcis	237
Kalogiropoulou, Evanthia	154
Kandel, Andrew	273, 344
Kanne, Katherine	349, 426
Kapahnke, Sheri	143
Karkanás, Panagiotis	345
Karl, Raimund	129, 211, 380
Karlsson, Catarina	134, 340
Kars, Eva	432
Kashina, Ekaterina	327
Kathariou, Kleopatra	417
Katsarov, Georgi	149

SESSION		SESSION		SESSION	
Lazzari, Marisa	355	Lubritto, Carmine	373	Margarit, Monica	298
Le Corre, Mael	378	Luciañez Triviño, Miriam	263	Marginedas, Francesc	419
Lebret, Jean-Baptiste	222	Luik, Heidi	263	Mařík, Jan	400
Lech, Pawel	257	Lukacevic, Marijana	83, 284	Marín Hernando, Juan	430
Lechterbeck, Jutta	149	Lund, Julie	203	Marin-Arroyo, Ana	321
Leder, Dirk	85	Lundin, Jon	197	Maring, Rikke	109
Ledger, Marissa	330	Lundström, Fredrik	372	Marini, Christina	157
Leghissa, Elena	271	Lundström, Victor	375	Markiewicz, Joanna	161
Legut-Pintal, Maria	126, 305	Luneau, Elise	350	Markó, András	283, 403
Leite, Adriana	376			Marreiros, João	197
Leitner, Simon Elio	390	<b>M</b>		Marti, Cynthia	30
Lekakis, Stelios	225	Maaranen, Nina	231	Martin, Jesus	39
Lenár, Vilmos György	396	Machacek, Jiri	35	Martin, Lucie	309
Lengyel, Dominik	241, 284	Machado, Diego	273	Martin, Valentine	90
Lengyel, György	224, 378	Machuca Prieto, Francisco	207	Martín, Antonio	390
Leone, Anna	406	Macián Fuster, Alejandra	417	Martín Casado, Juan Manuel	207, 404
Lerma Guijarro, Alma	225	Maciejewski, Marcin	343, 436	Martín de la Sierra Pareja, Paula	376
Leskovar, Tamara	344	MacRoberts, Rebecca	51	Martin Seijo, Maria	358, 406
Lespez, Laurent	230	Maddox, Timmis	203, 207	Martinet, Adrien	157
Letellier-Willemin, Fleur	177	Madella, Marco	309	Martinez, Laura	134
Levitán, Rebecca	401	Madrid, Aida	153	Martínez Espinosa, Isaac	130
Lewis, Carena	275, 316	Madsen, Mette	274	Martinez Okumura, Maria Mercedes	268, 430
Lewis, Joseph	312	Måge, Bjørnar	327	Martínez Sánchez, Rafael	176
Lewis, Michael	10	Magno, Giovanni	256, 345	Martínez-Sevilla, Francisco	176, 376
Líbor, Csilla	100, 339	Magnusson, Gert	340	Martins, Ana Cristina	157, 210
Liddiard, Robert	349	Magyari, Eniko	306	Martins, Andrea	220
Lie, Marian	154	Mahlstedt, Svea	327, 358	Marton, Tibor	271
Lifantii, Oksana	285	Maijanen, Heli	256	Martz de la Vega, Hans	32
Lilley, Ian	355	Majkić, Ana	85	Marwick, Ben	287
Limina, Valentina	192	Major, Istvan	213	Mascarello, Chiara	223
Lindstrom, Torill Christine	12, 427	Majorek, Magdalena	232	Masclans, Alba	384
Lindström, Gunvor	181	Makarewicz, Cheryl	221	Mason, Austin	289
Linke, Robert	390	Makhmasobirova, Feruza	215	Masotti, Sabrina	67
Linscheid, Petra	195	Makhortykh, Sergey	260	Masters, Mackenzie	339
Lis, Monika	339	Makin, Alexandra	195	Mateo Lomba, Paula	430
Liu, Xinyi	93	Makouskaya, Viktoriya	316	Mateovics-László, Orsolya	100
Ljungström, Olof	256	Makowiecki, Daniel	349	Mathieu, Langlais	98
Lo Monaco, Viviana	323	Malaxa, Daniel	45, 376	Matic, Uros	218
Loges, Luise	130, 237	Mallol, Carolina	239, 345	Matsumoto, Mieko	327
López, Pablo	323	Malve, Martin	226	Mattei, Luca	51, 264
López Castillo, Eva Maria	45	Mandescu, Dragos	306	Matzig, David	287, 372
López Lillo, Jordi A.	274	Manea, Bogdan	271	Maurer, Anne-France	218
López-Bertran, Mireia	210, 285	Manen, Claire	280	Maurer, Arnoud	347
Lopez-Bulto, Oriol	336	Mannering, Ulla	195	Maurer, Gwendoline	331
Lord, Maria	126	Mansrud, Anja	109, 196	Maurer, Jakob	327
Lorenzon, Marta	184	Mantile, Noemi	373	Mavrovic Mocos, Janja	434
Loskotová, Zuzana	371	March, Eleanor	289, 365	May, Keith	273
Louwen, Arjan	366	March, Ramiro	345	Mayor, Alejandro	248
Loy, Aida	130, 153	Marciani, Giulia	344	Mayoral, Alfredo	230
Loy, Anna	399	Marciniak, Arkadiusz	330	Mazis, Matasha	90, 343
Lozano-López, Néstor	280	Mardini, Mahmoud	231	McClure, Sarah	206
Ložnjak Dizdar, Daria	174				

	SESSION		SESSION		SESSION
McCrane, Samantha	419	Moghaddam, Negahnaz	100	Neill, Liz	417
McKeague, Peter	273	Moilanen, Ulla	180, 268	Neiß, Michael	203, 343
McKenzie, Jo	83, 239	Molak, Martyna	371	Nelle, Oliver	330
McSparron, Cormac	366, 427	Molina Balaguer, Lluís	280	Nelson, Matthew	39
Medina Gordo, Sonia	162	Molina-Campuzano, María Isabel	51, 343	Németh, Fruzsina	127
Medina-Alcaide, M <sup>a</sup> Ángeles	198	Mollard, Priscilla	304	Nenova, Denitsa	273
Megatli-Niebel, Isabel	343	Mollerup, Lene	229, 365	Neri, Diana	153
Meier, Thomas	129, 241	Molloy, Barry	86, 389	Nessel, Bianka	206, 381
Mele, Marko	306, 351	Molnár-Kovács, Zsolt	154	Neumann, Frank	374
Meli, Francesca	213	Monetti, Lisa	67, 419	Neves, César	280
Melis, Eszter	384	Mongillo, Jessica	67	Nevett, Lisa	192
Melo, Linda	378	Montagnari Kokelj, Manuela	347	Newland, Tayla	285
Mendoza Sanahuja, Marc	181	Montanari, Eleonora	187	Newson, Victoria	331
Meneghetti, Francesca	126	Monteiro, Patricia	267	Nezvalová, Lucia	338
Menelaou, Sergios	359	Monton-Subias, Sandra	142	Nicodemus, Amy	298
Menemenli, Yasemin	291	Moody, Bryony	273	Nicolis, Franco	268
Mengyán, Ákos	187	Mooney, Dawn Elise	358	Niculescu, Gheorghe Alexandru	218
Merkel, Máté	230	Moots, Hannah	389	Niebieszczanski, Jakub	230, 381
Mervel, Máté	358	Moragas, Natalia	436	Nikita, Efthimia	192
Messal, Sebastian	354	Morais, Rui	417	Nikita, Kalliopi	187
Mestellér, János	396	Mordovin, Maxim	135, 232	Nikitin, Alexey	16, 426
Mester, Zsolt	283, 403	Morell, Berta	384	Nikolopoulou, Athina	90
Mesterházy, Gábor	421	Moreno Padilla, María Isabel	157, 417	Nilhamn, Bonnie	315
Metzner-Nebelsick, Carola	434	Morgado-Roncal, Leyre	232	Nilsson, Björn	327
Meyer, Ann-Katrin	53	Morgan, Colleen	225, 284	Nilsson, Per	268
Michalewicz, Aleks	331	Moscone, Daniele	248	Nilsson Stutz, Liv	268
Michalik, Jakub	365, 374	Moshenska, Gabriel	225, 353	Nimura, Courtney	12, 381
Michalik, Michal	222	Mosiejczyk, Jakub	237	Nir, Nadav	180
Mickleburgh, Hayley	100, 268, 419	Moskal-del Hoyo, Magdalena	374	Niskanen, Markku	349
Migliavacca, Mara	347	Motuzaitė Matuzeviciūtė Keen, Giedre	93	Noergaard, Heide	384
Mihailovic, Dusan	283, 321	Mouriño-Schick, Andrea	210	Nol, Hagit	127
Mihelić, Sanjin	344, 351	Moutsiou, Theodora	298	Nolde, Nadine	154, 263
Milanovic, Dragan	206	Moya Soriano, Ester	339	Nordvall, Linn	376
Milejski, Pawel	135	Moyano Di Carlo, Julián	402	Nørtoft, Mikkell	376
Milek, Karen	383	Mozgai, Viktória	250	Noterman, Astrid	35
Milks, Annemieke	336, 358	Mueller, Johannes	394	Novak, Mario	339, 362
Millán Pascual, Rafael	39	Muller, Axel	180	Novák, Martin	336
Miller, Christopher	345	Munawar, Nour A.	320	Novakovic, Predrag	206
Miller, Katherine	35	Mundt, Courtney	424	Novinszki-Groma, Katalin	306
Mills, William	327	Munoz Cosme, Gaspar	12	Novotný, Jaroslav	376
Milosavljevic, Monika	162	Muntoni, Italo	248	Nowak, Kamil	343
Mina, Maria	142	Muradian, Lijana	366	Nowak, Marek	252
Minkevicius, Karolis	330, 354	Murray, Matthew	343	Nyárádi, Zsolt	304
Mino, Martin	343	Mutri, Giuseppina	224	Nyland, Astrid	375
Mircea, Cristina	326	Mytum, Harold	12, 126	Nytun, Arve	284, 385
Mistereck, Kathrin	269			Nzihou, Ange	330
Miszk, Lukasz	305, 401	<b>N</b>			
Mittnik, Alissa	389	Nafplioti, Argyro	389	<b>O</b>	
Mjaerum, Axel	109	Nagy, Balázs	379	O'Toole, Karen	273
Mlejnek, Ondrej	224	Naumov, Goce	206, 394	O'Neill, Brendan	345
Mlekuž Vrhovnik, Dimitrij	149, 421	Nebelsick, Louis D.	285	Ødegaard, Marie	385
Mödlinger, Marianne	237, 289				

## SESSION

Ögüt, Birgül	239
Oguz, Anil	312
Oguzhanoglu, Umay	359
Oğuzhanoğlu, Umay	359
Oksanen, Eljas	162, 312, 368
Okumura, Mercedes	372
Olet, Lilly	112
Olevska, Irina	237
Olivé-Busom, Júlia	264
Olivier, Adrian	275
Ollé, Andreu	197
Ollé Cañellas, Andreu	197
Olsen, Dag Erik	112
Opris, Vasile	271
Orbons, Joep	397
Ordóñez, Alejandra	416
Orlandi Barbano, Francesco	355
Orlando, Ludovic	349
Ortman, Scott	287
Orton, David	369
Ouellet, Jonathan	181
Outram, Alan	349
Özsoy, Nusret	195
Ozturk, Huseyin	389

## P

P. Barna, Judit	126
Paasikivi, Sofia	218
Pacheco, Susana	134
Pactat, Inès	10
Pagoto Bélo, Tais	210
Paladugu, Roshan	213
Pallin, Karolina	195, 232
Palmisano, Alessio	325
Pálóczy, Réka	396
Panagiotakopulu, Eva	135
Panagoupoulou, Aikaterini	177
Panetta, Alessandro	223, 323
Pankowska, Anna	100
Pantmann, Pernille	218
Paolillo, Francesca Romana	275
Pap, Evelin	384
Papadopoulou, Stella	298
Pape, Eleonore	142
Pappalardo, Chiara	407
Parini, Martina	273
Park, Gayoung	372
Parker Wooding, Jen	211, 273
Parkinson, William	206
Parque, Óscar	221
Parvanov, Petar	162

## SESSION

Pasaric, Maja	149
Passerini, Annapaola	331
Pastor Pérez, Ana	39, 194, 392
Pásztókai-Szeoke, Judit	396, 436
Patay-Horváth, András	385
Pateraki, Kleanthi	12
Patrick-Dawson, Laura	243
Patti, Daniela	51
Pawleta, Michal	284
Pažout, Adam	312
Pean, Stéphane	403
Pechtl, Joachim	108, 161
Peeters, Susan	142, 344
Peixotto, Becca	286
Peña-Chocarro, Leonor	45
Penezic, Kristina	362
Pensabene, Patrizio	324
Pereira, Daniel	176
Pereira, Telmo	248, 344
Pereira Rocha, Leonor Maria	280, 397
Peresani, Marco	344
Perez, Andrea	430
Perez-Juez, Amalia	51, 286
Perreault, Charles	287
Perry, Megan	231
Persico, Raffaele	397
Peruzzi, Bice	417
Petit-Castellví, Alba	339
Pető, Ákos	16, 154, 174
Peto, Zsuzsa	385
Petrauskas, Gediminas	353
Petreková, Eliška	12
Peyroteo Stjerna, Rita	100
Picin, Andrea	283
Picker-Kille, David	312
Pickles, Thomas	27
Pieniazek, Magda	359
Pierini, Rachele	359, 389
Piezonka, Henny	274
Piliciauskiene, Giedre	226
Pinillos de la Granja, Paula	347
Piotrowska, Beata	336
Piqué, Raquel	230
Piros, Réka	343
Pisanu, Laura	274
Plavšic, Senka	224
Plunkett, Emily	257
Pluskowski, Aleks	51, 437
Pochon, Zoé	264
Podénas, Vytenis	354
Poggiali, Federico	98
Pohl, Henrik	401

## SESSION

Poláček, Lumír	162
Polanska, Weronika	402
Polanyi, Tamas	427
Polito, Eugenio	346
Politopoulos, Aris	225
Polo-Diaz, Ana	345
Polymeropoulou, Panagiota	275
Popescu, Gabriel	362
Popovic, Danijela	349
Porubcanová, Zuzana	298
Posch, Caroline	108, 336
Pospieszny, Łukasz	93, 378, 426
Potrebica, Hrvoje	206, 434
Prado, Shalen	358
Prassolow, Jaroslaw Aleksei	316
Prats, Georgina	376
Preda-Bălăniță, Bianca	17, 206, 384
Prentiss, Anna	287
Preoteasa, Constantin	394
Price, Henry	326
Prichystalová, Renáta	100
Primeau, Charlotte	366
Priskin, Annamaria	298
Priß, Deborah	312
Prištáková, Michaela	239
Privette, Cameron	304
Provenzano, Noelle	263
Przybyl, Agnieszka	170
Pták, Martin	316
Ptáková, Michaela	161
Pulido, Guiomar	417
Puolakka, Hanna-Leena	128
Purdue, Louise	309
Pyrgaki, Marie	275
Pyzel, Joanna	96

## Q

Quaresma, José Carlos	346
Quevedo-Semperena, Izaro	280
Quinn, Colin	427
Quirós Castillo, Juan Antonio	323
Qvistgaard, Sarah	263
Qvistrom, Linda	198, 323

## R

Rabuñal, José Ramón	98
Rácz, Ákos	400
Rácz, Tibor	316
Rácz, Zsófia	371

	SESSION		SESSION		SESSION
Raczky, Pál	421	Robinson, Rhonda	211	Salvador, Pierre	283
Radchenko, Simon	218	Robinson, Stephanie	339	Sampaio, Hugo Aluai	381
Radini, Anita	406	Robson, Harry	196	Samu, Levente	250
Radišić, Milica	316	Rocha da Silva, Thais	126, 154	Sanches, Maria	280
Radivojevic, Miljana	254, 350	Röding, Carolin	344	Sanchez Conde, Francisco Javier	417
Radovic, Sinisa	321	Rodler, Alexandra	390	Sanchez de la Torre, Marta	248
Raffield, Ben	203	Rodriguez Corral, Javier	112, 126	Sánchez Moral, Carmen María	260
Rajala, Ulla	268, 312	Rodríguez-Antón, Andrea	32	Sanchez-Pardo, Jose Carlos	395
Rajkovic, Dragana	298	Rodriguez-Perez, Diana	417	Sand-Eriksen, Anette	402
Rajna, András	149	Roe, Joe	287, 325	Sandoval, Elena	149, 213
Rakonczay, Rita	338	Rogers, Bryony	378	Sandron, Sarah	406
Rakvin, Marta	351	Rohiola, Ville	368	Santamaria, Urko	280
Rama, Zana	395	Rolland, Joëlle	187	Santana-Cabrera, Jonathan	416
Ramacciotti, Mirco	38	Romagnoli, Francesca	142, 344	Santeramo, Riccardo	358
Ramé, Betty	90	Roman, Didac	98	Santiago Marrerro, Carlos	239
Ranaldo, Filomena	224	Romanis, Thomas	315	Santos, Ana	45
Rannamäe, Eve	226	Romanowska, Iza	367, 388	Santos, Joel	153, 218
Rass, Christoph	269	Romero Garcia, Galo	254, 273	Santos Retolaza, Marta	417
Real, Cristina	98	Röpke, Astrid	154	Sanz Royo, Alicia	321
Rebay-Salisbury, Katharina	384	Ros, Jerome	51	Sari, Latifa	224
Rebollar Flecha, Luis	274, 422	Rösch, Felix	39, 135	Sarkic, Natasa	365
Recchia, Giulia	206	Rose, Samantha	128	Sarris, Apostolos	397
Reichenbach, Karin	354, 396	Rose, Thomas	213	Saupe, Tina	231, 389
Reinman, Lauren	304	Rosenstock, Eva	373	Savelli, Sveva	315
Reiter, Samantha	86	Roshem, Irmine	264	Savolainen, Jenna	256
Rekowska, Monika	324	Roslund, Mats	274	Sawicki, Jakub	10, 135, 422
Relvado, Cláudia	100	Ross, Edward	181	Scancarello, Olivier	197
Renn, Lisa	135	Rots, Veerle	197	Scannell, Patrick	382
Rennell, Rebecca	416	Rouco Collazo, Jorge	51, 401	Schaefer-Di Maida, Stefanie	376
Renshaw, Layla	286, 353	Rouse, Lynne	350	Schaller, Clara	384
Renson, Virginie	180	Roussos, Dimitrios	180	Schell, Frank	96
Rhoné-Quer, Camille	215	Roy, Lynne	230	Schenck, Tine	336
Ribeiro, Artur	218, 323	Rueff, Bastien	198	Scherzler, Diane	102
Riccato, Anna	346, 369	Rummel, Christoph	312	Schimmer, Florian	369
Ricci, Giulia	98	Runer, Johan	135	Schlegel, Valery	142
Richards, Julian	273	Rustoiu, Aurel	306	Schlicht, Jan-Eric	291
Richards, Nina	250, 373	Ruttkay, Matej	400	Schmid, Clemens	287
Richter, Tobias	224	Ryder, Joseph	203	Schmidt, Patrick	345
Ridge, William	149			Schmidts, Thomas	369, 432
Riebe, Danielle	206, 421	<b>S</b>		Schmölcke, Ulrich	226, 383
Riede, Felix	224, 372, 375	Saag, Lehti	371	Schneeweiß, Jens	354
Riel-Salvatore, Julien	330	Saage, Ragnar	340, 343	Schönicke, Julia	241
Rimkus, Tomas	38, 327	Šabatová, Klára	93	Schoo, Tobias	135
Ripanti, Francesco	284	Sagrott, Stefan	83	Schreiber, Tanja	225
Riris, Philip	287	Sahoglu, Vasif	359	Schülke, Almut	381
Ritchie, Kenneth	53, 196	Saillant, Francine	12	Schultrich, Sebastian	86
Ritchie, Patrick	180	Salazar García, Domingo Carlos	98	Schumacher, Mara	239
Riva, Alessandra	275	Saliari, Konstantina	45	Schweitzer, Holger	257
Rivals, Florent	344	Salisbury, Roderick	382	Sebo, Béla	396
Rivero, Olivia	336	Salova, Julia	358	Sebok, Katalin	149
Robb, John	142, 225	Saltini Semerari, Giulia	285, 341	Seguedy, Marie	283
Roberts, Benjamin	254, 381			Seifert, Jerrod	284

SESSION		SESSION		SESSION	
Senatore, Maria	223	Sofaer, Joanna	174	Stoneman, Richard	181
Seppänen, Liisa	233, 256	Soficaru, Andrei	339	Strózyk, Mateusz	343, 384
Seregély, Timo	161	Solecki, Rafal	229, 354	Struve, Emil	327
Serra, Rita	67, 339	Solheim, Steinar	404	Stutz, Liv Nilsson	218
Serrano, Javier	416	Solnay, Eszter	271	Su, Kai	230
Serventi, Zrinka	347	Soltysiak, Arkadiusz	231	Sudol-Procyk, Magdalena	405
Shalom, Nitsan	180	Sommer, Ulrike	252	Sun, Yufeng	93
Shatilo, Liudmyla	394	Somogyvári-Lajtár, Eniko	426	Surera-Torres, Pau	416
Shaymae, Iken	267	Søndergaard, Louise	170	Surmely, Fred	38
Shelekhan, Oleksandr	306	Søndergaard, Mathias	274	Svensson, Andreas	343
Sherriff, Jenni	239, 331	Soós, Bence	306	Svensson, Eva	83, 134
Shev, Gene	213	Sorensen, Marie Louise Stig	174	Swensen, Elisabeth	162, 422
Shin, Nami	376	Soressi, Marie	344	Swenson, Dain	170
Shingiray, Irina	127	Sossa-Ríos, Santiago	239	Swiatkowski, Bartosz	436
Shipoli, Elza	436	Šoštarić, Renata	434	Symonds, James	320
Shiroishi, Tetsuya	309	Sotgia, Agostino	309	Syvolap, Mykhaylo	16, 32
Shiroukhov, Roman	349, 354	Souris, Magali	390	Szabó, Dóra	371
Shishlina, Natalia	195, 213	Søvsø, Mette	10, 343	Szabó, Melinda	285
Shnaider, Svetlana	350	Søvsø, Morten	135	Szabó, Nóra	421
Shvedchikova, Tatiana	100	Sozer Kolemenoglu, Selma	436	Szász, Hajnal	16
Shydlovskiy, Pavlo	403	Španihel, Samuel	338	Szécsényi-Nagy, Anna	349, 371
Siegmund, Frank	102	Spataro, Michela	271	Szegedi, Kristóf	224
Sierra, Alejandro	267, 362	Spate, Michael	93	Szeifert, Bea	371
Sierra Sainz-Aja, Alejandro	267	Speciale, Claudia	416	Szeliga, Marcin	161
Sigari, Dario	98	Speck, Sonja	126	Szeniczey, Tamás	371, 339
Siklósi, Zsuzsanna	149	Spekker, Olga	371	Szenthe, Gergely	250
Silva, Fabio	32	Spillane, Ben	366	Szeverényi, Vajk	427
Silva, Filipa	67	Spiwak, Alexa	134	Szigeti, Anna	213
Silva-Sánchez, Noemí	254	Šprem, Katarina	298	Szilágyi, Kata	252, 405
Silveira Martins, Adolfo António	436	Spros, Rachèl	264	Szilágyi, Márton	149
Simó, Márton	396	Stadlmayr, Andrea	67	Szocs, Peter Levente	10
Simões, Carlos	267	Staeuble, Harald	96, 330	Sztankovánszkiné Osváth, Zsófia	187
Simões, Sara	194, 353	Stagno, Anna Maria	134, 223, 323	Szücsi, Frigyes	400
Simon, François-Xavier	397	Stäheli, Corinne	401		
Simoni, Eleni	162	Stahlschmidt, Mareike	345	<b>T</b>	
Simpson, Ian	134	Stamataki, Elisavet	67	Tabaldyev, Kubatbek	350
Sinclair, Anthony	12, 218	Stamatopoulou, Vasiliki	177	Tafari, Mary Anne	426
Sindbaek, Søren	203	Stamerra, Laura	312	Taheri, Mohammad Hossin	53
Sinibaldi, Micaela	51	Stamnes, Arne	397	Taipale, Noora	197
Sitzia, Luca	345	Stanc, Simina Margareta	45, 306	Takakura, Jun	336
Skogstrand, Lisbeth	142	Stantis, Christina	231	Taloni, Maria	275, 346
Skole, John	401	Starski, Michal	260	Tamba, Robert	284, 401
Skorna, Henry	149	Stefanski, Damian	283	Tapia, Jesus	98
Škrdla, Petr	344	Stefanyshen, Earl	180	Tarbay, János Gábor	86, 381
Sloth, Pernille	274	Stella Mosimann, Federica	390	Tarlow, Sarah	268
Slusarska, Katarzyna	264, 419	Stemberger Flegar, Kaja	177, 346	Tarongi, Miguel	45
Šmalcelj Novakovic, Pia	250	Stephen, Jesse	201	Taylor, Gillian	180
Snoeck, Christophe	378, 426	Stepka, Zane	180	Taylor, Timothy	382
Soares, Inês	112	Stevens, Saskia	325	Tehrani, Rebecca	390
Soares, Joaquina	291	Still, Beverley	366	Teira-Brión, Andrés	93
Sobko, Jakub	331	Stöcker, Eike	390	Teixeira, Joana	280
Söderlind, Sandra	53	Stoddart, Simon	416		

	SESSION
Tejerizo, Carlos	134, 223
Telishenko, Serhii	38
Tencer, Tomáš	397
Tenzer, Martina	315, 407
Tereso, João	45
Terlato, Gabriele	321
Tété Garcia, Cristina	12
Texugo, André	381
Theodoroudi, Eleftheria	157
Théry-Parisot, Isabelle	374
Theune, Claudia	269, 353
Thomas, Ben	284
Thomas, Elizabeth	90
Thomas, Suzie	424
Thun Hohenstein, Ursula	321, 430
Tica, Cristina	100, 339
Tinapp, Christian	96
Tint, Küllike	12
Tiplic, Ioan Marian	371
Tisdall, Eileen	83
Tobias, Bendeguz	339, 371
Todaro, Simona	311
Tomanova, Pavla	213, 354
Tomczyk, Weronika	378
Tomé, Laura	239
Topal, Denis	16
Toreld, Christina	284
Toro, Oscar	157, 274
Torras Freixa, Maria	436
Torres Gomariz, Octavio	210, 285
Torres-Iglesias, Leire	321
Tóth, Krisztián	96
Tóth, Peter	271
Tóth, Zsuzsanna	263
Toulouse, Catherine	315, 396
Trampota, Frantisek	149
Travé Allepuz, Esther	134
Trimmis, Konstantinos	157
Trinder, Ermelinda	206
Tritsaroli, Paraskevi	192
Trzeciacki, Maciej	260
Tsai, Che-Hsien	359
Tsiafaki, Despoina	284, 417
Tsurev, Atanas	271
Tudorie, Anamaria	271
Tuffery, Christophe	283
Turcanu, Senica	271
Turek, Jan	86, 170
Tvrđý, Zdenek	339
Tykot, Robert	38

## U

Ulanowska, Agata	232
Uleberg, Espen	273
Ullinger, Jaime	339
Urankar, Rafko	257
Urrutia-Aparicio, Maitane	326
Usmanova, Emma	127

## V

Vadillo Conesa, Margarita	98
Vafadari, Azadeh	283
Vágner, Michal	229
Vagni, Elisa	187
Väisänen, Teemu	286
Valchev, Todor	16, 153
Valenzuela, Alejandro	45
Valenzuela-Lamas, Silvia	45
Valenzuela-Suau, Lua	378
Valk, Heiki	354
Vallejo Casas, Elena	35
van Amerongen, Yvonne	174
Van der Velde, Henk	45
van Gijn, Annelou	220, 345
Van Ham-Meert, Alicia	343, 369
van Leusen, Martijn	273
van Vugt, Lieveke	230
Vanderhoeven, Timo	432
Vandeveld, Ségolène	198, 345
Vandrup Martens, Vibeke	420
Varalli, Alessandra	309, 389
Varga, Benedek	351
Vargha, Mária	10, 162
Varkuleviciute, Karolina	426
Varlet, Vincent	100
Vasile, Stefan	344
Vautrin, Adeline	221
Vaz, Filipe	45
Veiga-Rilo, Clara	264
Vella, Emily	404
Venditti, Caterina Paola	346
Vendramin, Daniele	192
Vendrell Cabanillas, David	417
Ventresca Miller, Alicia	350
Verdonkschot, Jadranka	436
Veres, Daniel	149, 343
Verhagen, Philip	367, 388
Verhegge, Jeroen	397
Verheyden, Sophie	344
Vernot, Benjamin	230

## SESSION

	SESSION
Verostick, Kirsten	371
Vettese, Delphine	430
Vicze, Magdolna	174
Vida, István	400
Vida, Tivadar	371
Vidal Cordasco, Marco	321
Vidal Lorenzo, Cristina	142
Vieira, Alexandra	284, 385
Vijande, Eduardo	267, 401
Vika, Efrossini	161
Villalón-Torres, David	239
Villumsen, Sune	274
Vinci, Giacomo	143, 416
Virsilieni, Jurgita	436
Visentin, Davide	248
Visocka, Vanda	354
Vitezovic, Selena	298, 362
Vlach, Marek	367
Vo Van Qui, Camille	349
von Baeyer, Madelynn	358
von Rummel, Philipp	337
Vondrovský, Václav	161
Vostrovská, Ivana	96
Voulgari, Evangelia	271
Voutsaki, Sofia	192
Vrydaghs, Luc	180
Vuillien, Manon	221
Vyazov, Leonid	371
Vybornov, Alexander	149, 252
Vynckier, Geert	229
Vynogrodskia, Larysa	127

## W

Wager, Emma	274
Wait, Gerald	102
Walczak, Anna	339
Waldhart, Elisabeth	241, 407
Walker-Friedrichs, Fiona	213
Walsh, Matthew	86
Wang, Ke	371
Wang, Shujing	181
Wanger-O'Neill, Anneli	230
Ward, Andrew	126, 417
Wärmländer, Sebastian	340, 343
Waszk, Benny	126
Watson, Jenna	304
Webley, Robert	349
Webster, Lyndelle	239
Weise, Svenja	256, 264
Welty, S.	419
Wendrich, Willeke	220

## SESSION

Wenn, Camilla Cecilie	289
Wennberg, Tom	260
Werra, Dagmara H.	376, 405
Westergaard, Bengt	153
Westmont, V. Camille	286
White, Jessica	264
Whitefield, Andrew	392
Whitefield, Hans	399
Wicker, Nancy	343
Wiebe, Matthea	180
Wigg-Wolf, David	283
Wilk, Stanislaw	149
Willems, Sonja	346
Williams, Alan	254
Williams, Robert	254
Williamson, Christina	407
Wilson, Andrew	257
Wilson, Katherine	27
Wilson, Kathleen	218
Wisher, Isobel	198
Witan, Joanna	264
Witmore, Christopher	407
Witte, Frauke	260
Wittenberger, Mihai	376
Wolff, Frank	269
Wollak, Katalin	351, 400
Wollentz, Gustav	241
Wolska, Bogumila	100
Wright, Holly	273
Wright, Joshua	350
Wygala, Brian	375

## Y

Yalman, Nurcan	355
Yamasaki, Mari	126
Yaworsky, Peter	224

## Z

Zabiela, Gintautas	354
Zabulione, Aelita	330
Zago, Sabrina	369
Zagorc, Brina	339
Zagorodnia, Olga	86
Zak, Claire	143
Zakrzewski, Sonia	231
Zamora, Aurea	305
Zanier, Katharina	323, 351
Zavodny, Emily	206
Zay, Orsolya	396
Zdeb, Katarzyna	260, 365
Zear, Asem	289
Zejdlik, Katie	304
Zelenkov, Alexander	128
Zhang, Mengyao	93
Zhang, Yingxin	315
Zhou, Hongdi	195
Zhuniskhanov, Aidyn	32
Zimmermann, Judith	27
Zinn, Katharina	12, 27
Živaljević, Ivana	196, 109
Živkovic, Jelena	127
Zlámálová, Denisa	371
Zoldoske, Teagan	257
Zubrow, Ezra	330, 382
Zuchowska, Marta	157, 195
Zupancich, Andrea	321

## SESSION