



## ABSTRACTS

# 15<sup>TH</sup> ANNUAL MEETING OF THE EUROPEAN ASSOCIATION OF ARCHAEOLOGISTS

**15-20 September 2009**  
**Riva del Garda | Trento, Italy**



UNIVERSITÀ DEGLI STUDI  
DI TRENTO



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## ABSTRACTS BOOK



# PREFACE

The Annual Meeting of the European Association of Archaeologists is being held in Italy for the second time. After Ravenna in 1997, it is now the turn of Riva del Garda in Trentino to welcome such a large group of archaeologists who will be able to exchange views and present the outcomes of their research.

It is an honour to host a scientific meeting the quality of which is immediately evident from the wide range of session themes and the topics of the papers.

Trentino is a land of archaeologists: it is the birthplace of Federico Halbherr, the discoverer of Gortyna, Festòs and Haghia Triada on Crete (Greece), Paolo Orsi, the tireless investigator of the civilizations of Magna Grecia, Giuseppe Gerola, scholar of Byzantine and Venetian monuments on the island of Crete, and Pia Laviosa Zambotti, author of many volumes on the cultural evolution of early cultures in Europe. More recently Bernardino Bagolini and Renato Perini have contributed, with their investigations on Mesolithic and Neolithic sites and research on the lake-dwellings of the Bronze Age, to make Trentino a region whose rich archaeological heritage is well known even outside our national borders.

Lake Garda, too, is an archaeological territory: Mount Baldo, which dominates the eastern shore of the lake, preserves the earliest evidence for human presence in our region; at Riva del Garda, thanks to the careful preventive action carried out by the Archaeological Heritage Office of the Autonomous Province of Trento, evidence of Neolithic settlements and a rich documentation of the Roman period have been brought to light. They illuminate the way this territory offered excellent economic and environmental resources in various periods.

It is in this territory that today the Museum of Riva del Garda operates, preserving some of the highest expressions of cultures that have left their traces in this region over the past millennia, like the Copper Age statue-stelae from Arco. The museum is the great promoter of the enhancement of the archaeological heritage of the Lake Garda area. Furthermore, it is working towards the creation of a large territorial complex called MAG (Museo dell'Alto Garda/Museum of Upper Garda).

Lake Garda is at present a border territory. But it is a liquid border, navigable and, therefore, it is a space for sharing and exchanging, of passage and cultural mingling. The Mediterranean climate it enjoys symbolically represents the role that this region has always had, as a melting-pot of cultures from the neighbouring regions (the site of Monte San Martino is emblematic of these aspects) and, more generally, a meeting point between the Mediterranean and Central European world.

The organisation of the meeting has been a complex task, shared by many people and various institutions. To each them, and unfortunately I cannot list them individually, my gratitude for their work, for their human and professional contribution, their engagement and patience.

Some people, however, deserve a special thanks because without them all this would not have been possible: Senator Claudio Molinari, Mayor of Riva del Garda, who has believed in the project from the start and has supported it in every way, together with Monica Ronchini, Director of the City Museum; all the members of the Scientific Committee who had a difficult task which they carried out in a well-balanced and impartial way; Margherita Ferrari and Marianna Zambiasi who have taken care of the organisation impeccably and most professionally, making suggestions and offering solutions to every problem; Monica Dorigatti who has offered her expertise and her sensitivity in every phase of the organisation; and a very special thanks to Martina Dalla Riva who has led the Scientific Secretariat most competently and with great patience.

At the moment of writing a great friend and archaeologist has left us, Lawrence H. Barfield, of the University of Birmingham (UK). It is very sad not to see him on "his" Lake Garda, yet the memory of him will stay alive for those – and there are many of us – who had the opportunity to appreciate his humane character, his simplicity and enthusiasm, together with his great scientific expertise.

I wish to dedicate this effort to Lawrence, in memory of his precious advice, the friendly and profound discussions and the enlightening exchange of views.

*Franco Nicolis*  
*Coordinator of the Organising Committee*

2 August 2009

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# **SESSIONS AND ROUND TABLES**



# APPROACHES TO ARCHAEOLOGICAL INTERPRETATION



**A001****Session title:****ABOUT THE FARM****Organiser:** Petersson Maria, National Heritage Board (Sweden)**Co-organiser:** Carlie Anne, National Heritage Board (Sweden)**Session abstract:**

In the session About the farm we invite you to discuss the prehistoric and medieval farm and its landscape.

Within settlement archaeology the perspective has broadened during the last century. Focus is no longer restricted to the buildings and the farm as an economic and functional unit but encompasses the farm as social arena and mental construct. The farm mirrors functional aspects connected to the agrarian production and also immaterial aspects based on the cosmological and social/cultural values of prehistoric and medieval people. Modern landscape research has contributed with a pronounced spatial perspective, applied both to settlement and landscape. The long-time perspective is a specific trait of archaeology. It emphasizes both *la longue durée* and periods of rapid change.

What similarities and differences are there between different geographical areas and different periods regarding the architecture of the farm buildings, the lay-out of the toft and the organisation of the surrounding landscape (with roads, arable fields, pastures, water-holes, meadows and managed woods)? How do we explain these (tradition, notions connected to the farm as social space and status manifestation, the organisation of labour, practical considerations)? What do they tell us about contacts?

The social organisation is reflected in settlements and the surrounding landscape. So far the élite has received particular attention. How do we identify the lower social strata? What terms, methods and models do we use to describe and characterise these? How was labour organised (and divided?) and how was co-operation organised?

**Paper abstracts:****ASPECTS ON IRON AGE SETTLEMENT HIERARCHY – POTENTIALS AND LIMITS OF INTERPRETING SOCIAL RANKING IN SETTLEMENT MATERIALS**

Carlie Anne, National Heritage Board (Sweden)

In later years several attempts have been put forth in order to grasp social ranking of farmsteads in prehistoric and historical settlements. The methods differ. In many cases the size of buildings and farms, combined with ideas of changes in building traditions, the presence of precious metal finds, specialization and cultic activities have been used as criteria for identifying hierarchal structures and centralities. This mode of procedure has shown to be particular successful when studying social environment of the upper social stratum of society – represented by magnate estates and halls.

But, how do we identify different categories of farms/ buildings used by people of lower social ranking – like for example free farmers, peasants, tenants and thralls? Similar conditions accounts for those groups of society engaged in other activities than farming, such as metalworking, pottery production and other kind of handicrafts. Thus, we need to look at all social levels of society in order to understand the character and diversity of social interaction.

The aim of my presentation is to discuss how we interpret social ranking from settlement materials. What potential and what limits can be seen in the archaeological record? As a point of departure I will use examples from large scale excavations of Iron Age settlements in Scania, southern Sweden, which allow us to combine models of social stratification with the study of spatial organization of settlements from a landscape perspective.

**DOES IT EXIST DIFFERENT MANNERS TO EXPRESS HIERARCHY IN AN IRON-AGE SOCIETY?**

Carlie Lennart, Kulturmiljö Halland – Halmstad (Sweden)

Power and hierarchy are two phenomenons which is intimately associated to each other and something that people



during a long time tried to attain. In symbiosis with power the people during the Iron-Age have used different means to express their position in the society. Usually this was notified by magnificent buildings and/or conspicuous artefacts. Among the artefacts the wealth was shown by different objects of gold and silver but also other imported luxurious objects, such as glass and wine from the Roman Empire.

This items was subject for the most outstanding elite and is easily detected in an archaeological context, but how does the hierarchy turn out in a local standard? Have they chosen some other or different attribute to manifest their position in the society?

From several archaeological excavations in southern Sweden the results indicate a segregated way of living. In the villages there is at least one farm which is separated from the other by means of size that could indicate a significant standard of wealth. On the other hand there is a tendency among the artefacts that rather suggest a society based on equality without any considerable variations. The observations are sometime full of contradictions but never the less a reality. The contradictions give rise to the question whether there have been different approaches to hierarchy, concealed within the archaeological materials.

### **THE IRON AGE LANDSCAPE OF LABOUR AND POWER**

Petersson Maria, National Heritage Board (Sweden)

Large scale archaeological excavations combined with new theoretical approaches to landscape enables us to identify periods of rapid changes in settlement pattern and landuse in middle Sweden. My presentation relies on an ongoing analysis of an intensely excavated area in where more than 100 excavations have been carried out within a few square-kilometres.

A new social landscape emerged during the centuries before Christ and it's basic components are seen to have lasted for several hundred years. The number of subordinate agricultural units increased (many of them probably not self sufficient) and social stratification probably became more pronounced. A result was that the number of people available for heavy manual labour increased drastically. At the same time the landscape was transformed and landuse intensified. Roads were built to facilitate transports of goods between different parts of the larger farms units. Water holes were dug for the domestic animals, and reinforces by elaborate stone constructions, thereby fixating landuse for a long time to come. The special central grazing areas have been identified by archaeological methods. New techniques for the arable also seem to have emerged during this period, involving heavily manured areas of gardenplot-size. These are found in the immediate vicinity of the long-houses. All these changes brought about in the landscape have been extremely labour-intensive and seems to have been connected to, and indeed facilitated by, changes in the social structure of society

### **POWER AND EVERYDAY LIFE**

Berónius Jörpeland Lena, Seiler Anton, National Heritage Board (Sweden)

In Central Sweden major changes took place in society during the period of 900-1200 AD. The evidence of local aristocrats

and estate building are possible to detect in written sources mainly from the 13th and 14th centuries. How the transition from the Viking Age society -which in earlier research consisted mainly of free farmers - came about, is still not very clear.

In this paper we would like to discuss how changes in the material culture, artefacts and buildings, on a farmstead could be used to discuss fundamental changes in the society. Our starting point is the village of Mälby, which were excavated in 2007. The excavation revealed that Mälby had not been an "ordinary" village during Early Medieval Period. Instead it seems that Mälby can be understood as a manor with a landowner that belonged to the higher social strata in

society. Since Mälby also existed during the Viking Age, it is possible to trace changes in how power and wealth were expressed in the material culture on the farm it self, and how Mälby and its inhabitants interacted with the society in the district and the surrounding landscape.

### **SPADE-SHAPED CURRENCY BARS, HISTORY AND IDENTITY IN CENTRAL NORRLAND, SWEDEN**

Lindeberg Marta, Dept. of Archaeology and Classical Studies, Stockholm University (Sweden)

In central Norrland, Sweden, large numbers of spade-shaped currency bars were manufactured throughout the first millennium AD which is a remarkably long period of use. These bars are notably absent in the archaeological

record from sites where iron-working has taken place. Instead they are found in hoards, deposited on boundaries in the landscape. The shapes of prehistoric bar iron were not chosen solely from a technological view point. Rather the shapes refer to utilitarian objects that would have had an important function, as well as symbolism, attached to them at the time. I suggest that the shape of the bars were taken from the socketed axe, a tool that was used when felling trees, in agriculture and iron-working.

A large-scale iron production took place from around the time of the birth of Christ and the spade-shaped currency bars were manufactured from the time when this production was introduced. The introduction of iron production coincides roughly in time with the introduction of agriculture and a sedentary way of life – events that would have deeply changed the lives of the Iron Age people. In these changes the socketed axe would have been the main tool and it therefore incorporated ideas history, identity and place in the world. I suggest that this is why the shape of the socketed axe was chosen for the currency bars. The socketed axe referred back to a mythical history when people began to cultivate the land, became sedentary and started making iron.

### **WOODS, PASTURAGES, RIVERS, VILLAE:THE LAND USE IN CENTRAL-EASTERN ALPS IN ROMAN TIME**

Mosca Anna Paola, University “La Sapienza” - Roma (Italy)

In this paper is analysed the land use and the spece management in the central-eastern Alps in Roma period. Archaeological and historical sources were necessary to afford this research, but also the Knoweldge of the peculiar land problems helped to unterstand the way of housing and the economy of this territory. The central-eastern Alps in Roman period are a sort of hinge open to economic traffics and cultural exchanges in a European perspective, and its peculiar alpine nature favoured the practice of habits perpetuated in Middle Ages and even later.





A002

Session title:

## **ARCHAEOLOGIES AND SOUNDSCAPES. FROM THE PREHISTORIC SONOROUS EXPERIENCES TO THE MUSIC OF THE ANCIENT WORLD**

**Organiser:** Dimitriadis George, DiSA University of Genova (Italy)

**Co-organisers:** Melini Roberto, Conservatorio “F.A. Bonporti”, Trento (Italy); Clodoré-Tissot Tinaig, ArScan ‘Protohistoire européenne’, Maison René Ginouves of Archaeology and Ethnology - Nanterre (France)

**Discussants:** Dimitriadis George, DiSA University of Genova (Italy); Singleton Michael, Emeritus Professor Louvain University (Belgium)

### **Session abstract:**

People “did music” evidently utilizing not only tools especially crafted for, but also objects created for other goals, raw materials and the human body and voice themselves. This statement, if on one hand points out how hard is the research in this field, on the other opens an attractive reflection about important issues that relates about the “idea” of music from prehistory to antiquity till present times.

The positivistic and “western” view that narrowed the concept of music and associated it exclusively in connection with musical instruments, appears obsolete: reconsidering the sonorous horizon with an archaeological perspective become therefore very significant in order to understand, in more general terms, how the relationship between mental meanings, culture and technology can be complex.

Session’s aims are:

1. to promote the discussion about recognition and interpretation of the first evidences of soundscape.
2. to explore the relations of the prehistoric sonorous experiences with the environment, and to point out the rise of the concept of music in the most ancient civilisations.
3. to give a brief overview of the actual state of research in music archaeology, and to invite archaeologists, who discovered ancient musical instruments, to present and discuss their finds.

We wish that this session could also be a reflection on :

1. How do we know for these archaeological items that they could have been used for a musical purpose?
2. How far can we go in our interpretation by identifying enigmatic objects on the basis of ethnographical comparisons and experimental archaeology?

Call for papers is addressed not only to archaeologists: organizers attend and welcome contributions from music experimentalists, anthropologists and musicologists.



### **Paper abstracts:**

#### **SOUNDS OF THE SILENT CAVE. AN ETHNO-PHILOLOGICAL PERSPECTIVE ON PREHISTORIC INCUBATIO**

Benozzo Francesco, Dept. Foreign Languages and Literature, University of Bologna (Italy)

The aim of this paper is to examine the practice of prehistoric “incubatio” starting from different kinds of sources and with particular regard to the problem of the relations between silence and soundscape. According to the principles of Ethnophilology, also texts, images and words from later Indo-European traditions can be considered in order to reconstruct a prehistoric map of the phenomenon. In this way, it is possible to reconsider the problem of “incubatio” from the double perspective of its origins (that the author firstly reconnects to the observation of animals’ hibernation) and its persistences (later traditions of “incubatio” and their shamanic contexts).

#### **MUSIC ARCHAEOLOGY IN THE RIPARO GABAN, TRENTO**

Delpero Alberto, University of Trento (Italy)

Riparo Gaban is in Trento (Italy). The sequences of the stratus attests frequentation since Mesolithic to the Middle Bronze Age. Between Neolithic and Mesolithic fine art objects, a hollow human thigh-bone differs. Once discovered it was possible to blow through, a physical-acoustic tests assured the sound (similar to a trumpet one)

was approximately a G 3.

Besides others art objects found with this bone could be connected to the production of sounds. A little bone cylinder decorated by a zigzag line is like a whistle. In the same level was found a deer horn lengthwise section shaped like a spade. Here again we see zigzag and parallel lines converging to triangles. The object is similar to the spade rhombus diffused now in central India, Suriname and Sudan. The shape of the piece of bone decorated with fish forms and with a hole is very diffused for making *bull-roars*. A boar bone is similar to a well known and used sonic object: the rasp.

Music-archaeology and ethno-musicology give new meanings to the Riparo Gaban artefacts & objects.

### **PALAEOLITHIC SOUNDSCAPES: A COGNITIVE FOUNDATION OF SYMBOLIC SPACE**

Meschiari Matteo, Dept. of Anthropology, University of Palermo (Italy)

Sounds involve both time and space. To produce sounds is to colour the perception of a place, to probe its spatial qualities in order to understand it in its invisible parts and to endow it with an added semantic value. By studying certain sonorous evidence from the Upper Palaeolithic, my contribution intends to analyze the cognitive bases of the symbolic construction of space through the production of sounds.

### **PALEO-LITOPHONIES**

Calegari Giulio, Dept. of Palaeontology, Museum of Natural History - Milano (Italy)

In our daily intimate gesture expressiveness we conserve signs of ancient beauty. Between these, the traces of the sounds are perhaps deepest, more impressed in the layers of the memory. Years of experimental archaeology has taught to me that the reproduction more faithful than a chipped stone, it was the sound of the percussion and the chip that was detached. The same, identical sound that our ancestors had listened.

Prehistory speaks to us through material evidences, figurative manifestations, and dialogue with the territory. In they is frequently present that extension of the gesture that leads to the rhythm, to the sonorous dimension. Try to listen to all these, with a presumed scientific reconstruction, door many times to opposite result from those intentional ones. Door to far away place in a dimension or onlooker this that instead has been able, with thousands varying, to reach until to we.

It must "listen to" the past without mortify it with the pretension bringing back to a present that cannot be suggested. The rhythms of the past are in it's remain and within of we. They can be cultured and intuited transforming itself in a contemporary language, with a participative vision. They throw a bridge towards the future, are place of relation with the world, in an exchange that invites all the senses to re-sound, in perfect combination, in a continuous one listen.

### **SCENOGRAPHIC INTERPRETATION OF THE ROCK-ART OF SERRA BRANCA, BRAZIL**

De Andrade Buco Cristiane, FUNDHAM, Serra da Capivara (Brasil) & ITM, Mação (Portugal)

This research portrays the first analytic results about rock art scenographic interpretation in Serra Branca region, Serra da Capivara National Park in the Northeast of Brazil. There are more than one hundred rock art archaeological sites in Serra Branca region. In these archaeological sites there are many compositions that represent humans, animals and objects that expose two universes: daily life and mythical world.

The analogy between rock-art and Brazilian native music is the principal theme of this communication. Musical inferences associated a musical instruments found in the paintings and the human gestures associated while playing and dancing indicate the permanence of a rite for more than 10 thousand years.

### **A POSSIBLE NEOLITHIC BONE FLUTE FROM SERBIA**

Vitezović Selena, Archaeological Institute of Belgrade (Serbia)

Apart from several musical instruments made of ceramics, several possible musical instruments made of bone were so far reported from several Neolithic sites in central Balkan, for example Anzabegovo and Divostin. However, their interpretation as musical instruments is not certain. This paper will focus on one small, but unique find, a possible bone flute. It was found in the site Drenovac in central Serbia in Vinča culture (Late Neolithic) layers, and, although fragmented, it possess the features of a true musical instrument. The mode of shaping of this object, the context

and analogies will be presented and it will be compared with bone musical instruments from other Balkan Neolithic sites reported so far. Also the interpretation of its significance within Vinča culture and within a wider context of European prehistory will be offered.

### **BABY BOTTLE OR WATER WHISTLES? RETHINKING THE USE OF ENIGMATIC CERAMIC ARTEFACTS DATED TO THE BRONZE AGE, FOUND IN SWITZERLAND, ON LAKE-DWELLING SETTLEMENTS**

Clodoré-Tissot Tinaig, ArScan 'Protohistoire européenne', Maison René Ginouves of Archaeology and Ethnology - Nanterre (France)

Some small ceramics found in Switzerland, on lake dwelling settlements, dating from the Bronze Age, have a globular shape with a very short neck and one - sometimes two - small beak-shaped spout. Their exact function is unknown.

They could be compared to some ceramics dated to the roman period, which have been interpreted as baby bottles. But the shapes of these Bronze Age ceramics also remind the water whistles traditionally made of clay, in different parts of Europe. The Experimentations I did with some reconstructions of these enigmatic ceramics could check this musical interpretation.

These probable water whistles could be considered as a new shape of Prehistoric clay whistles, As a conclusion for this paper, I will briefly dress an inventory of the ceramics whistles unearthed in Europe, dating from the Neolithic to the Iron Ages.

### **THE 'PENDALS XYLOPHONES'. SONOROUS HANDCRAFTED OBJECTS OF THE IRON AGE**

D'Eugenio Alessandra, University "Suor Orsola Benincasa" - Napoli (Italy)

The theme of my report concerns bronze made objects which are of the xylophones type, also named *calcofoni*, dating back to the iron age only (end IX – beginning VIII century B.C.). They were characteristic ornaments and in some way they represented a distinctive feature of female burials in the area which extends from the costal stripe of Metaponto to the hinterland until the domain of Sybaris. Owing to their peculiar metallic structure, in between musical instruments and ornamental pendant, the xylophones may certainly be considered sonorous objects which probably have relation with religious dimension. Of relevant significance is also the presumption that the origin of the instrument may be connected to the oriental area. In the IV century BC, after a latency of about four centuries, the xylophones reappeared in some pottery of Taranto area, in a connotation associated, even in this case, to the female world.

In 1976, H.R.W.Smith proposed the identification of the instrument with Archita's πλαταγή and therefore, the new xylophones could match a sonorous plaything which is in harmony with the principles stated in the educational theories enunciated by Archita. It may be assumed that the xylophones certainly represented, an object capable to develop particular sonorous surroundings with distinctive purposes: one of religious content in the sites of Enotria, and a different one of ludic intent in the area of Taranto.

### **SOUNDS AS SYMBOL: MUSICAL INSTRUMENTS IN VALCAMONICA ROCK-ART**

Marretta Alberto, CRAAC Centre of Anthropological Researches, Central Alps (Italy)

Valcamonica is well known as the Alpine place bearing one of the richest traditions of rock art in Europe. Within the wide range of signs represented there are also some important pictures of musical instruments. The types of objects identified is actually narrowed to wind instruments, especially the so called "horns" (lat. *cornu*), long and curved metal pipes of Etruscan origin then transmitted to the Romans. This set of figures is one of the largest and most important iconographic sources known in the Alps for this type of instruments. The chronology so far proposed put the Valcamonica occurrences mainly in the "period of Etruscan influence", namely the Middle Iron Age (VI-IV cent. BC), although the new data presented here (about 15 cases and, among them, a recently discovered figure of around 1 mt in diameter) allow us to lower the dating of most of them to the Roman Imperial period (I-II century AD). The representations, that almost never depict the act of producing the sound but the instrument as such, suggest a powerful symbolic value linked to the object itself, which in both Etruscans and Romans contexts precedes the appearance of prominent personalities or magistrates (also in funerary images) and finds use in the military activities or as an accompaniment of the gladiatorial games.

**METHODOLOGICAL ANALYSIS AND SOUND MODELS THROUGHOUT THE STUDY OF SOUND RELATION BETWEEN ROCK SITES IN ARAGÓN-SPAIN**

Garcia Benito Carlos, Lòpez Maria Sebastian, Dept. of Antiquity, Prehistoric Area, University of Zaragoza (Spain)

The studies made on the Rock Art and its territoriality in relation to the landscape and its context have been source of recurrent study in the last years, as much in the scope of Geography like the one of Prehistory (Leroi-Gourhan 1964, Binford 1968, Hodder 1987, Tilley 1994). The data processing has little by little begun to be made in digital format, specially in the context of Geographical Information Systems (GIS), analyzing in this way, in a same system the different factors that can condition the space distribution patterns of the rock art: altitudes, slopes, topography, geology, uses of the ground, etc.; and even those tie ones to the possible territorial relations (cattle visibility, routes, optimal ways, joint). Equally, the studies of archeoacoustics are doing from last the twenty years since the sound has been a factor increasingly introduced in the archaeological analyses, and specially in the dedicated ones to the rock art. Until the moment, the loudness has studied or acoustics of the caves and shelters with prehistoric rock art looking for to determine to what extent this influences in the location of the places in which are the art as well as its content, finding guidelines that establish connection between their location and the places with good acoustics (Reznikoff 1987, 1995, 2002, 2006, Reznikoff and Dauvois 1988, Dauvois, 1995, 2005-2006, Dauvois and Boutillon 1990, 1994; and Waller 1993, 2002). The investigation proposal that appears here has of novel setting out as study object the possible sonorous relation that it can exist between two or more stations of rock art as a factor to consider for his examination more. In this way, in the first place a concise methodology appears that allows us to evaluate the auditory agreement that can get to exist between the different stations from rock art that in our case they will be the located ones in the valley of the Martin River (Aragón, Spain). After this, it is made an empirical analysis on the land for the study and obtaining of data of neutral form on the sonorous conditions and of the auditory relation that exist between two or more painted shelters in the present time.

**CULTURAL IMPACTS OF SOUNDSCAPES IN PREHISTORICAL AND RECENT MELANESIA & ADJACENT SOUTHEAST-ASIAN REGIONS**

Dosedla Heinrich, Centre of Interdisciplinary Studies and Research (Austria)

While the most parts of Asia and Europe since earliest periods experienced various waves of migration as well as diffusion movements often resulting in intricate patterns of overlapping or intermingled musical traditions one of the rare places where distinct soundscapes can still be determined persisting from prehistoric times until primary European contact are New Guinea and the Melanesian archipelago.

In spite of the general isolation of this area recently there is also considerable archaeological evidence from remote parts of interior New Guinea indicating cultural influences – as in the case of certain drum and flute types - which can be traced back to earliest stages of southeast-Asian prehistory.

**THE MUSICIANS AND THEIR SOUNDSCAPE DURING THE NEW KINGDOM. THE SENSE OF SIGHT IN THE ANCIENT EGYPTIANS ICONOGRAPHIES**

Simini Valerio M., University of Pisa (Italy)

The musical life in ancient Egypt has its greatest changes during the New Kingdom: in this period many music scenes preserved describe the intensity and the variety of the relations between the sense of hearing and the sight. The iconographies of the XVIII dynasty show beautiful semi-nude girls playing during the banquets to satisfy the pleasure of ears and eyes, otherwise the male soloist harpist-singers are sometimes represented as blind.

This characteristic has a symbolic value, whose roots lie within the social origins of the iconography itself. The representations of musicians without a direct relationship with their soundscape grow in number during the Amarnian period: some blinded men appear in relieves performing with a giant lyre.

**DID HADES ACCEPT VISITORS?**

Panagiotis Karampatzakis, School of Architecture, Aristotle University of Thessaloniki (Greece), Zafranias Vasilios, Faculty of Engineering, Aristotle University of Thessaloniki (Greece)

The present paper is concerned with the acoustical properties of the archeological site designated as the underground crypt of the Acheron Nekromanteion, located in the prefecture of Preveza in northwestern Greece.

A series of measurements, during 1997-2008, of the reverberation time (Rt) results together with 3D computer models

of the space were then used with acoustic simulation software so that the measurements could be evaluated and explained meaningfully. It is noted that the  $R_t$  measured was more than 85% lower than that expected of a simple model of the room and 75% lower than the result obtained with a very detailed model of the room. The background noise measured was also extremely low, which combined with the low  $R_t$  make a very interesting combination that is rarely if ever found in nature but which approximates the soundscape found in a modern anechoic chamber (with all its intense psycho-acoustic phenomena).

Searching for the explanations for such a deviation from the computer model predictions it was found that a quite simple and mathematical in nature explanation of at least a part of the phenomenon exists based on a law of acoustics called “Sabin’s Law”, which means that the conscious design of the place so as to have these properties by its designers is plausible and even probable.

### **ASPECTS OF THE SOUNDSCAPE IN THE PO VALLEY ETRURIA (VII-V CENTURY BC)**

Castaldo Daniela, University of Salento (Italy)

Inspired by some Etruscan objects now on display at the Archaeological Museum of Bologna (Italy), I would like to reconstruct some aspects of the soundscape of the Po Valley Etruria. First of all, I will take into consideration some artefacts from the Bologna region, the Etruscan Felsina, mainly tombstones and bronze situlas, decorated with musical scenes and dating back to the end of the VI and V century B.C. Then, I will try to study and interpret these objects from a musical perspective, comparing them to others even more ancient and coming from Marzabotto, Verucchio and other areas outside the Po Valley. Through the study of this rare musical evidence it will be possible to throw some light on how music was made by this Ancient Civilisation and on the meaning given to music at that time, pointing out its usage, functions and symbolic value.

### **EARLY SOUNDS FROM ETRURIA: MUSICAL SCENERY BETWEEN THE VILLANOVIAN (900–720 BC) AND THE ORIENTALIZING PERIODS (720–580 BC)**

Morandini Flavia, Dept. of Antiquity & Middle East, University “Cà Foscari” - Venezia (Italy)

Music in Etruria is a topic widely discussed mainly as regards the Archaic period. In this period there are many evidences, from both the material culture (realia, painted figures on pottery, tomb walls, sarcophagi, reliefs, mirrors, bronze or terracotta figurines and architectural elements) and literary sources.

The matter has blurred outlines for earlier ages: Villanovan and Orientalizing.

Although the number of documents currently available is limited, percussion instruments are known during the Villanovan, mainly from graves, connected to the female sphere. These objects have a ritual function, also “life”, which point out the important role the women played at the beginning of the Etruscan culture.

During the Orientalizing period the scenery becomes more diversified with the occurrence of wind and stringed instruments that we know from painted pottery and exceptional finds, like the “tromba-lituo” from Tarquinia. This variety indicates a progressive specialisation in the character of both music and rituals, which points to a more complex structure of the Etruscan society.

### **SONOROUS ANIMALS: THE CASE OF THE LYRA-CHELYS**

Tonon Giacomo, University of Padova (Italy)

Since the beginning of his history, the human being sensed how nature can be a model or a rich source of resources to generate sounds. The animal world has especially offered him very singular and interesting instances: a special one is the use of some animal’s anatomical parts to create a stringed instrument. The Homeric Hymn to Hermes refers minutely how from a tortoise shell, some goat horns and sheep-gut, the young god invented a cord-phone destined to become one of the most important and famous musical instrument of the Greek and Roman world.

Through an aimed inquiry of “Musical Archaeology”, will be identified the most relevant comparisons inside the iconographic and literary Greek and Roman heritage in order to understand and single out the essential organology of this stringed instrument and the most important moments of the lyra-chelys manufacture with some animal’s anatomic contributions. On the base of this different information, will be presented some peculiar archaeological discoveries in the Italic peninsula concerning the stringed instruments of the lyra-chelys. In particular archaeological findings of tortoise shells (with some peculiar feature) that can be identified as part of an ancient lyra-chelys.

**THE REDISCOVERY OF THE CARNYX OF SANZENO (VAL DI NON, TRENTO)**

Roncador Rosa, University of Bologna & Archaeological Heritage Office of the Autonomous Province of Trento (Italy)

The recent discovery of the carnyces of Tintignac (Correze, cf. Maniquet infra) enables the reinterpretation of some discoveries of the 1950s on the site of Sanzeno (Valley di Non, Trentino, Italy) as parts of a carnyx. This partially-excavated archaeological site is one of the most important centres of the central-eastern Alps during the Late Iron Age. During the numerous excavations since 1899, a huge quantity of metal and ceramic objects was discovered that permitted the definition of the so-called Fritzens-Sanzeno culture. The distribution of such objects is very similar to the territory of the Raeti according to the ancient writers. These people, open to influences coming from the nearest cultural areas, were in dynamic touch both with the Mediterranean world and with Celtic Europe.

The carnyx is a further important element in understanding the complicated net of contacts and relationships which existed between the inhabitants of the Alps and the Celts from the 5th to the 1st century B.C.

**“SOUND AND THE CITY”: GEOREFERENCING THE SONOROUS/MUSICAL EVIDENCES OF THE ANCIENT POMPEII**

Melini Roberto, Conservatorio “F. A. Bonporti” - Trento (Italy)

The concept of *soundscape*, as outlined in the R. Murray Schafer's (1977) keen research, recalls immediately the idea of relation between man and nature. This fact mustn't fade in the background the extreme interest that should characterize the survey on the sonorous space where most of the human beings really lives, that is the city. Referred to the cultures of antiquity, the urban *soundscape*, certainly, is more difficult to catch, because the emergences are often not homogeneous and the contexts are rarely connected. Under present condition of the research, only one exception seems to avoid these limitations: Pompeii.

As it's known, this roman town, destroyed in 79 CE by the eruption of the mount Vesuvius, has been completely brought back at topographic level, and its dug-out areas (a sizeable portion of the whole) are extremely suitable for every study aiming at an organic comprehension of the most different aspects of that community's life (just think to the Wilhelmina Jashemski's works on its gardens, and to those of Penelope Allison on its houses). A research on the Pompeii's *soundscape* as a whole, until now never realized, starts from the *georeference* of the artefacts and iconographies connected with sounds and music, and then it relates this abundance of evidence with the structures. The result is to manage -sometimes in a surprisingly significant way- the reconstruction of the acoustical horizon of those ancient citizens, and, interpreting it, to throw sidelight on the existing relation between the sonorous/musical experiences and the environment in the Roman's times.

**“SOUNDSCAPE” OR “SOUNDSCAPES” - THAT, ANTHROPOLOGICALLY SPEAKING, IS THE QUESTION**

Singleton Michael, Emeritus Professor Louvain University (Belgium)

A003

Session title:

**INNOVATION AND EVOLUTION****Organiser:** Uomini Natalie, University of Liverpool (UK)**Co-organiser:** MacDonald Katharine, Faculty of Archaeology, University of Leiden (The Netherlands); Fluck Hannah, University of Southampton (UK)**Session abstract:**

Humans are often regarded as particularly creative, and an increased capacity for innovation is seen as one of the factors underlying the emergence of distinctly 'modern' human behaviour, evident in 'revolutionary' changes in the archaeological record. Innovation is important in understanding human evolution, while the role of demographic, social and environmental factors influencing the rate and transmission of innovations within a population is of interest to archaeologists studying diverse periods and regions. This session aims to bring together researchers in archaeology, primatology, psychology, neuroscience, and animal behaviour. While we focus on human origins, the questions addressed have a wider archaeological relevance. Key questions can include: How can we identify and compare innovation in the archaeological record? What are the implications of mobility for the transmission of innovation? What processes underlie primate and human innovation and how do they differ? How do people acquire innovative behaviours in the social context of communication and imitation around interactions with objects? Can models of social networks help us to understand individual relationships and hence improve our understanding of the dissemination of innovations? Is the flexibility of hominin technological and social strategies due to the interplay of personality traits and types, with implications for innovativeness, conservatism, risk taking, and life history factors?

Can and do humans innovate cooperatively? What are the ecological costs and benefits of innovation in different cultural / environmental contexts and for individuals at different life history stages?

**Paper abstracts:****THE AXE AND THE LOOM: METRICS FOR COMPLEXITY IN ARTEFACT PRODUCTION**

Rugg Gordon, Hyde Joanne, Computing and Mathematics, Keele University (UK)

This study follows up previous approaches to quantification of complexity by various authors. The previous studies typically focused on a single artefact at a time as a worked example. This study investigates the issues involved in comparing the complexity of two or more artefacts, using a small case study. The case study involves artefacts used within a single culture, such as an Iron Age axe and loom, rather than artefacts in isolation. The reason for this is to make it easier to assess the extent to which there is a "shared tool kit" (methodological as well as physical) which can be used in the manufacture of a range of artefacts, thereby producing "economies of scale" in terms of the manufacturing complexity of an artefact. The study examines process complexity (as described by Haidl) as well as fabricatory complexity (as described by Rugg) and some issues in cognitive complexity (as described by Ling et al).

**QUANTIFYING NOVELTY IN THE ARCHAEOLOGICAL RECORD**

Gordon Rugg, Computing and Mathematics, Keele University (UK)

This paper describes a variety of methods for quantification of novelty, imported from a range of disciplines and literatures which are not well known in archaeology. These extend the methodological toolkit available to researchers into culture and innovation. The methods include, but are not limited to, the following.

Inverse frequency weighting. This involves allocating a weighting of  $1/n$  to instances of the chosen item, so that rarer items are given a heavier weighting than common ones, in a way which allows summing of novelty across components.

Minimum edit distance. This involves calculating the minimum number of changes which needs to be made to change one item into another specified item (e.g. the number of changes involved in changing from one manufacturing process to another).

Worked examples are given, showing how these and other approaches such as the concept of honest indicators can be used to quantify the novelty associated with specific changes in the archaeological record, such as the change from stone to copper and bronze.

### **SUPRACRITICAL CONVERSATIONS AND THEIR ATTENUATION BY INVENTIONS AND THEIR SELECTION.**

Bond Peter, School of Archaeology and Classical Studies, University of Liverpool (UK)

The frequency, intensity, and character of inventions and the innovating process distinguish not only human from lesser primates, but also human cultures, in both time and space. How are such differences produced? An answer to this challenging question is explored through a combination of theoretical perspectives: Dunbar's social brain hypothesis (SBH), a systems theory of living devised by the biologists Maturana and Varela (known as Autopoietic Theory), and Kauffman's idea of supra critical attenuated systems. Both the latter are associated with the science of complexity.

The proposition.

Language is the primary mechanism of primate group coherence and stability. Extending the SBH in accordance with Autopoietic Theory, conversation is described as the intertwined flow of emotioning and languaging, and is, simultaneously, the mechanism by which socio-technical relations are conserved and modified. Conversations are portrayed as constant sources of idea variety and also the mechanism for selection and diffusion. To exemplify the relationship between conversations, invention, innovation and adaptive behaviour, a supracritical system is described in which variety production explodes and overwhelms a group's capacity for selection leading to its disintegration. Kauffman suggests that new order is precipitated around the very things the supracritical system produces.

Developing this scenario, the paper proposes that invention is a catalyst for order, and innovating is a selection and order making process. Periods in which there are 'explosions' of innovations are those in which human social systems have tended to supracriticality, and periods or spaces of relative stability are characterised by a reduced frequency and intensity of conversations.

### **INNOVATIVE POTENTIAL OF CHIMPANZEES. A COMPARATIVE STUDY OF THE TOOL BEHAVIOUR**

Stolarczyk Regine, Haidle Miriam, Heidelberg Academy of Sciences and Humanities – Tübingen (Germany)

The tool behaviour of chimpanzees is the most multifaceted beside that of humans. They have developed group specific use of objects, and the tradition of nut cracking with stones can be tracked down to more than 4000 years ago. Over 90 slightly to fundamentally differing tool behaviours have been observed so far, at least 30 of those qualify as cultural patterns depending on the underlying criteria of differentiation. The used raw materials vary from twigs and branches, sticks and bark, leaves and grasses, to stones. These are modified in numerous ways by breaking them off, by detaching bark, leaves, supernumerous twigs, by chewing or folding, by adding several of a kind. Chimpanzees manipulate tools in many different ways to solve problems in several contexts like hunting, gathering, access to resources, personal hygiene, prevention against discomforts, in situations of display, defence, and self stimulation. An examination of the variation of the tool behaviour by cognigrams shows the diversity and flexibility of the species' use of means and their familiarity in solving problems with implements. Behavioural differences to early *Homo* might exist not only in the use of secondary tools by the latter, but also in the relation of the innovation rate on an individual basis, the formalization of new behaviour on the group level and the development of long lasting traditions.

### **TITLE TO BE ANNOUNCED**

Horváth Tünde, Archaeological Institute of Hungarian Academy of Sciences – Budapest (Romania)

### **THE ROLE OF INNOVATION IN HOMININ RANGE EXPANSION**

MacDonald Katharine, Faculty of Archaeology, University of Leiden (The Netherlands)

Innovation is seen as playing an important role in human evolution partly in relation to range expansion: novel behaviours might solve new environmental problems or open up new habitats, with an ongoing impact. However, while innovation and supporting cognitive abilities could have aided expansion into new environments, ecological factors such as diet could also be important. Studies of other species, including primates and birds, provide mixed



support for the role of innovation versus other factors in coping with new environments. Here, I review evidence for occupation of new environmental conditions in the early and Middle Pleistocene, focusing on the colonization of northern latitudes in Europe, compared with the archaeological record for behavioural innovation.

A number of changes in behaviour, such as use of fire, have obvious benefits for coping with a range of environmental challenges. Given the nature of the record, establishing the first occurrence of new behaviours, and hominin presence in new environments, presents a problem, and even where data is available causation cannot be proven. Hominin physiology and comparative data provide another point of entry. Several changes in behaviour could have played a role in occupation of new environmental conditions, however technological diversity in different environmental conditions is noticeably rare.

**A004****Session title:****MOVEMENTS ACROSS AND ALONG WATER WITHIN LANDMASSES****Organiser:** Vianello Andrea, Intute, University of Oxford (UK)**Co-organisers:** Anderson Claire, National Museum (Ireland); Stuijts Ingelise, Discovery Programme (Ireland)**Session abstract:**

Water moves continuously as do humans. People travel on water and seek out resources in its environs. This session aims to explore the intriguing relationship between water and the movement of people in antiquity. In particular it will focus on the movements of humans within all types of inland and coastal watery environments, with the exception of journeys across open seas. Rivers, lakes, bogs, mires, estuaries and flooded areas offered opportunities to explore, exchange and access natural resources and to colonise new areas. Inlets and outlets of rivers were often gathering places. Rivers provided the challenges and opportunities of accessing new regions and environments as well as pursuing the horizon to the sea and beyond. But why did people choose to undertake such travel on water or access (often inhabitable) watery environments? What were the technological, physical, social, religious, and economic challenges they faced in doing so?

This session will consider rivers, lakes and wetlands as areas that offered opportunities for the exploitation of natural resources (marine saltworks, peatlands, estuarine etc.) in addition to social and economic advantages. How did ancient people perceive watery environments? And how important were wetlands to the economies of ancient societies?

The chronological boundaries for this session include all European and Mediterranean societies up to and including the Iron Age, but case-studies centred outside the region and applicable to general issues may be acceptable. Contributors should focus on fluvial systems (including lakes); periodically flooded areas (e.g. marine saltworks, estuaries, areas periodically flooded by rivers such as the Nile); natural wetland (e.g. river estuaries, lagoons), areas connected to communication and exchange networks structured around rivers; and bogs.

**Paper abstracts:****THE ECONOMY OF THE NEOLITHIC POPULATION OF LAKE LUBĀNS WETLAND AND THE PALEOHYDROLOGICAL REGIME OF THE LAKE**

Loze Ilze, University of Latvia (Latvia)

Lake Lubāns wetland contains the largest lake in Latvia. The wetland was inhabited during the Upper Palaeolithic, Mesolithic, Neolithic and Eneolithic periods. In the AT2 climatic period, the number of settlements in the area increased significantly after more land resurfaced from waters. New populations settled near the river beds and shores of ancient rivers and lakes. The archaeological excavation carried out in the area has identified 18 settlements that benefited from the environment provided by the wetland. There was rich game and fur fauna. By the Middle Neolithic the number of cattle in the Zvidze settlement was larger than the number of hunted aurochs. The lake was also rich in fish. Agriculture started during the Middle Neolithic. Raw materials such as flint and amber were scarce however, but the large waterways allowed access to other regions, especially marine coastal areas. For instance, amber was obtained by exchanging furs, and then it was moved to the amber-processing workshops within the wetland, where worked amber became a new local resource that could be then exchanged in the Daugava and Upper Volga region for the required flint. This paper will explore the benefits and challenges posed by living in the wetland environment of Lake Lubāns. The development of the movements will be assessed following the recognised local climatic periods.

**MIDDLE HOLOCENE HUNTER-GATHERERS OF THE BAIKAL REGION IN SIBERIA: THE KEY IS IN THE WATER**

Weber Andrzej, University of Alberta (Canada)

The importance of Lake Baikal – the world's deepest and largest reservoir of fresh water – and of the three large rivers around it – the Angara, Lena, and Selenga – for the development of the local middle Holocene hunter-gatherers

is well documented. Since mid-1990s, the Baikal Archaeology Project has been generating large amounts of new data on these foragers involving excavations of cemeteries and habitation sites and an array of modern laboratory analyses applied to large collections of human osteological remains. This new material reveals a number of new patterns and necessitates reinterpretation of the region's middle Holocene prehistory. Among the most important insights are the positive correlations between the following environmental and cultural variables: (1) uneven distribution of fish resources, uneven distribution of the human population, and cultural heterogeneity during the Early Neolithic; (2) more even distribution of terrestrial game, more even distribution of the human population, and cultural homogeneity during the Late Neolithic to Bronze Age period; (3) poorer health, heavier workloads, and higher reliance on fishing among the Early Neolithic groups; (4) better health, lesser workloads, and higher reliance on game hunting among the Late Neolithic–Bronze Age groups. Furthermore, while evidence for travel along the major water courses is ample, the evidence for the use of watercraft is ambiguous for the entire middle Holocene period.

### **SÁMI WATERSCAPES AND THE PREHISTORY OF NORTH NORWAY: THE CENTRALITY OF COASTAL AND INLAND WATER-BASED ACTIVITY FOR UNDERSTANDING INTERACTION AND CULTURAL RELATIONSHIPS**

Wickler Stephen, Tromsø University Museum (Norway)

The starting point for this paper is an assertion that waterscapes and the general importance of water have been neglected in the study of indigenous Sámi prehistory in northern Norway. This has had far-reaching consequences for our understanding of Sámi settlement in both coastal and inland settings and interactions between these zones. There is a long standing, but arguably tacit, acknowledgement of the significance of water for Sámi settlement. What we lack is an explicit focus on the centrality of maritime contexts and inland waterways grounded in the archaeological record. The results of recent research and a variety of other evidence are presented in order to examine relevant issues. These include Sámi boat building and use (coastal craft, sewn boats, log boats), ethnic interactions with a maritime focus (boathouses, slab-lined pits (hellegroper) for processing marine mammal oil) and water-based activity in the interior (boat storage structures and landing locations, reindeer crossing locations). The material correlates of Sámi water-based activity remain poorly understood and research specifically addressing these issues is needed. Potential models for future research are presented and discussed.

### **PREHISTORIC PORTAGES PASSING THE CENTRAL EUROPEAN DIVIDE**

Dosedla Heinrich, Krauliz Alf, Centre of Interdisciplinary Studies and Research (Austria)

The so-called Central European Divide as a distinct section of the transcontinental divide is defined by the separation of these rivers running towards the Northern Sea or the Baltic Sea and those rivers running towards the Mediterranean or the Black Sea. A quite significant number of rivers are emerging from the rather limited area of the Central European Divide situated at the borderline between Austria and the Czech Republic. Among them are the Vltava/Moldau as the dominant tributary of the Labe/Elbe, the Morava/March and the Vistula/Weichsel, having their source in the north respectively in the east of the divide, as well as some minor rivers originating in the south of the divide which are tributaries of the Danube. As a result of recent investigations hydrological conditions as well as vegetation patterns which since Palaeolithic times onwards were extremely different from contemporary ones had distinct consequences concerning water levels and navigability of these river systems which at periods even allowed the use of monoxyllic vessels of which there is local archaeological evidence. As trade goods mostly figured flint, amber, salt, copper, tin, iron and graphite, later eventually also imported items of Mediterranean origin. According to more convenient circumstances at these stages the distance of portages were shortened to considerable extent compared to trade routes of later periods which followed the former traces also during medieval times and even up to the early 19th.

### **MOVEMENTS AND WATERWAYS IN THE MIDDLE-DANUBE BASIN: THE RIVER ARCHAEOLOGICAL POINT OF VIEW**

Toth Attila, Kulturális Örökségvédelmi Hivatal (Hungary)

Rivers played important role in the life of pre-industrial societies as waterways, sources of food and drinking water, borders and a constant risk factor. When archaeologists studying diffusion of finds and cultural features often concludes the role of waterways, ferries etc. The relatively recently developed underwater archaeology of rivers give

us a possibility to study ancient bridges, ports and ships, which influenced ancient "movements". River archaeology, a new discipline unifies the results of underwater and "terrestrial" archaeology with paleo-environmental studies (like geo-morphology, hydrology etc.) for the better understanding of interactions between people and the river. The Middle-Danube basin is one of the largest catchment area of Europe. Underwater and interdisciplinary work has been started in recent years in Hungary (in the Danube and the Drava rivers). These researches expose the archaeological potential of river islands and shoals, the importance of interdisciplinary view of river valleys. New finds (although late- or post-medieval) gave us a more detailed picture of river navigation.

### **THE BRONZE AGE PO VALLEY OF ITALY**

Vianello Andrea, Intute, University of Oxford (UK)

This paper focuses on the movement of commodities and peoples in the region of Veneto, primarily during the Bronze Age. The Veneto was a key area between the Emilian Terremare and the Alpine lake-dwellings, at the heart of a large communication and exchange system centred on lakes, rivers, lagoons, river mouths and sea. Movement on land in the region before the construction of Roman roads appears limited. The Veneto was inserted in long-distance exchange networks, both along rivers and marine coasts. Such networks have brought into the region Aegean-type pottery during the Late Bronze Age, but more importantly exotic raw materials were imported, worked and exchanged at Frattesina. Since the Bronze Age, riverine and marine exchange networks could interact in this area, and commodities and people could circulate through the Veneto using waterways only. The ability of the ancient Veneti to move on waters was one of the principal reasons for their success, and their familiarity with water was later inherited by the Venetians and continued to be a key reason for the success of the region.

### **PLANT EXPLOITATION AND WOODLAND MANAGEMENT AT THE DUTCH EARLY NEOLITHIC WETLAND SITE BERGSCHENHOEK**

Out Welmoed, University of Leiden (The Netherlands)

The Dutch wetland site Bergschenhoek (near Rotterdam) is a 4 x 4 m piece of wood peat embedded in clay that showed reed bundles, a hearth complex and wood remains including some fish traps. Core prospection suggested the nearby presence of further remains. The site is interpreted as a fishing-fowling camp that was repetitively visited during c. 10 years at c. 4200 cal BC. Since its excavation by the National Museum of Antiquities in 1976, it has been a unique case in the Dutch wetland archaeology because of the well preserved predominantly organic find assemblage and because of the insights it provided in short-term stays in the middle of the marshes (Louwe Kooijmans 1987). The environmental analyses of the site included identification of fishes, birds and mammals (Clason and Brinkhuizen 1993), but also of mollusks, pollen, seeds, mosses, wood and wood charcoal that remained mostly unpublished. Comparison of the various plant remains enables the reconstruction of the local vegetation and provides indications of the exploitation of non-local vegetation. The fish traps furthermore provide the best evidence of woodland management that is available for Dutch Mesolithic and early and middle Neolithic wetland sites.

Clason, A.T. and D.C. Brinkhuizen 1993. Bergschenhoek, in: A. Clason, S. Payne & H.-P. Uerpmann (eds), *Skeletons in her cupboard. Festschrift for Juliet Clutton-Brock*, Oxford, 61-73.

Louwe Kooijmans, L.P. 1987. Neolithic settlement and subsistence in the wetlands of the Rhine/Meuse delta, in: J.M. Coles and A.J. Lawson (eds), *European wetlands in Prehistory*, Oxford, 227-251.

### **BRONZE AGE BARROW COMPLEXES IN THE LINCOLNSHIRE FENS AND THEIR SETTING IN THE ANCIENT LANDSCAPE**

Chowne Peter, University of Greenwich (UK)

This paper will describe current research on the low lying Bronze Age round barrow complexes of the fenland in Lincolnshire, UK. The study builds on the author's research of the 1980s, the Fenland Survey in the early 1990s and recent investigation of the Witham Valley. The barrows were initially identified from soil marks appearing on vertical aerial photographs taken for non-archaeological purposes in the early 1970s. On the northern peat fen margin the mounds appeared as light coloured spreads of mound material sometimes with the peat filled surrounding ditch clearly visible in contrast to the humic topsoil. Several complexes were subjected to fieldwalking survey and exposed barrow sections recorded in drainage ditches. Artefacts recovered confirmed a Bronze Age date for at least some of the barrows. Late Mesolithic and Neolithic material was recovered from at least two complexes perhaps suggesting that these locations were often visited and may have a particular significance to early prehistoric communities.



Recent recording of lidar data and information from earlier surveys and recent fieldwalking mapped through GIS is providing new insights on the relationships between the barrow complexes, ancient courses of the Rivers Slea and Witham and wider patterns of movement and settlement. The paper will present an overview of the research and conclude by focusing on barrow complexes in contrasting locations. Peat fen group adjacent to the River Slea close to the current confluence with the River Witham on the northern fen margin and a complex on the western silt fen margin where the relationship appears to be with ancient creeks, springs and watercourses that played a significant role in prehistoric and later settlement and land division.

### **AN EVALUATION OF THE ARCHAEOLOGY OF ULSTER'S (IRELAND) ANCIENT FORDING PLACES**

McNeary Rory, University of Ulster (UK)

A new research project, tasked with creating a baseline survey of the freshwater archaeology of Northern Ireland, was set up in January 2009 by the Northern Ireland Environment Agency (NIEA) in conjunction with the Centre for Maritime Archaeology (CMA), University of Ulster. This paper reports on one of the core themes of this research project – riverine crossing points, namely fords. In Ireland in later prehistory rivers served as a means of transport and communication between communities and conversely formed boundaries for regional identities. As a result fording places often became points of transit and route confluences as well as boundary flashpoints and contested landscape foci. Intensive dredging operations in the nineteenth and twentieth centuries at specific fords yielded a significant corpus of archaeological material. The material recovered is part of a wider pan-European phenomenon of prehistoric finds from rivers. The first part of this paper provides an overview of past and current archaeological work on Ireland's fording points, with a particular focus on the Lower Bann, Erne and Ulster Blackwater. Current methodologies will also be discussed in terms of desk-based attempts to reconstruct the pre-drainage or 'ancient' aspect of some of these river courses, utilising a combination of historical documentation and cartographic evidence, as well as recent sub-aquatic prospection at a selection of these fording sites in order to ascertain their current archaeological integrity.

### **THE SEASONAL ACCESS OF THE TURLOUGHES OF IRELAND**

Bunce Amy, independent researcher (Ireland)

The karst limestone landscapes of Ireland, found particularly in the west, produce seasonal lakes known as turloughs. This term derives from the Irish for 'dry lake' and these features fill during winter or following heavy rainfall when the underground reservoirs spill up onto the surface. The natural functioning of turloughs and their ability to absorb flood waters has been severely affected by modern drainage. However, in the past, they were respected and utilised in spite of, and more frequently because of, their hydrological peculiarities.

When dry, turloughs offer excellent grazing land and throughout history may have existed as commons land due to the variable access. However, evidence of settlement on turloughs also exists and in these cases it may be that the seasonal changes in ease of access was desired. Although when full, turloughs appear much the same as permanent lakes, the resources they offer are very different. A turlough in flood may have been considered much less in terms of the provisions available in the environment but for the attractions of the necessity of a complete change in methods of access and transport. The relative unpredictability of the flood timing and speed that the waters can rise and sink may demand an element of innovation in methods of access. The unpredictability may also have been responsible for either a disregard or a reverence for the landscape. The movement of the water and sudden appearance and disappearance without any obvious connections to above ground waterways may also have been significant.

### **TROUBLE OR OPPORTUNITY: MARGINAL WOODLANDS**

Stuijts Ingelise, Discovery Programme (Ireland)

Ireland looks like a soup plate: hollow in the middle with raised surrounds and filled with large areas of brown peat. Rivers run like arteries through the centre. A few eskers (raised gravel ridges), remnants of the Ice Ages also provided safe passages. Otherwise the heart of Ireland is very much dominated by bogs and lakes. Over time the extent of bogs has changed dramatically. This had a very definite effect on the mobility of prehistoric (and historic) people. Moreover, marginal woodlands surrounding bogs could form an additional barrier, if one wanted to visit them in the first place. Riverbanks carried their own vegetation, along quiet streams or in dynamic braided rivers. This presentation will compare three settings and investigate the relationship between prehistoric people and the marginal woodlands: Derryville bog in County Tipperary, Derragh Island in County Longford, and Edercloon, also in County Longford.

**A005****Session title:****NEOLITHIC MONUMENTS: FUNCTION, MENTALITÉ AND THE SOCIAL CONSTRUCTION OF THE LANDSCAPE****Organiser:** Schulz Paulsson Bettina, Christian Albrechts Universität - Kiel (Germany)**Co-organiser:** Bisserka Gaydarska, University of Durham (UK)**Session abstract:**

The construction of Neolithic monuments was the result of new approaches to life, death and society, all of which were expressed in the landscape. The siting of these structures may reflect economic conditions as well as the local ecology, and the same may be true of the architectural styles in which they were built. For these reasons it is essential to consider the monumentalisation of Neolithic landscapes in terms of these different factors. It is equally important to discuss the ways in which those factors were related to one another.

Cultural changes could be influenced by many different features, including economic changes or/and environmental stress caused by ecological factors and the process of food production.

They could also results from conflicts within Neolithic society. The world views of individuals and communities would have been equally important and may have provided the motivation for creating monumental landscapes and related changes in material culture. In studying this phenomenon, it will be important to consider the distributions of ritual structures together with the spatial organisation of the societies who created them.

The session will examine:

1. Environmental factors and economic needs as possible reasons for erecting Neolithic monuments.
2. The use of mental maps, and the mentalités that lay behind the architecture of Neolithic monuments. The session will also consider the distributions of these structures.
3. Neolithic social organisation, as reconstructed through the distribution of monuments. The proposed session will also consider burial rites and Neolithic demography.

The session is open for papers both about European Neolithic monuments but also such, employing non-European analogies or comparisons with the historical period. The emphasis will be on international collaboration and on developing projects for future research.

**Paper abstracts:****SOCIAL RITUAL AND MEGALITHS: THE PRODUCTION AND CONSUMPTION OF KNOWLEDGE**

Müller Johannes, Graduate School Human development in Landscapes, Institut für Ur-und Frühgeschichte  
Christian Albrechts-Universität - Kiel (Germany)

The reconstruction of architectural design and ritual processes of megaliths is much easier, since new excavations take place in Northern Germany. In consequence to that, the biography of monuments allows insides into memory and meaning of Neolithic societies.

**AN AGENT BASED APPROACH FOR THE RECONSTRUCTION OF NEOLITHIC FUNNEL BEAKER SOCIETIES**

Hinz Martin, Graduate School Human development in Landscapes, Institut für Ur-und Frühgeschichte  
Christian Albrechts-Universität - Kiel (Germany)

Neolithic monuments do not exist isolated but are embedded in a whole landscape of social importance. Therefore their function and meaning can only be investigated if one tries to consider also the societies who built these monuments. And also burial sites are only one kind of meaningful place incorporated in a whole system of sites with different ritual and economic meaning inside of a settlement landscape.

The aim of my study is to re-construct a Neolithic settlement system as an agent based model with the help of a computer simulation based on archaeological data, accompanied by the use of ethnological material and the consideration of the natural environment of that time.



The development of a landscape happens as a dynamic interplay of the natural conditions and as a result of the economical basis and the shaping of a cultural landscape formed by metal processes and social backgrounds of a society through time. That is why an approach which has the implemented capability of dealing with these dynamic, time-dependent developments is most suitable to draw appropriate pictures of past conditions.

The questions which my study tries to answer are the following:

1. How large/small could a society have been who built megalithic burial monuments?
2. Related to that, how many residential units are connected to how many burial monuments?
3. What area was needed to maintain such a society?
4. Related to that, what kind of economic system is the most likely for such a society?
5. What kind of sites of importance were needed for such an economic system?
6. What settlement pattern fits this and the archaeological record?
7. How could the network of communication lines (ways) have been between the different sites of importance?

The empirical bases of my study are the Neolithic Funnel beaker societies of the south-eastern Schleswig Holstein, but also other test regions of northern Europe are considered. The tested conceptions are drawn from existing theories about these societies as well as from ethnographic parallels.

### **MONUMENTS AND THE HUMAN LANDSCAPE: THE TEMPORALITY OF THE NORTHERN BRITISH NEOLITHIC**

Griffiths Seren, Cardiff University (UK)

In 2007 Bayliss and Whittle, using Bayesian statistical analysis, published a chronology for five southern British early mortuary structures. Bayliss and Whittle's work represented a significant departure from the kinds of narratives that were written about British Neolithic monuments. Instead of timeless, ancestral structures, these chronologies allowed a far more precise history of human activity at these sites.

This paper presents the results of a project to look at the available chronology for the early Neolithic of the north of England. The variability in mortuary tradition is highlighted, along with possible parallels from outside the region. This paper also presents the available chronology for other early Neolithic material culture introductions such as pits, pottery, axes which have also been reassessed as part of this project. The appearance of mortuary sites are explored within the cultural landscape of northern Neolithic Britain, where materiality and monumentality were going through apparently punctuated periods of rapid change. What emerges from this reappraisal is a prehistory where individuals, their choices and doings, are full of compelling potential.

### **THE ORIGIN AND SPREADING OF MEGALITHS IN SCANDINAVIA AND FRANCE: DIFFUSIONISM VERSUS CONVERGENCE**

Schulz Paulsson Bettina, Graduate School Human development in Landscapes, Institut für Ur-und Frühgeschichte Christian Albrechts-Universität - Kiel (Germany)

Up to the present day approximately 30'000 megaliths still exist in whole Europe- most of them were constructed in the Neolithic and in the Copper age. The last year's radiocarbon dates are helping to untangle the nuances of the differences for the beginning of megaliths in the different regions and with an interpretative Bayesian statistical framework it is possible to define these origins even more. In Scandinavia it is feasible to follow the "path" of the megaliths from the beginning of the 35th century BC on, over the spatial dimension of the radiocarbon dates. In contrast to that, in France are megaliths probably developing independently on Corse and in the Bretagne around the 43th century BC.

The paper gives a description of different scenarios for the origin and the spreading of megaliths in these two regions and is as well a theoretical approach towards a socio-archaeological and a paleo-psychological interpretation of the monumentalisation of landscapes from prehistoric societies as a part of their memory culture.

### **SPECIAL BUILDINGS IN THE PRE-POTTERY NEOLITHIC OF UPPER MESOPOTAMIA**

Moetz Kemal, Graduate School Human Development in Landscapes, Christian-Albrechts-Universität - Kiel (Germany)

In Upper Mesopotamia (border region of Northern Iraq, Northern Syria and South-eastern Turkey) a rise of non domestic architecture can be observed in the beginning of the Pre-Pottery Neolithic (PPN). Early sites dating to

the PPNA (10200/9500-8800 cal. BC) bear architecture with monumental aspects from communities which seem to have subsisted on wild resources. This is indicated at Göbekli Tepe which is characterized by several large round enclosures consisting of T-shaped pillars. However certain aspects of these phenomena are not restricted to this early time period, but seem to have continued into the PPNB (8800-6900 cal. BC) within fully sedentary food producing communities like Nevalı Cori. Recent investigations recorded even more sites bearing monumental structures similar to the sites mentioned above.

This paper summarizes briefly about the sites which yielded monumental architecture and describes their settings in the area of interest. It synthesizes aspects of monumentality given in these structures and deals with functional attribution. Furthermore it is the goal to analyze possible concepts behind the erection of these special buildings.

### **FLINTBEK-FIRST RESULTS**

Mischka Doris, Institut für Ur-und Frühgeschichte Christian Albrechts-Universität - Kiel (Germany)

Near Flintbek, a few kilometres southeast of Kiel and the Baltic Sea, a big Neolithic and bronze age cemetery is situated in a moranic landscape. The area is limited by a small river and several bogs, but, even excavated nearly complete between 1976 and 1996, only few evidences for dwellings were registered. Nevertheless, the region of Flintbek can serve as a case study in several ways which will be presented on the conference:

- detailed chronological studies because of 3D-measurements of nearly every pottery fragment
- ecological frame parameters because of the charcoal samples which could be taken (species of wood and diameter analysis) and the pollen analysis from the nearby bogs
- information on the prehistoric economy because of the numerous plough tracks and the vehicle tracks preserved underneath the barrows

### **THE GALLERY GRAVES OF HESSE AND WESTPHALIA: NEW PERSPECTIVES ON THE (MENTAL) MAP**

Schierhold Kerstin, Abt. für Ur- und Frühgeschichtliche Archäologie Westfälische Wilhelms-Universität - Münster (Germany)

Since 3500/3400 cal. BC, monumental megalithic collective tombs were erected in Hesse and Westphalia by the people of the Wartberg culture. The architecture of these tombs shows many different features in comparison to the contemporaneous monuments of neighbored cultures like the Funnel Beaker Culture. Geological analysis of the building materials allows hints at the amount of work, which lightens the social organisation of the builders' society. Provenance, extraction and transport of the building materials show different strategies of sitting and construction, therefore the existence and effective use of mental maps.

Architecture and construction of the tombs reveal close contacts between the burying communities of the Wartberg Culture. On the other hand, some construction details, especially concerning the entrance, are influenced by the Funnel Beaker Culture. This could suggest a different understanding or even change of ritual structures.

Not least, a view of the distribution map shows not only regional groups with similar burial rites in between the Wartberg Culture. GIS-based visibility analyses were carried out in a regional group of seven tombs in order to clarify the relationship between the tombs themselves as well as with the surrounding landscape. These analyses reveal differentiated structures and relationships already known in a similar way in other regions of Europe with megalithic tombs.

### **TOMB SHAPES AND GRAVE GOODS: CONTINUOUS USE AND DESTRUCTION IN THE RIO DE GOR MEGALITHIC NECROPOLISES**

Spanedda Liliana, Marrero José Andrés Afonso, Cámara Serrano Juan Antonio, Molina González Fernando, Montufo Martín Antonio Manuel, Pau Claudia, Haro Navarro Martin, Dept. Prehistoria y Arqueología, Facultad de Filosofía y Letras, Universidad de Granada (Spain)

Rio de Gor Megalithic necropolises are one of the most important funerary clusters in Southern Iberian Peninsula. We pretend on studying megaliths and settlements characteristics in relation to social organization according to the scarce and old available data. Firstly, an evaluation of previous unsystematic surveys and looters destructions of monuments has been made by taking into account situation of preserved tombs. Visibility GIS analysis have let us to suggest hypothetical situation of disappear graves with a help by ancient cartographic data. Secondly, visibility and topographical analyses has shown that graves were used to mark routes in a double way (from south to north along the river course and from the valley to the plateau) and settlements were located near the valley bottom although



with chronological and hierarchical differences. Thirdly, shapes, dimensions, grave goods and situation have been taken into account in order to study grave differences. We have seen that tombs were not only used during a long time but also they were probably arranged in groups around some of the most monumental tombs which sign the river course in Chalcolithic period. Routes from the valley to the plateau were created by addition of tombs from the beginning of Late Neolithic and they were finished with great and trapezoidal tombs in Chalcolithic times. Fourthly, tomb reuse has been proven in Middle and Late Bronze Age, and in the late of these periods this use was in relation to rich burials as can be seen from the great amount of silver ornaments.

### **MONUMENTALITY, VISIBILITY AND ROUTES CONTROL IN SOUTHEASTERN IBERIA MEGALITHISM**

Cámara Serrano Juan Antonio, Molina González Fernando, Montufo Martín Antonio Manuel, Alcaraz Hernández Francisco Miguel, Prehistoria y Arqueología, Facultad de Filosofía y Letras, Universidad de Granada (Spain)

At the end of the four Millennium B.C. in Southeastern Iberian Peninsula economic changes, that have begun in Late Neolithic (from 4000 B.C.), became consolidated. A little stop in slow environmental changes to a greater aridity were accompanied by full sedentary way of live, mixed farming (including cattle use in labor, emphasis in certain cereal species with a higher yield, use of damp places to cultivate pulses and the beginning of olive tree exploitation) and craft development (including metallurgical techniques and the use of metallic tools in other productive activities as flint knapping and textile industries).

Taking into account that this economic development is related to social changes, we pretend on studying the use of tombs in territorial control, capital status definition and wealth exhibition and masking. Boundaries and routes definition by megaliths combined concentration (in the valleys and near main villages) and scattering (towards the mountains), addition of tombs and subordination among them, exhibition and concealment, in a context where other types of sites (hill forts) helped to control land and people. All the situations will be used to express in different ways social competition and an unequal society, as can be seen in consumption differences in settlements and graves. Territorial and resources control will be exerted only in an ideal way in favor of all the community because it will provide more benefits to a section of it, as could be also seen in certain grave goods.

**A006****Session title:****NEW RESEARCH INTO UPLAND LANDSCAPES:  
THE CONTRIBUTION OF EUROPEAN POSTGRADUATE STUDENTS****Organiser:** Carrer Francesco, University of Trento (Italy)**Co-organiser:** Siklósi Zsuzsanna, Institute of Archaeological Sciences, Eötvös Loránd University - Budapest (Hungary)**Session abstract:**

European postgraduate students of archaeology do not have many opportunities to share the results of their research with other colleagues from different countries, even if it would be so important for the circulation of data and new approaches as well as for the discussion of methodological and theoretical issues. That's the reason why, for the first time in the history of EAA Conferences, we propose a student session which would be dedicated to the research proposals of MA and PhD students.

The session focuses on upland landscapes studies. We have chosen this subject because, in the last few years, it has had an improvement of theory, models and technology, and it has begun one of the most interesting current fields of research, carried on by many research institutions all over Europe (and also by the Department of Philosophy, History and Cultural History of Trento University-"B.Bagolini" Laboratory, that has been directly involved in the organization of the session). Every kind of approach and every period are taken into account.

With this proposal, we hope to establish a tradition at EAA Annual Meetings, providing an excellent opportunity for postgraduate students to present their papers in front of an international audience.

**Paper abstracts:****"SHEEPING" THE LANDSCAPE! PREHISTORIC PASTORALISM AND LANDSCAPE CHANGES IN THE ITALIAN EASTERN ALPS**

Carrer Francesco, Dept. of History, Philosophy and Cultural Heritage, University of Trento (Italy)

In this research I mean to summarize the "state of art" of the archaeology of pastoralism in the eastern Alpine ambit and to understand how the different strategies of territorial management have modified the mountain landscapes during the prehistoric period.

In fact, I realized that pastoralism influenced settlement patterns, paths, territorial control etc. This is due to the specific needs of livestock: the human communities that graze them have to select peculiar ecological ambits, peculiar mobility, peculiar productive strategies. So, we can argue that pastoralism creates its landscapes; but landscapes create their pastoralisms too: the constant exploitation of natural resource cause a continue modification of the strategies of grazing. Furthermore, new strategies contribute to create a new landscapes that create a new pastoral strategies! There is so a continuous research of equilibrium, with periods of productive growth and periods of collapse, slow and imperceptible mutations and moments of deep instantaneous change. The archaeological outcomes are complicated diachronical palimpsests that are typical of the uplands: multistratified rockshelters, scattered findings, hilltop settlements etc... .

The aim of this paper is to underline the "systemic" relationships that involve pastoral subsistence strategies and human landscapes; in other words, I would like to interpret the upland landscapes applying the pastoralism theories and to analyze prehistoric pastoralism using the upland landscape data.

**SETTLEMENT PATTERNS OF WESTERN CANTABRIAN MOUNTAINS IN THE IRON AGE: THE PIGÜEÑA VALLEY (ASTURIAS, NW SPAIN)**

González Álvarez David, Dept. of Prehistory, Complutense University - Madrid (Spain)

This paper studies the settlement patterns of the communities which inhabited the Pigüeña Valley (Asturias, NW Spain) during the Iron Age. Here, the sites form an interesting group useful to investigate Iron Age settlement patterns in mountain areas. These peoples built hillforts (castros) at altitudes near or even above 1000 meters high, to take advantage of pasture zones.



In this study an attempt will be made to reconsider these supposedly sedentary castro communities, suggesting the possibility that there may have existed mobility practices related with the movements of the herds, which would imply that not all the dwelling enclaves were castros, and that not all the known castros were permanent. I make use of 'pastoral movements' as an interpretative tool to understand subsistence and settlement systems of the preroman communities which inhabited the interior mountains of the region.

My reflections on the characteristic sample under consideration here have attempted to understand the settlement systems in the 1st millennium BC in relation to their herding strategies.

### **ISOTOPE EVIDENCE FOR HUMAN DIETS IN THE MESOLITHIC AND NEOLITHIC PERIODS OF COASTAL SPAIN (VALENCIA)**

Salazar García Domingo Carlos, Dept. of Human Evolution, Max-Planck Institute for Evolutionary Anthropology - Leipzig (Germany) & Dept. of Prehistory and Archaeology, University of Valencia (Spain)

We report here on the results of carbon and nitrogen stable isotope analysis of humans and fauna from Mesolithic and Neolithic sites from the Valencia region of Spain. In other parts of Europe there is isotopic evidence for an abrupt change in diet between these periods, especially in coastal regions of Northern Europe. To date, there are few isotopic studies for these periods from the Mediterranean. This presentation reports new isotopic data from the eastern Iberian Peninsula, from sites dating to the Mesolithic, and early, middle and late Neolithic.

### **HIGHLAND FROM A LOWLAND PERSPECTIVE. THE ROLE OF HIGHLAND LANDSCAPE IN THE LIFE OF LOWLAND COMMUNITIES AND ITS SOCIAL IMPLICATIONS IN THE LATE NEOLITHIC OF THE CARPATHIAN BASIN**

Siklósi Zsuzsanna, Institute of Archaeological Sciences, Eötvös Loránd University - Budapest (Hungary)

The main distribution areas of Late Neolithic communities in the Carpathian Basin were lowland and hilly country. These areas provided the most appropriate circumstances for subsistence (agriculture and animal husbandry).

At the same time, raw materials derived from highland landscapes (for example stone and copper) played an especially important role not only in the everyday life but in the expression and manipulation of social inequality and in the ritual life.

Several questions arise here: how could access these lowland communities to highland raw materials? What kind of relationship could be between highland and lowland communities? Is it any sign of craft specialization? How can we interpret the use of stone and copper objects beyond the everyday life?

With summarizing our present-day knowledge about Late Neolithic communities I would like to show the importance of this lesser known area and outline some directions of future research.

### **PREHISTORIC EXPLOITATION OF PANTELLERIAN OBSIDIAN: DISCOVERY OF NEW SOURCES, AND PROVENANCE OF ARCHAEOLOGICAL ARTIFACTS**

Tufano Emiliano, University "Suor Orsola Benincasa" - Napoli (Italy)

A careful survey of Pantelleria territory allowed us to identify two unknown obsidian sources on the high cliffs in the southern part of Island, more precisely at Cala della Polacca, and Faraglione di Dietro l'Isola, and to locate the sources previously discovered.

Analyzing by ICP-MS analytical method 50 finds from archaeological sites at Mursia and 30 from Lago di Venere we were able to determine which sources were exploited by prehistoric inhabitants of Pantelleria, providing interesting data about supply and selection of raw material.

We can affirm that no difference was still in the sources exploitation system since Final Copper Age till Early Bronze Age. In fact, the analysis of samples from the archaeological sites at Lago di Venere and Mursia shows that the whole obsidian sources were utilized by prehistoric inhabitants of Pantelleria.

We found no trace of processing in proximity to the obsidian sources; which indicates that the raw material was picked up as block and subsequently carried in the numerous lithic workshops on the island.

During the prehistory it was impossible to reach Cala della Polacca and Faraglione by land route, that sources were reached only by boat. The use of boats to carry obsidian is very significant since it indicates the existence of an high professional level in supplying of raw material.

The sources of Lago di Venere and Faraglione di Dietro l'Isola were not so much exploited, which can be easily explained considering the poor quality of obsidian from the first source, and the difficulty of access to the second, since it is situated on a high coastal cliff very distant from any landing place.

**WHY PEOPLE DECIDE TO PAINT IN THE SAME AREA? AN EVALUATION OF THE DISTRIBUTION PATTERN IN POST-PALEOLITHIC ROCK ART SHELTERS IN CENTRAL INLAND VALENCIA.**

Martinez i Rubio Trinidad, Dept. of Prehistory and Archaeology, University of Valencia (Spain)

We present our work about the post-Paleolithic rock art in the central inland territory of Valencia, focusing in two main parts. Firstly, we do a retrospective assessment from the last decades on studies about the territoriality in post-Paleolithic rock art location from the Mediterranean area of the Iberian Peninsula, which means since the initial works until the beginnings of the 1990s. During that period, spatial patterns were treated only by the principle of proximity to archaeological sites. Rock art itself was studied stylistically, independently from other archaeological remains or the surroundings. While in other areas, spatial studies were already introduced and completely normalized, it was not until recently that researchers started approaching rock-art from a landscape perspective. Then we studied how this new approach focus in location studies and how they deal with theoretical and practical concepts as Landscape, Archaeological Site, Stylistic division or Chronology. This methodological advance to rock-art studies from a Landscape Archaeology point of view leads us to consider more than just the panel itself, and must permit to explain the geographical distribution we found in rock art shelters in a small piece of land in Valencia throughout time. Finally, the locations and their main landscape features have been studied using GIS software to evaluate possible trends among rock-art sites.

**ANALYZING PREHISTORIC LANDSCAPES: A METHODOLOGY OF SPATIAL ANALYSIS APPLIED IN THE SURROUNDINGS OF 'EL CASETÓN DE LA ERA II' ENCLOSURE (CASTILLA Y LEÓN REGION, SPAIN)**

García Marcos, Dept. of Prehistory, Archaeology, Anthropology, University of Valladolid (Spain)

This research is about the occupation of the middle Douro Valley (North Meseta, Spain) between the Copper Age and the Early Iron Age (3000-500 B.C.). For a long time this area was considered to be uninhabited until the Early Iron Age. However, thanks to a recent aerial photography-based project, 45 enclosures were discovered in this area, built during the Copper Age and re-occupied during the Bronze Age as it was proved with the excavation of 'El Casetón de la Era' (Valladolid).

The first part of the research took place last year, when we tested a methodology of study in terms of Spatial Archaeology in the nearby of 'El Casetón' between 2 geographic zones: the plain of Tierra de Campos and the moor of Torozos (Palencia and Valladolid). At the beginning we improved the information by an exhaustive field survey and then we were able to do the best with a GIS-based "spatial analysis" that tried to explain the function and significance of enclosures from its placement and the relations with contemporary sites. We organized the questions to the GIS-project in 3 groups: orography, visibility and accessibility and we obtained amazing results about settlement and about the exceptional placement of 'El Casetón'.

Nowadays we are amplifying the information with another 7 enclosures and about 260 sites in a bigger area, which should give us soon a better idea of the social evolution of the people that lived in the middle Douro Valley from the "time of the enclosures" until the prelude of History.

**THE MIDDLE BRONZE AGE AT TELL AHMAR (NORTH-WEST SYRIA)**

Perini Silvia, School of History, Classics and Archaeology, University of Edinburgh – Scotland (UK)

Initially excavated by F. Thureau-Dangin between 1929 - 1931, the construction of the Tishrin Dam and the impending danger of a possible destruction or flooding of part of the Middle Euphrates Valley, has led to the reopening of the excavations at Tell Ahmar by Professor Guy Bunnens in 1988. Research conducted on the acropolis from 2004 onwards has revealed the existence of a well stratified Middle Bronze Age occupation (ca 2000-1600 B.C.). Evidence for this period comes from two different architectural units: a private house (The Burned House) and a storage building.

This presentation focuses on the archaeological evidence of the Middle Bronze Age levels of Tell Ahmar, with particular emphasis on the ceramic material. In addition, some implications of current research on the functional analysis of the pottery assemblage are discussed.

**CENTRES AND COMMUNICATION IN SOUTH-EASTERN ESTONIA DURING THE IRON AGE IN THE CONTEXT OF EARLY MODERN ERA MAPS**

Veldi Martti, Tartu University & Estonian National Heritage board (Estonia)

The paper focuses on the study of prehistoric roads and communication in south-eastern Estonia during the Iron Age (500 BC–1227 AD) using Early Modern maps from period between 1684–1839 and distribution of archaeological sites on landscape. Early Modern maps were digitally customized with today's maps in order to locate historic main land roads on today's landscape as precisely as possible. The maps were digitally registered with Earth's coordinates in GIS software, and separate map layers for roads on each map were created. After that the correlation of historic roads, archaeological sites and hill-forts as power centres were analyzed. The results of the research showed that during the first half of the Iron Age (500 BC–450 AD), the Migration Period (450–600 AD), and Previking and Viking Age (600–1050 AD) water routes dominated over land roads, in the Late Iron Age (1050–1227 AD) land roads became of more importance. The analyses concluded that the position and function of the hill-forts is very much defined by the landscape. Most of the hill-forts are situated on the edges of landscape regions, very often on the borders of large natural obstacles on the crossroads of land and water routes. Therefore one of the main functions of the hill-forts was to control and regulate traffic that enabled for the hill-forts strategically to distribute resources.

### **STUDYING THE CITY: REFLECTION ON THE STUDY OF AN HISTORIC CENTRE**

Mato-Fresán Cristina, Heritage Laboratory Consejo Superior de Investigaciones Científicas (Spain)

This research project is focused on the city of Santiago de Compostela (Galicia, Spain) in the Baroque Era, but its main objective is trying to understand and seize the spatial conception that underlies a society in a particular historical moment. It is precisely this objective what forces us to analyse the city as a global process. The theoretical and methodological approaches from Landscape Archaeology and Building Archaeology, which are fused in the scientific program of the LaPa as Built Space Archaeology, display the framework for this project. If landscape is understood as a social product, and the city is a built space, result of mechanisms of representation, then it is clearly a landscape. On the other hand and considering that architecture is mainly a social construction, Building Archaeology, which understands the constructions as a stratified reality, offers the perfect tools for deconstructing the edification processes. Arriving to this point, the evolution of constructions can be understood in two different scales: micro for the buildings and macro for the city.

Through a practical case of study, the façade of a building in the historic centre of Santiago de Compostela, which was developed during the design of the Heritage Information System of the city of Santiago (LaPa- Consorcio de la Ciudad de Santiago de Compostela), we will try to analyse the possibilities that our proposal offers to the study of the city and heritage, trying to integrate the different disciplines and professionals involved in the study of the city, considering it a global reality.

### **EARLY CHRISTIAN IDENTITY: THE CASE OF ROTUNDA IN THESSALONIKI (GREECE)**

Mato-Fresán Magdalena, Mickiewicz Adam University - Poznań (Poland)

Nowadays archaeological approach emphasize the social sphere of human past. I choose to focus on Christian identity in fifth century on Rotunda in Thessaloniki as a case study. I try to find out how the archaeologists would be able to find meaning of identity hide in architecture, how group of people from the fifth century created their own identity and showed it in architecture, which was the difference between pagan and Christian architecture and what features were used by Christian in construct their new identity. Especially I develop an agency theory to show that people have intentionally and active beings who create a material culture and who are created by it.

### **THE MEDIEVAL CHURCH OF SAN MARTINO DI LOMASO (TRENTO, ITALY): A 3D MODELLING**

Rapanà Matteo, Dept. of Archaeology, University of Padova (Italy)

In this article we present the processing of the laser scanner data (range data alignment, editing, mesh generation, geometric simplification and texture mapping), the visualization of the achieved 3D model into the Lidar DEM and the successive archaeological analysis of the site of the medieval church of S.Martino (Lomaso, Trento).

Precise measurements of distances, surfaces, thicknesses and volumes of the structures or of particular architectural elements were performed. Using a series of horizontal, vertical and inclined planes, horizontal and vertical sections as well as plants of the various building phases were derived.

Particular elements were also recognized and emphasized thanks to the creation of the 3D model. These elements have been inserted into a database according to their characteristics and this led to the generation of several 3D thematic maps (i.e. building phase maps or lithotopes).

In addition old pictures showing parts of the ruins before the restoration were applied onto the generated geometric



## *Approaches to archaeological interpretation*

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model, enabling the visualization of its original aspect.

Finally the integration of the digital the church into the DEM could be used for the clarification and understanding of settlements trends and territorial organization in past ages.

The presented experience clearly demonstrates how 3D is an efficient tool also in archaeology, helping the research and the knowledge in the investigated area and it proves that is not anymore a mere optional accessory but it should become a standard for all the archaeological investigation on sites and finds.

A007

Session title:

**PRISONER OF WAR ARCHAEOLOGY (19<sup>TH</sup> AND 20<sup>TH</sup> CENTURIES)****Organiser:** Mytum Harold, University of Liverpool (UK)**Co-organiser:** Mytum Gillian, University of Cambridge (UK)**Session abstract:**

Archaeologists have begun to study many aspects of the 19<sup>th</sup> and 20<sup>th</sup> centuries. This can be seen especially within the fields of historical archaeology, conflict archaeology, buildings archaeology, heritage management, landscape archaeology, and site interpretation. All of these sub-fields have the capacity to highlight different aspects of the POW experience.

The life of the prisoner of war, whether military or civilian, was highly structured and regimented, controlled by roll-calls, architecture, censorship, camp hierarchy, fear and uncertainty – and guards. Conversely, the prisoners themselves created administrative and practical challenges regarding security, accommodation and provisioning.

This session includes the study of the artefacts of internment; excavation and survey of internment camps; analysis of buildings and use of space (including issues of control and observation of prisoners); landscape setting and interaction with local communities; and management, conservation and interpretation of this heritage. It will review current knowledge and approaches, and set future agendas.

**Paper abstracts:****A UNIVERSE OF BONE: THE WORKING OF ANIMAL BONE BY NAPOLEONIC PRISONERS OF WAR**

Callow Susie, University of Bristol (UK)

The use of animal bone to create artefacts was a very common pastime amongst prisoners held in Britain during the Napoleonic wars. As well as acting as a diversion from their mundane and deprived lives, it was also a lucrative pastime. Items such as ship models, cribbage and chess sets, and automata were traded both within the prisons and in local markets. The money was utilised in various ways, such as to purchase extra food rations or a more comfortable sleeping place, and even to help fund escape attempts. Communities of bone workers became an intrinsic part of life within prisons across Britain, and the unskilled began to participate when the advantages of the work became apparent.

Creating items from bone was a means through which the prisoners could negotiate and redefine their identities and relationships with each other and the outside world. Created in confined and challenging surroundings, the artefacts are testament to a determination to survive; some are painstakingly intricate, many reflect French patriotism. Overall, they reveal how bone work created unique channels of communication with the outside world, and that the use of bone as a raw material helped to restructure the social order within the prisons.

**ARTEFACTS OF INTERNMENT: ARCHAEOLOGY AT TWO AMERICAN CIVIL WAR PRISONER-OF-WAR SITES MANAGED BY THE US NATIONAL PARK SERVICE**

Jameson John, US National Parks (USA)

While the American Civil War (1861-1865) is best known from key events such as the Battle of Gettysburg, another kind of battle was burned into the historical consciousness of the United States, the horrid Civil War POW experience. An estimated 56,000 men perished in Civil War prisons, a casualty rate much higher than on the bloody battlefields. The paper will focus on two sites presently managed and interpreted for the public where archeology has played an important role in filling major gaps in the historical record. The first site, Andersonville National Historic Site, Georgia, is the location of perhaps the most notorious of the Civil War prisons. Besides the prison, the park includes the site of a national cemetery and the National Prisoner of War Museum. With little surviving records or remains of the stockade, archeology has provided key evidence for two construction phases as well as key architectural features and living areas. The exhibits in the National Prisoner of War Museum commemorate the sacrifice and suffering of American prisoners of war in all conflicts. The second site, Fort Pulaski National Monument, Georgia, is the location of the imprisonment of the "Immortal 600," Confederate (southern) officers whose sad treatment was

in part prompted by news of the horrors at Andersonville. The location of the graves of the Confederate prisoners that died at Fort Pulaski were revealed through archaeology and are now marked and interpreted for the public by an outside exhibit.

### **FROM HOLIDAY CAMP TO INTERNMENT CAMP: REPRESENTATION AT CUNNINGHAM'S CAMP, DOUGLAS DURING THE FIRST WORLD WAR**

Mytum Harold, University of Liverpool (UK)

By September 1914 the Isle of Man had received its first internees from Britain. This rapid contribution to the British war effort was possible because Cunningham's holiday camp could be quickly and easily converted to its new purpose. The camp had been providing a wholesome holiday experience for young men from the industrial towns of northwest England, sleeping under canvas but with outdoor sports facilities and central services in large permanent buildings. The materiality of this infrastructure was both its attraction to the authorities and a subject of current archaeological analysis. Managerial changes took place over the course of the war, first following a riot due to overcrowding that led to the establishment of another camp on the island at Knockaloe, and second as the longer-term effects of incarceration led to the establishment of more substantial sleeping accommodation and the institution craft workshops. Representation of the camp can be examined under two main headings: how the camp the authorities presented it to both the inmates and the outside world (including visitors from the Swiss embassy), and how the internees portrayed themselves. The internee self-representation can be seen through camp newspapers and photographs taken by local commercial photographers who took pictures to be sent home by the internees. The portrayal of the physical conditions of the camp in these photographs was not neutral, but carefully composed. However, careful analysis can reveal some of the preoccupations of the internees, and the class and religious divisions that were perpetuated through camp life.

### **NAZIS IN CANADA? RELOCATED GERMANS, DISPLACED NATIVES AND THE HIDDEN HISTORY IN CANADIAN NATIONAL PARKS**

Myers Adrian T., Stanford Archaeology Center (USA)

The Canadian National Parks enjoy almost universal appreciation. Their raw beauty, the friendly and informed ranger, the efficient infrastructure, paved roads; all these make the park system something akin to sacred in the public eye. Here, however, I cast a critical eye on the history of the Canadian National Parks. I address a legacy of forcible removal of First Nations and forcible confinement of prisoners – both, events that occurred within park boundaries in the first half of the 20<sup>th</sup> century. In 1942, Nazi Prisoners of War were transported from North Africa to Riding Mountain National Park, Manitoba, where they were put to work logging. The POWs, forcibly relocated to Canada, arrived only a few years after the Keeseekowenin Ojibway band had been forcibly evicted from the very park where the PoWs were taken. The Ojibway watched as their houses were burned to the ground by parks officials. In this paper I explore the possibility of a heritage and archaeology of this Nazi POW camp built in a National Park, and report on the first season of exploratory fieldwork there.

### **"MY HOME WAS THE AREA AROUND MY BED": EXPERIENCING AND NEGOTIATING SPACE AT CIVILIAN INTERNMENT CAMPS IN GERMANY, 1942-1945.**

Carr Gillian, University of Cambridge (UK)

In 1942 and 1943, during the German Occupation of the Channel Islands, a total of 2,200 Islanders were deported to a number of civilian internment camps in Germany. A few months after their arrival, the Red Cross caught up with them and delivered to every internee a weekly parcel. In order to pass the time during their long years of internment, the islanders recycled those parcels. The cardboard, parcel string, packing crates, tins, and cellophane packing material were all recycled to make a range of different artefacts. The parcel wrapping paper and art materials from the Red Cross also enabled the islanders to create an array of artwork, ranging from greetings cards to watercolours. The most ubiquitous images produced in the camps showed how islanders used, experienced and negotiated space and territory in the camp on a variety of levels: that around their beds; that of their barrack room or dormitory; and that in the buildings and grounds of the camp as a whole. Beyond this lay the immediate vicinity of the camp - the fields, village or townscape visible through the barbed wire. At yet another level of remove was the space of their unrestrained imagination, which was usually the landscape of home. Using these nested levels of experienced and imagined space, this paper examines the confined world behind barbed wire that the civilian internee called home.



**LA GLACERIE, CHERBOURG**

Early Rob, Oxford Archaeology (UK)

The prisoner of war camp at La Glacerie was established by the American authorities in August 1944 and was the first of its kind in Normandy. In August 1945, the camp was handed over to the French authorities and finally decommissioned in 1948. The camp was rediscovered during an archaeological evaluation in 2006 and subsequently the French authorities prescribed an archaeological excavation covering an area of 1.6 hectares. This was the first prescription for a Second World War archaeological site in *archéologie préventive* in France. Sunken featured structures in regimented rows and within separated compounds were later confirmed to be the remains of structures constructed by prisoners in a labour camp attached to the main POW transit camp. The majority of structures were dwellings and many demonstrate their own distinct character connecting us to their constructors and occupiers. Evidence for the project has been collected from a range of sources including international, national and local documentary sources, oral history, aerial photography and archaeological evidence. This presentation will comment on our approach within the restrictive environment of rescue archaeology and present the results of our studies. Particular attention will be paid to the distinct narratives that can be identified through a multidisciplinary approach. Comment will be made on how our own points of reference to this difficult period in history and its heritage are changing and how archaeological research will replace living historic accounts to inform that process.

**LANDSCAPES OF PAIN AND THE UNWANTED HERITAGE. PRISONERS OF WWII IN NORWAY - AN ARCHAEOLOGICAL PERSPECTIVE**

Jasinski Marek E, Norwegian University of Science and Technology (Norway)

This paper reports on part of the Research Council of Norway funded project *Painful Heritage - Cultural landscapes of the Second World War in Norway. Phenomenology, Lessons and Management System* conducted in co-operation between NTNU, Museum of Natural History and Archaeology, and the Falstad Centre. It presents theoretical reflections and a research outline of the sub-project devoted to Nazi POW Camps as elements of Norwegian cultural heritage and Norwegian cultural landscapes. During the Second World War Norway received special status within Hitler's strategy, and enormous numbers of Nazi military were stationed there during 1940-1945. More than 150.000 Prisoners of War and slave labourers from at least 15 European nations were transported by the Nazis to Norway. Today, very few physical traces of the c. 500 Nazi camps are still visible in the Norwegian cultural landscape and the sites have no clearly defined or effective form of preservation and management in the Norwegian Cultural Management System. When places receive historical significance in the narrative tradition then collective memories are sorted, selected, and possibly idealized. Recent archaeological literature has highlighted socio-cultural construction with emphasis on the landscape as collective memory. But what happens when traces of disturbing and painful pasts are being dismantled and/or neglected for one reason or another? Forgetting is often an active choice with practical and symbolic consequences. This paper examines the archaeological and wider ethical issues of this unwanted heritage

**SELECTIVE REMEMBRANCE: MEMORIES OF A SECOND WORLD WAR INTERNMENT CAMP IN SWEDEN**

Burström Mats, Stockholm University (Sweden)

During the later part of the Second World War (after Stalingrad) a number of internment camps were established in officially neutral Sweden for Norwegians who had fled German occupation. The official purpose of these camps was to train extra policemen to meet the expected situation in Norway immediately after the war, but in reality they were military training camps. One camp was situated in Eckersta, 100 kilometers southwest of Stockholm, and had approximately 1000 internees. One of them, Sverre Marstrander who later was to become a well known archaeologist, spent his short period of time at the camp excavating a Viking Age burial mound. Just after the end of the war the Norwegians were succeeded by approximately 750 Polish women who had been evacuated to Sweden from German concentration camps. Today memories of the Norwegians are still very much alive locally while the Poles seem to be almost forgotten. This selective remembrance is probably a reflection of what part of the recent past people feel proud about and not. A small scale archaeological excavation at the site in 2005 revealed few finds but brought important questions about remembrance and forgetting to the fore.

**AMERICAN, BRITISH AND FRENCH POW CAMPS IN NORMANDY, FRANCE (1944-1948).  
WHICH ROLE FOR ARCHAEOLOGY IN THE MEMORIAL PROCESS?**

Schneider Valentin, Université de Caen Basse-Normandie (France)

After four years of German occupation, France was finally liberated during summer 1944 by the Allied troops landing in Normandy and the Provence. Although the French no longer suffered from the enemy occupation, France was not “liberated” from the Germans. In fact, the Allies opened in France numerous central POW camps for captured enemy soldiers, used for the transit of the prisoners. In Normandy alone – the first French region to be liberated in 1944 – seven central POW camps with huge capacities were established to evacuate the front eastwards. Additionally, hundreds of labour camps were set up by the Allies in France, providing them with a cheap manpower. In 1945 the camps were progressively transferred to French custody. At its maximum, more than 900,000 Axis POWs were withheld in France. Contrary to the occupation period which was soon considered as the common past enabling the French to rebuild their unity as a nation, the presence of German POWs after 1944 was soon buried in oblivion. The phenomenon is particular in Normandy, where the occupation was very hard and the POWs particularly numerous after 1944. As for any historical period where written documents and testimonies relating the everyday life are not provided, an archaeological approach to the camps for German POWs is essential to reveal living and working conditions and the situation of the camps within the landscape and the local communities, as it has since been proven by the excavation of an American POW camp close to Cherbourg.

A008

Session title:

**ROCK-ART: BEYOND ART**

**Organiser:** Craig Alexander, University of Cambridge (UK)

**Co-organiser:** Mattioli Tommaso, University “La Sapienza” - Roma (Italy)

**Session abstract:**

Rock-art research has been dominated – with notable exceptions such as work by Bradley – by art-historic concerns with style, typology and iconography. As Tilley points out in his most recent work (“Body and Image: Explorations in Landscape Phenomenology 2”, Left Coast Press 2008) such an art-historical approach is most likely at odds with the way that prehistoric peoples experienced their “art”.

Without explicitly endorsing a phenomenological approach above all others, the organisers of this session wish to showcase approaches that move beyond the art-historical: landscape analyses of rock-art including GIS, analyses of image positioning and association, direct-dating, phenomenological/experiential approaches, the temporal dependence of readings of images and so forth. Fundamentally we wish to put rock-art back in its rightful place as a core element of material culture – indeed a privileged element in that it is most often found exactly where its creators intended it to be – rather than an esoteric interest often deemed peripheral to the archaeological record.



**Paper abstracts:**

**THE SPATIAL LOCATION OF IRON AGE ROCK-ART SITES AND THEIR INTERRELATIONSHIPS WITH OTHER CONTEMPORARY LOCI IN VALCAMONICA, LOMBARDY**

Craig Alexander, University of Cambridge (UK)

This paper presents a macro-level spatial analysis of the location of Iron Age rock-art sites in Valcamonica, Lombardy, Italy. Rock-art site locations and known valley-floor cult site locations have been recorded with hand-held GPS and combined with a 20m DTM of the middle valley. Additionally a model has been created to predict likely habitation sites on the basis of those sites already discovered. Taking due account of likely palaeoenvironmental conditions the intervisibility of rock-art sites, habitation sites and known cult sites is investigated. Does this occur more often than would be expected by chance alone? Obviously, given that most of the rock-art lies on non-vertical surfaces the visibility factor refers to the locus of creative action within the taskscape rather than to the engravings per se. Further, were rock-art sites chosen for their visual dominance of the landscape? In a glacial valley one expects a wide viewshed to be the norm and so we must assess whether the rock-art sites enjoy significantly larger viewsheds than other randomly chosen locations on the valley sides.

**ANALYSIS OF ARCHAEOLOGICAL FINDINGS IN ROCK ART SITES OF CENTRAL AND SOUTH ITALY**

Mattioli Tommaso, University “La Sapienza” - Roma (Italy)

In recent years a research team from the University of Perugia (Italy) has brought to light numerous rock shelters and caves along the Apennine mountains with prehistoric paintings and engravings ranging from Upper Palaeolithic to Iron Age. These new discoveries, together with previous studies, have exposed a new and consistent archaeological heritage. This paper presents the results of the analysis of archaeological materials found in that sites and the relationship between rock-art sites and other archaeological findings in the surroundings. The purpose is to improve the knowledge of the chronology and the function of this particular kind of archaeological data.

**SHAPING STYLE WITH SPACE**

Marretta Alberto, CRAAC Centro Ricerche Antropologiche Alpi Centrali (Italy)

The analysis of the spatial positioning of the subjects of Valcamonica rock art (concentrated around Capo di Ponte) and, in particular, spatial variation in their figurative styles has shown a non-random distribution in “dedicated” sub-areas. This pattern suggests that the variability of subjects and, above all, the way in which they have been depicted

(the so-called “style”), particularly during the Iron Age, should be considered not only across time, the traditional system of explanation that assigns different pictures to different periods according to a generic evolutionary pattern that goes from simple to complex shapes, but also and especially across space. In the cases examined so far it is in fact space that represents the constant element around which subjects and styles gather together. Recently available data show the need not to avoid but rather to recover the concept of style in a form partially separated from the main chronological vector, analyzing instead the variability of images in the light of positional data on individual figures. A second step involves the highlighting of the further relationships that exist between sequences composed of subject/style pairings, and the corresponding areas of distribution. The ancient rock art territory acquires in this way a set of detailed and complex features, perhaps reflecting the corresponding identity of different groups involved in the rock art production process (religious elites, age or gender groups, etc.) or perhaps as the result of the work in specific areas of certain “masters”, who expressed their roles and perspectives through a sub-set of the most common signs used during the period.

### **PASTORAL GRAFFITI: ECONOMICS AND AESTHETICS ON THE ROCKS OF FIEMME (TRENTINO ITALY)**

Bazzanella Marta, Museo degli Usi e Costumi della Gente Trentina – S. Michele All’Adige - Trento (Italy)

On the limestone cliffs of the south-looking slopes of the Cornon ridge in the Fiemme valley, (Trentino, Italy), at an altitude between 1000m and 190 m above sea-level, i. e. on the highest and most remote portion of the territories of a little cluster of villages (Tesero, Panchià, Ziano, Predazzo), thousands of shepherds’ inscriptions can be found. These were made with local red ochre between the second half of the 1700’s and the first part of the 1900’s, by local goat keepers and sheep tenders engaged in the local short distance transhumance trail. Dates, signatures, initials, family symbols, herd accounting, pictographs and sacred symbols are found, significantly concentrated along the steep trails to the highest pastures, where the flocks of sheep and goats were driven after the last shearing. The goal of the present work is that of putting in evidence the relations between this particular brand of shepherd rock art and the significant areas of local alpiculture, such as the trails, the pastures, the shepherds’ own dens, the sources of water supply and the mines of the local red ochre called bol (“mark”). Our analysis has also taken into account data related to prehistoric and protohistoric evidence as to pastoral usage of the area, which was at least partly based on the same economic drivers.

### **SUPERNATURAL LANDSCAPES AND POST-PALAEOLITHIC ART IN SPAIN**

Díaz Andreu Marga, Dept. of Archaeology, University of Durham (UK)

The study of post-palaeolithic art in Spain has for the last one hundred years mainly been concerned with issues of typology and, especially, chronology (Breuil 1920; Hernández Pacheco 1924; Almagro 1944; Martí & Hernández 1988). Although issues of chronology are obviously key to our understanding of art, this has led to an imbalance with respect to other related contextual elements. In the last few years a number of young researchers have applied GIS to study the location of rock art (Aguilella 2004; Cruz Berrocal 2005; Fairén 2007; McClure et al. 2008) but the focus of their research has been the relationship between economic areas and the location of the rock art. In this paper it is argued that research on other non-economic aspects of the location of rock art such as rock colour, landscape formations and orientation, may also reveal that these factors had a part to play in the decisions people made on the selection of places to decorate the landscape. In sum, without denying the importance of the study of typology, iconography, chronology and economics, which are all essential in our comprehension of past rock art, this paper will argue that in the study of post-palaeolithic rock art in Spain other less factual elements that may have been central in the world view of past people urgently need exploring. A key issue in this respect is beliefs regarding supernatural features of the landscape.

### **ROCK ART OF CORSICA: DESCRIPTION AND ANALYSIS OF THE MAIN SITES**

Leconte-Tusoli Severine, University of Corsica (France)

Prehistoric rock art is the oldest artistic expression of humankind. It is the birth of art and it belongs to an preliterate society. The perception, the use and the function of the pictures don’t comply with a single universal code. To understand the meaning or the place of a representation, the cultural and environmental context of the society has to be taken into account. The prehistoric rock art of Corsica consists of engravings and paintings. Sites are not numerous but they are significant because of their originality and peculiarity. We often refer to “schools” which emphasizes artistic expression. They fluctuate according to geography but also according to time and society. What

are their cultural and geographical roots? What is the meaning of the figures? Is it possible to date these patterns? What are the techniques and the materials used by the artists? ... Since the 90's, studies have lifted the curtain on some of these questions but this art still a mystery on its whole. Today it is the target of criminal intent: obliteration of rock carvings and paintings is a frequent outcome of a lack of official protection.

### **THESE ROCKS WERE MADE FOR WALKING - RITUAL AND PERFORMANCE AT LEIRFALL, TRØNDELAG, NORWAY**

Sognnes Kalle, Institutt for Arkeologi og Religionsvitenskap, NTNU - Trondheim (Norway)

The Leirfall rock-art panels, which are dominated by footprints, are found at three different panels. At the lower panels the footprints lure spectators to follow the rocks further up-hill, pointing towards the major panel, a multi-motif panel, which is one of the larger Bronze Age rock-art panels in Scandinavia. The upper part of this panel, which cannot be seen from below, is virtually covered with footprints, most of which are facing down, towards a terrace in front of the panel. This rock also holds a wide view of the valley below. The author will present and discuss this setting, which gives the impression of a 'stage' or 'rostrum' in front and above spectators participating at public rituals or performances.

### **ENGRAVED ROCKS, SETTLING AND EXPLOITATION OF THE LAND BETWEEN THE IRON AGE AND THE ROMAN AGE: THE CASE OF BERZO DEMO – VALCAMONICA (ITALY)**

Solano Serena, University of Trento & CRAAC Centro Ricerche Antropologiche Alpi Centrali (Italy)

The settlement was organized as a series of small houses of the alpine type, partially underground, on a slope at around 800m altitude. Findings testify a continuous use of the village between VI B.C. and II A.D. centuries, with the main activity being metallurgy. Not far from the settlement, some rocks show second and late Iron Age engravings, probably related to the village below and created/employed by its population.

The inscriptions (around 80) are the most interesting engravings. An analysis of the signs present at Berzo Demo in comparison to other inscriptions in Valcamonica leads to recognizably original traits and therefore to the belief that a local variant of epigraphy might exist.

### **ARRANGEMENT OF FIGURES IN ROCK-ART PANELS**

Iliadis Giorgos, UTAD (Portugal)

### **STUDYING CROSS-OVER: EARLY IRON AGE HUMAN REPRESENTATIONS IN DIFFERENT MEDIA**

Rebay-Salisbury Katharina, Dept. of Archaeology and Ancient History, University of Leicester (UK)

In the Early Iron Age, human representations north of the Alps and in the Mediterranean share a number of similarities and overlaps; they are encountered in a range of media, including bronze and other metals, pottery, stone sculptures and rock-art. Famous scenes show people hunting, feasting, competing in sports or chariot races, spinning and weaving or grieving for their dead. When integrated in a new local context, images are transformed and merged or 'creolized' with ideas from different backgrounds and traditions, helping to form new understandings of identity and society. A new assessment of these images including a detailed image analysis will help to understand how the motifs are related and thus help to better appreciate the network of complex relationships between temperate Europe and the Mediterranean. An important part of the analysis will be the investigation of the transfer of technologies across wide geographical areas as well as the study of cross-craft interaction: this framework will help to understand overlaps of motifs and technologies between materials and challenge our general assumptions about art and craft as fields of specialisation. Although rock-art is probably the largest body of images available for study, it has traditionally not been included in discussions of Iron Age art. Fixed in space and excluded from trade and exchange of commodities and luxury items, rock-art differs in many aspects from what is usually considered Iron Age art. This paper aims to address how rock-art might be integrated into a wider framework of studying human representations in Iron Age Europe.

### **THE RED ARMY GRAFFITI IN THE REICHSTAG, BERLIN. A ROCK ART LOST IN TRANSLATION**

Baker Frederick, Danube University, Krems & Fritz Lang Institute of Media and Technology (Austria)

The discoverer is British, the walls are German, the artists were Soviet, the language is Russian, the lettering is Cyrillic and the meaning is lost in translation.

At the end of WW2 thousands of Red Army soldiers symbolically signed themselves off at the end of a long war, by writing graffiti on the walls of the German parliament - the Reichstag. In the 50's the writings were ordered to be cleaned off by the West German government. Yet the contractors took a short cut and just covered many of the walls with panels instead of scrubbing the walls. When in the 1990's the London architect Norman Foster and his team ripped off the paneling they "re-discovered" hundreds of these graffiti. A battle started between the German political elite and the former allies as to the meaning of these pieces of 20th century rock art.

This paper highlights the key conflict that arises when the signs on a wall have different audiences, with different histories and different visual languages. One person's aesthetic desecration is another's holy mark, one person's text is another's piece of abstract expressionist doodling. Most of the texts are just names or journeys, yet the MPs moving into the new parliament could not read Cyrillic and were driven by a post-war guilt that made many assume that the writings were all insults and should be erased. In the centre of the story an architect and an archaeologist combine to fight for the palimpsest's many meanings – and the values of democracy in interpreting a dataset born of totalitarianism.

### **REVEALING INVISIBLE: THE WAYS OF SEARCH FOR IMAGES ON WELL-INVESTIGATED SITES**

Miklashevich Elena, Kemerovo State University (Russia)

A rock art site, like an iceberg, has its visible part and invisible parts. The visible part is what one can readily see while visiting. Of course, the visible part for the experienced eye of a rock art specialist is much larger than for a casual visitor; furthermore, longer and deeper investigation makes this visible part ever larger. Still, each rock art site potentially bears much more information than at first appears.

Part of this "invisible" information (the paper considers only the imagery of a site) is lost forever because of natural destruction, but other parts can be revealed. Ways of searching for new images and compositions, in particular, are: 1) cleaning off lichen; 2) removing sediments under and next to the visible panels; 3) looking for fragments on the entire slope below the visible panels, or even in the mountain foothills; 4) examining the panels - both those which are well-known and those which look empty - under artificial oblique light; 5) watering the panels - this reveals very faded paintings which, very often occur among pecked figures. These methods were implemented recently on a large number of rock art sites in Siberia and Central Asia - sites that were fully published and seemed to be well investigated and documented. This new approach not only considerably increased the number of images for each site (sometimes by 1.5-2 times), but also forced us to reassess significantly (sometimes, radically) some established schemes concerning chronology, attribution and interpretation of rock art of the region.

A009

Session title:

**SOCIAL ASPECTS OF THE PREHISTORIC PAST: ARCHAEOLOGICAL MODELS AND INTERPRETATIONS****Discussant:** Sestieri Anna Maria, Istituto Italiano di Preistoria e Protostoria (Italy)**Paper abstracts:****ETHNOGRAPHICAL NOTES ON PREHISTORIC CULT STONES AND FIGURINES IN LOWER AUSTRIA**

Krauliz Alf, Dosedla Heinrich, Centre of Interdisciplinary Studies and Research (Austria)

Regarding the distribution of prehistoric figurines within central Europe there is a considerable amass of those from the Palaeolithic period especially in a region between Lower Austria and the southern part of Czechia known as the so-called "Venus" type. As a striking feature according to local ethnography of that region there was a rural tradition concerning the use of stone objects in some superstitious context supposedly dating back to cult activities of pre-Christian origin. An analysis of a collection of these stone items referred to as "charm stones" shows that most of them bearing distinct shapes are apparently not artefacts but may rather be defined as so-called "geofacts" configured by nature which in some cases have received additional artificial modification to obtain figurine character. Stones of that sort were not only kept in local farm houses until recently for the sake of fertility but also were found at distinct locations referred to as former cult places including caves and rock shelters known as prehistoric sites. Significantly the prevailing stone material of these objects is diorite which is occurring within the dominant granite in that area only on just a few limited sites, one of which situated near Motten village in the northern part of Lower Austria was examined in recent years by the authors the results of which are presented in this paper.

**HOUSEHOLDS AND SOCIAL REPRODUCTION IN THE CENTRAL BALKANS, 5500-4500 BC (VINČA CULTURE)**

Tripkovic Boban, Dept. of Archaeology, Faculty of Philosophy, University of Belgrade (Serbia)

House dimensions in the Late Neolithic of the Central Balkans (Vinča Culture) vary from only 15m<sup>2</sup> to approximately 200m<sup>2</sup>. While a certain number of those houses can demonstrate differently specialized uses or serve as status symbols, ethnographical studies also show us the diversity of co-residential groups. Nuclear, extended or complex family and multi-family household are only some of the most referred to social units. This paper reexamines an old concept pertaining to different models of co-residential groups in Late Neolithic houses in the central Balkans. Methodological tools used were: a) house dimensions, number of spaces in them and the structure of finds on their floors; b) architectural histories of individual houses. Correlation of architectural and social process indicated possible forms of social reproduction of Vinča households, as well as other important conclusions: that a house was perceived as a place in which identities were created, maintained and negotiated and that structure and organization of house space have an important role in that process by reflecting intervals of "harmony" and "tension".

in the Early Bronze Age.

**ANIMAL RITUAL KILLING AND BURIAL: EUROPEAN PERSPECTIVES**

Reynolds Ffion, Cardiff University - Wales (UK)

Examining the ways in which materials are deposited in Early Neolithic pits – be they artefacts, animal or human remains – still poses interpretational difficulties even for the modern theorist. Working through the detail of the Coneybury 'Anomaly' in Wiltshire, this paper focuses specifically upon the character of the depositional practice evident at this site within the Earlier Neolithic (c. 3750 cal. BC), and attempts to define how we might comprehend the pit as a form of totemic practice. Acts of feasting, like the one evident at the 'Anomaly' would have shaped the ways people conceptualised certain animals, with symbolic significance of particular species changing through time. Especially during the Earlier Neolithic, cattle began to predominate in the structures' contexts, with certain species such as deer being underrepresented, perhaps because they were not domesticated. Alternatively wild species such as deer may have been subject to formal taboo.

To fully contextualise my argument, I will be using analogies from the many religions of Amazonia and neighbouring

regions of South America, who may be classed as totemic or perspectivist. For many of these people deer are proscribed, considered scared, used in shamanic performances and appear in an anthropomorphised form. Can these understandings be reflected in the archaeological record? This paper will consider the effects of possible ideological behaviour at the Coneybury 'Anomaly' – especially in relation to the patterns of wild deer deposition. In this, I aim to identify some of the potential archaeological correlates of Neolithic taboos, and through this begin to offer possible ways of understanding the missing link – why were deer not domesticated?

### **SOME REMARKS ON TRANSITIONAL PERIOD IN BULGARIAN PREHISTORY**

Kufel Mariusz, Institut of Prehistory, Adam Mickiewicz University - Poznań (Poland)

The paper will concern the transition from the Eneolithic to the Bronze Age in nowadays Bulgaria, also called the Transitional Period, ca. 4200/4000-3200/3000 BC. Broadly considered, one can define the time in question as a some kind of cultural destabilization, which strongly contrasts with the periods both Eneolithic and the Bronze Age. For that period significant changes in many areas of life in the examined area are considered. These changes, according some scholars, issue very clearly from archaeological data. The basis in this paper will be the compilation of the most essential hypotheses which were formulated for the explanation of this phenomenon. In this perspective one ought to bear in mind some important theories like climatic factors (climatic optimum at the beginning of that period) and the subject of population movements (the invasion of steppe communities into the Balkan Peninsula). These two views occupy the strongest position, however do not explain some matters. Last years is perceptible a certain tendency to denying these theories and formulating others as e.g. the settlement discontinuation. A most extreme position, in this context, is the rejection of Transitional Period from Bulgarian prehistory. Present paper aims therefore a recapitulation of all being in discussion approaches to the problem and at the same time aims to take part in the discussion by supporting of the hypothesis about the baselessness of using the term of the Transitional Period. In support to this statement there is a scarcity of essential sources which confirm considerable social changes in the millennium in question (for example the evidence of presence of steppe people in the Balkans). There is a lack of significant and abrupt climatic changes in the pollen records in the region as well. For that reason some evidence will be presented which supports the statement of some occupation continuity, similarity of material culture into the 4th millennium BC in comparison with former period i.e. Eneolithic and succeeding Early Bronze Age. By the explanation of that matter some results, coming from environmental and social sciences will be applied which confirm the occupation of different environmental niches by the same communities.

### **COLLECTIVE, COMMUNAL AND INDIVIDUAL GRAVES AND WHY DOES IT MATTER? AN EXAMPLE FROM THE EARLY BRONZE AGE AEGEAN**

Herrero Borja Legarra, Institute of Aegean Prehistory (UK)

In the quest for interpreting burial practices, archaeologists have always looked for ways of relating mortuary customs to socio-political structure, and more recently to key ideological and cognitive frameworks. In the process, we have neglected to discuss in detail what individual, communal and collective burial means. We have used these adjectives just to describe the physical interments within a tomb. However, a detailed discussion would show that these classifications are far from straightforward, but nonetheless essential for the correct understanding of mortuary behaviour and its relation to the defining social and ideological characteristics of a society. To illustrate the point, I will use a case from the Early Bronze Age Aegean as an example of how interment types represent different social and ideological attitudes for each community. I will argue that a detailed study of the diverse interment types and their wider social meanings is crucial for the understanding of the trajectories of these communities

### **MOVING BEYOND COMMON PERCEPTIONS OF THE 'ABSTRACT', 'PERIPHERAL' AND 'PROCESS', BUT WHERE TOO? THE CHALLENGE OF DECONSTRUCTING AND RECONSTRUCTING THE EVIDENCE FOR COASTAL SALT PRODUCTION IN SOUTHERN BRITAIN (700BC-AD450)**

Hathaway Sarah-Jane, Bournemouth University (UK)

This paper is a result of the final year of my PhD research on coastal salt production in southern Britain (700BC-AD450) and will discuss the challenges faced when attempting to reinterpret this evidence. The PhD process often involves the deconstructing of previous methods of recording, describing and interpreting the archaeological remains in the hope of reconstructing the evidence in a better more understandable light. This research process has been no exception and has often involved treading the line between the need for categorisation using a database in order to consistently records and compare the evidence, and carrying out a more holistic approach to interpretation. This



has often involved facing literature which contains limited perceptions as to the potential of these sites, and indeed production processes in general. I have explored not only the biographies of the ceramic forms used to produce salt (briquetage), but also the lifecycle and human 'management' of the sites as a whole, including the choice of how and where to deposit the 'waste' of production. This has also included the exploration of salt consumption and the integral link between this and production. Issues with perception have been further emphasised when attempting to marry the archaeological evidence for production with consumption as a paper at conferences. Where does the paper go? Does it sit within a technological/production process category/theme, or indeed within a food consumption category/theme?

### **UTILITARIAN AND RITUAL POTTERY OF THE GOROKHOVO CULTURE: CONTINUITY AND CHANGES IN THE ANCIENT SOCIETY**

Panteleeva Sofya, Institute of History and Archaeology, Russian Academy of Sciences, Ural Division (Russia)

Different cultural traditions co-existed in Trans-Uralian forest-steppe in the Iron Age. The Gorokhovo culture (5th-2nd centuries BC) is one of the most striking among them. Origin of the culture and interactions between its people and neighboring forest-steppe and steppe population attract a keen interest of archaeologists. Such study is impossible without analysis of pottery, which is not only perfect chronological data carrier, but also can be viewed as a medium of expression of cultural identity. Utilitarian and ritual ceramics belong to diverse spheres of human being and changes occurred in ancient society were being reflected on them differently. It is well known, that pottery of everyday use was modified more rapidly. Ritual vessels as a part of most conservative element of culture – funeral ceremony – retained traditional appearance longer. Comparison of these groups of wares, appurtenant to the one culture, allows to reveal in ceramic complex both archaic and "new" features appeared during cultural interactions and transformations. Indeed, it makes possible to study ethnic processes, which took place on the particular territory in the particular time.

The paper aims to present results of comparative analysis of Gorokhovo culture pottery, which is being undertaken for understanding cultural interactions in the Iron Age Trans-Urals. The Pavlinovo fortress and related to it Sopininsky and Mourzinsky I cemeteries were chosen as a scientific polygon. Pottery set from settlement is represented by various cultural types, which have different positions on the chronological scale. Ceramics of the Gorokhovo type constitute the considerable part of collection (35%) and connect mainly with the first chronological period (400-300 Cal BC). Gorokhovo graves in kurgans are the earliest and dated to the same time.

Collection of the settlement mainly consists of vessels adorned with incised technique (49%), comb (16%) or smooth (7%) stamp and non-decorated pots (22%). Stamped patterns were not common for Gorokhovo pottery ornamentation and appeared under the outside influence. Introduction of comb stamp was the consequence of close interactions with representatives of the local Vorobievo cultural tradition (6th-4th centuries BC). Wares decorated with smooth stamp were recovered only from structures of the second chronological period of the Pavlinovo fortress. Probably these pots were made under the impact of ceramic tradition of the Sargat culture population, penetrated on the territory of the Trans-Urals from eastern areas in the 4th-3rd centuries BC. Collection from kurgans comprises ceramics decorated with incised technique (42%) or pit-pricked elements (32%), and non-decorated glass-shape pots with flat bottom (16%). The last two groups are not typical for the settlement assemblage. Perhaps, they were molded specially for burials. Small size of vessels allows to judge that all of them were of individual use.

Thus, utilitarian and ritual pottery is different in form, size and decoration, what is partly caused by its function. Traces of outside influence on the settlement ceramics are evidence of ethnic processes taken place on that territory in the Iron Age. Incised design is predominant in both groups. Obviously, it is a core of the Gorokhovo decorative tradition, which is alien to preceding ornamental stereotypes of the forest-steppe and has close analogies in ceramic complex of Southern Ural's nomads.

### **THE BRONZE AGE COPPER SMELTING IN SOUTHERN ALPS (TRENTINO, ITALY): AN EXPERIMENTAL APPROACH**

Bellintani Paolo, Silvestri Elena, Stefan Livia, Archaeological Heritage Office of the Autonomous Province of Trento (Italy); Belgrado Enrico, independent researcher (Italy)

Since 2004 a team of archaeologists, archaeotechnicians and archaeometrists (in collaboration with the Department of Geosciences of University of Padua and Faculty of Engineering of Trento) is carrying on a research project of experimental archaeometallurgy. Prehistoric exploitation of copper sulphides (chalcopyrite) is particularly important in Trentino region (south-eastern Alps), where more than one hundred Bronze Age! e smelting sites with tons of slags have been found. New excavations of smelting sites, functional analyses of artefacts and archaeometrical analyses of slags have been the starting point of the research. The experimental approach, of a "first generation" according to

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## *Approaches to archaeological interpretation*

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Mathieu's definition, aims to the reconstruction of the complex chaîne opératoire, also through the use of replicated smelting furnaces. Experience led to generate new hypotheses and to elaborate a working methodology. Recording every variable allows us to keep under control the experiment in order to understand the determinant factors which take place in the process. A morphometrical and quantitative analysis of thousands of slags found in smelting sites is giving new data about the amount of exploited mineral and regarding the steps of the working process. These data permit also a better accuracy of the archaeometrical analyses. Finally, the experimental replica of the smelting process become reason for reflection, in particular concerning comprehension of archaeological remains and use of territory.

A010

Session title:

**WORKING WITH THE PAST: STRATEGIES FOR CRISIS OR INTENTIONAL INCORPORATION? TOWARDS AN ARCHAEOLOGY OF RECYCLING****Organiser:** Dragos Gheorghiu, National University of Arts – Bucharest (Romania)**Co-organiser:** Mason Phil, Institute for the Protection of Cultural Heritage (Slovenia)**Session abstract:**

Recycling is a basic anthropological process of humankind. The reutilization of materials or of ideas from the Past is a process determined by various natural or cultural causes. Recycling could be motivated by a crisis or by a complex symbolic cause like the incorporation of the Past into the Present.

What archaeology has not insisted upon is the dimensional scale of the process, which operates from the micro-scale of the recycling of the ancestors' material (Gheorghiu 2001), up to the macro-scale of the landscape (Mason 2008).

It is well known that there are direct relations between artefacts and landscapes in what concerns the materiality and mobility of objects. An additional relation between artefact and landscape could be the process of recycling. In many ways artefact and landscape can be considered as one aspect of material culture, perceived at a different scale, since both have the same materiality and suffer the same process of reutilisation.

The present session invites archaeologists to approach the significant process of recycling within the archaeological record at two different levels: of artefacts and of landscape.

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**Paper abstracts:****RECYCLING AS RHETORIC ACTIVITY**

Dragos Gheorghiu, National University of Arts – Bucharest (Romania)

The symbolic role of the recycled materials seems to have been ignored when studying the archaeological record. Frequent examples support the assumption that the recycling process was a structured activity subject to the rules of visual rhetoric.

Central to the discourse of the present paper is the identification of rhetoric tropes used during the process of construction and deconstruction of prehistoric and historic architectural objects, using study cases from South Eastern Europe.

**THE NEVER ENDING JOURNEY: CYCLING AND RECYCLING SEEN THROUGH A CRITICAL ASSESSMENT OF THE TAPHONOMIC PROCESS**

Robin Dods Roberta, Culture and Global Studies, "Irving K. Barber" School of Arts and Science, University of British Columbia - Okanagan (Canada)

In working through problems of interpretation of natural and cultural realms it became clear to me that an expansion of the concept of taphonomy was necessary. Therefore this is an examination of taphonomy in both a literal and figurative sense. Understanding taphonomy in two forms is informative when we come to constructing any synthesis of what has been gleaned from the known (Traditional Ecological Knowledge TEK) and the learned (Western Scientific Knowledge WSK) (Dods 2004). The loss of "information" will be investigated from four perspectives that encompass the taphonomy of the physical and the ideational. These perspectives will be expanded through a discussion of systemic contexts and filters, while natural and ideational/cultural systems will be observed through some specific examples. The impact of the loss of information on the interpretation of the world of the past, not the

least of this being the recycling of its materials through the culture of archaeology, will be looked at from both a practical and a theoretical perspective.

### **RECYCLING AND SECONDARY USE: TOWARDS THE FUNCTIONAL ANALYSIS OF THE ARCHAEOLOGICAL ARTIFACTS AND FEATURES**

Nikolova Lolita, The Art Institute of Salt Lake City, Draper - Utah (USA)

According to the archaeological theory, there is a difference between recycling and secondary use (e.g. Schiffer 1987, Ellison 1999, Ellis 2000). The variable definitions of recycling include either broadly modification and reuse or remanufacturing and reuse of artifacts which secondary function is different than the original one. Secondary use means change in the function but not in the morphology of the objects (Ellis 2000:43). Balkan Prehistory gives numerous instances for testing both concepts against a rich archaeological material (Bailey 2000, 2005; Nikolova 1999). Our case studies are the numerous fragmented pottery discovered in the prehistoric cultural layers that were obviously secondary used in a series of specific activities during the life of the villages, and the appearance of features of house debris that underlies some house floors (e.g. Dubene-Sarovka and Dyadovo, Early Bronze Age). We will test the hypothesis that those archaeological things had complex functions being also a record of recycling activities of the ancient people. They were used as a sustainable material and integrated both the village activity and a concept about the ancient environment. It remains unclear what was the awareness of the archaic people about processes that today we describe as recycling and secondary use.

As in the case of the Neolithic garbage pits, the prehistoric villages were used for production and reproduction of material culture, some components of which could have been visibly changed and re-incorporated with a different function. This kind of recycling possibly integrates the modern characteristics of recycling and the secondary use.

### **INCORPORATING AND RENEWING PAST SYMBOLS: THE TARXIEN CEMETERY REUSE OF MALTESE MEGALITHIC TEMPLES**

Copat Valentina, Ruggini Cristiana, University "La Sapienza" – Roma (Italy)

The problem of the transitional moment from the Late Neolithic Tarxien Temple phase to the Bronze Age Tarxien Cemetery phase in the prehistory of Malta has been deeply debated in the recent past. The interpretation of this phenomenon is essentially based on the eponymous Tarxien Temple's evidence, where extended fire traces have been found between the two phases and where the reuse of the temple structure as a cremation cemetery by the Tarxien Cemetery's groups has been seen as a proof of the violent and sudden passage causing the collapse of Tarxien Temple's communities.

Data coming from the new excavations in Tas-Silg Temple (University of Rome – La Sapienza) are instead revealing a continuous use of some megalithic structures, without a real gap from the previous moment such as the change in their functional destination. The attention that is instead paid next to the more ancient structures (also witnessed by restoring activities) shows their high impact on the ideology of the Bronze Age Maltese communities and of the neighbouring ones in contact with them, as the Sicilian ones.

It is probable that this phenomenon does not mean a continuity in the symbolic sphere, but could have brought to deep transformations in the religious beliefs: the incorporation and renewing of past symbols belonging to a different cultural entity, but inseparable from the Maltese landscape till today, are then a possible investigation field to approach the theme of recycling in a frame of deep cultural reshuffling.

### **MEMORY THROUGH TIME: THE CENTRAL SARDINIA SYMBOLIC AND PHYSICAL SACRED LANDSCAPE**

Gradoli Maria Giuseppina, COMET – ISSEP Sardegna (Italy)

A survey for both landscape features and caves in the central part of Sardinia Island has produced evidence for several natural recycled burial sites and rites of Neolithic and Bronze Age.

Some ways of perceiving and using the landscape, common to non-western societies, have been recognised in the study area. These could have played a role of transmitting information across time and space. Indeed, ethnographic sources indicate that past and modern Sardinian societies have always been strongly linked to oral traditions and to the practice of passing down from mothers to daughters special rituals, the original meanings of which have now been lost.

Moreover, prominent landmarks of the area, geological formations, mountain, steep valleys, waterfalls, pools and other "liminal places", such as caves could have been subject to "special attention" in the past and, on a long time



scale, symbolically charged of supernatural powers. Mortuary rituals and ancestor veneration in the area exhibit a continuity that marked their important role in the social and natural environment, within which they once lived.

### **REUSED ROCK ART IN SOUTHERN SCANDINAVIA**

Nilsson Per, Archaeological Excavations Dept., Swedish National Heritage Board . - Linköping (Sweden)

An interesting study case of recycling seems to be the way rock art sites in southern Scandinavia were used - or reused - during the Bronze Age as well as during the Iron Age. The south-Scandinavian rock art tradition has mainly been dated to the Bronze Age, but we should not limit our studies to the way the rock art sites were understood during this period. In fact, excavations at rock art sites have shown that many of the finds and features discovered at these sites can actually be dated to the Iron Age.

This paper sustains the idea that by studying the life-histories of artefacts, settlement sites and monuments, it is possible to study the history of reuse itself. The reuse of older sites and structures in the landscape has most often been regarded as a legitimizing act, as a way of demonstrating the rights to use or inhabit a certain area. However, is it possible that the past sometimes could have played a more problematic role? The present paper intends to discuss this question, using different study cases of reuses of rock art sites from Scandinavia.

### **RECYCLED MEMORIES? THE PAST AND PRESENT IN EARLY IRON AGE LANDSCAPES OF SOUTHERN GERMANY**

Murray Matthew, University of Mississippi (USA)

Recycling is encountered at various scales in the mortuary landscapes of the early Iron Age in southern Germany. In mortuary landscapes, acts of recycling included curation and redeposition of funerary materials, reuse of monuments for burial, and the citation of older monuments and mortuary features in new social discourses. These acts were intentional ways of enchainning objects, features, and individuals across time and space. They created theaters of “incorporated practices” that reinforced group identity and ideology, and through which the collective memory was transmitted or transformed.

At Tumulus 17 in the Hohmichele mound group, funerary remains from the primary burial event were curated and recycled within a single burial mound across several generations. Seriation of primary and secondary graves in the mound and analysis of mound stratigraphy indicate that the monument was used intermittently as a cemetery from around 600 B.C. to about 450 B.C. Hearths and structured deposits in the mound fill reflect mound maintenance and visitation rituals possibly linked to ancestor veneration.

At a larger scale, mortuary monuments were integrated into complex landscapes that also incorporated linear earthworks and habitations. Monuments, as local theaters for “incorporated practices,” were linked to other places in “choreographed” landscapes where movement was manipulated to enhance the experience of certain monuments. I explore the process of landscape enchainment at the late Hallstatt-period Heuneburg as well as at the early La Tène-period Glauberg in Hessen in west-central Germany.

### **RECYCLING POWER AND PLACE: THE MANY LIVES OF TRAPRAIN LAW, SE SCOTLAND**

Armit Ian, University of Bradford (UK)

Traprain Law, which dominates the East Lothian coastal plain in SE Scotland, is best known for the spectacular hoard of Late Roman silverware recovered from the site in 1919. However, the hillfort, traditionally regarded as the capital of the phlo-Roman Votadini, has a much deeper history, revealed through several episodes of investigation from the early 20th century onwards. Excavations from 1999–2006 were accompanied by a new programme of AMS dating which has greatly clarified the complex biography of Traprain Law, suggesting several major transformations from the Early Bronze Age to the Early Medieval period.

During much of the Bronze Age and pre-Roman Iron Age, the hill seems to have been a place of special significance marked, at various times, by the creation of extensive rock art panels, depositions of fine metalwork, and the construction of several enclosing ‘ramparts’. During two key episodes, however, in the 9th century BC, and again in the Roman Iron Age, the hill seems to have become densely occupied, with signs of high status activity, before turning once again into a place of primarily religious significance in the Early Medieval period. This paper examines how far each of these episodes of human engagement with the hill drew upon earlier accretions of meaning.

**ANCESTRAL PLACES: THE CREATION AND RECYCLING OF MONUMENTAL LANDSCAPES IN SOUTH-EASTERN SLOVENIA IN THE 1ST MILLENNIUM BC AND THE 1ST MILLENNIUM AD.**

Mason Phil, Institute for the Protection of Cultural Heritage (Slovenia)

The reuse of monumental landscapes in later periods is a familiar feature in many areas in Europe. The monumental landscapes of South-eastern Slovenia were largely a creation of the Early Iron Age. The paper seeks to show how Middle and Late Bronze habitation and mortuary sites were monumentalised by the construction of barrows and hillforts, resulting in the creation of highly visible places in the landscape. Where such earlier places were not present, earlier material was often incorporated into monuments to link such places to the past. Such monumentalised places were often incorporated into the landscapes of the LIA, the Roman period and Early Medieval period.

It is posited here that this incorporation of earlier elements in a new whole was a means of legitimating a changing socio-political milieu through the recycling and, as such, reinterpretation of real and fictitious ancestral places, which often lay in dominant, highly visible positions in the landscape.

**RECYCLING POTS, PLACES AND PRACTICES: THE ROMAN CEMETERY AT PODLIPOGLAV (SLOVENIA)**

Županek Bernarda, Sivec Irena, Museum and galleries of Ljubljana (Slovenia)

This paper seeks to address the re-use of prehistoric places and practices in Roman period in an archaeologically distinct area east of modern Ljubljana, Slovenia.

Recycling of the past is a phenomenon recognized in a variety of archaeological contexts, being interpreted in social, ideological and ritual terms. The “use of past in the past” is closely bound to the concept of social memory: the construction of a collective notion about the way things were in the past. It is rarely meaningless or innocent, but is often used to naturalize or legitimate authority, create and support a sense of individual and community identity or serve in resistance to imposed authority.

The case study is taken from the small Roman cemetery at Podlipoglav near Ljubljana. After an examination of the grave goods and burial structure, best described as an eclectic mix of different traditions, focus moves to the location of this cemetery in an archaeologically distinct region, where the re-use of prehistoric cemeteries was practised in the Roman period.

The possible reasons behind this recycling of prehistoric places and practices are discussed, focusing on the suggestion that they are active components of a local cultural identity in a period of major changes that occurred during the beginning of Roman period. We interpret the mortuary practices at Podlipoglav as a bricolage of different traditions and see the concept of cultural hybridity as both inspiring and productive tool for understanding changes in the Roman period in the area.

**SECONDARY USE OF STORING VESSELS AND HOUSEHOLD POTTERY DURING THE LATE MIDDLE AGES: THE PLACING OF POTTERY IN VAULTS AS A CASE STUDY.**

Caroscio Marta, Museo Nacional de Cerámica “González Martí” – Valencia (Spain)

The use of amphorae and other vessels in Roman vaults is extremely well known, and Vitruvius (V,6) provides a detailed account of this building technique. Even though during the 5th and 6th centuries some technical devices changed, and despite the lack of known examples between the 6th and 10th centuries, vessels were still placed in vaults during the late Middle Ages. Recent studies have drawn attention on the variety of technical devices used (Poisson 2005, Berti G. 2007), pointing out that during the late Middle Ages vessels employed for this purpose were mainly “recycled” (kiln, trade or domestic waste). Were local products only used? What was the role of storing vessels? How these assemblages have been interpreted?

This paper aims to present part of the results of a broader research on the production and use of storing vessels in the western Mediterranean between the 14th and the 17th centuries. Diverse examples of secondary use of pottery for building vaults will be discussed, presenting, among others, the assemblage of the “Convento de Santo Domingo” (Valencia) as a case study.

A011

Session title:

**ZEITGEIST****Organiser:** Rebay-Salisbury Katharina, University of Leicester (UK) & University of Vienna (Austria)**Co-organiser:** Hakenbeck Susanne, McDonald Institute for Archaeological Research, University of Cambridge (UK)**Session abstract:**

Zeitgeist, 'the spirit of the age', refers to trends and worldviews as well as to the dominant intellectual, cultural, ethical and political climate of an era. In archaeology, we encounter large scale, broadly contemporaneous phenomena that are shared beyond cultural or regional boundaries. Zeitgeist phenomena cut across trajectories of cultural change or evolutionary developments and can be implemented in a variety of cultural settings.

Differently from, for instance, the spread of agriculture or metallurgy, Zeitgeist phenomena do not have an obvious point of origin and do not appear to be transmitted in a linear way. Yet they are shared across long distances. They cannot be interpreted with the conventional archaeological language of chronological or evolutionary change, the spread of peoples or culture groups, or the diffusion of ideas. Instead, they appear to be expressions of deeply-running ideological shifts - the Zeitgeist of an era.

Typically, we observe such phenomena archaeologically in two domains, as particular aspects of human practice and in the widespread occurrence of particular aesthetic styles. Examples from the sphere of practice include European megalithic architecture in the fourth millennium BC and the practice of building barrows in the Middle Bronze Age. Examples from the realm of 'fashion' or aesthetics are the revival of human representations around 800 to 600 BC and the distribution of early medieval animal style on metalwork. We propose that the concept of Zeitgeist in archaeology may provide a new way of understanding these complex phenomena, distinct from other theoretical models of shared cultural traits. We invite papers that not only describe Zeitgeist phenomena in various periods but also make an attempt at explaining underlying ideas, causes and possible forms of transmission.

**Paper abstracts:****MIND, COSMOS AND THE CIRCLE: THE DITCHED ENCLOSURE AMBIENCE IN IBERIAN RECENT PREHISTORY**

Valera António Carlos, Archaeological Research Group (NIA) of ERA Arqueologia S.A. (Portugal)

During the 4th and 3rd millennia BC, alongside with the megalithic funerary phenomena, we observe the spread of ditched enclosures in Iberia, most of them with a circular and concentric tendency. This paper attempts to establish a relation between this phenomenology and cosmological worldviews and specific cognitive abilities. It will be argued that some of those enclosures played a central role in spatial organization and landscape construction in a cognitive and structural way, generating a shared ambience of being in the world that, in spite of local and regional particularities, can be recognized in an European scale.

**THE SPIRIT OF A NEOLITHIC AGE—SOCIAL AND MATERIAL NETWORKS IN THE CARPATHIAN BASIN LATE NEOLITHIC**

Salisbury Roderick B., State University of New York at Buffalo (USA)

We often impose our ideas on the past, forming "zeitgeists" that reflect how we think the past should have been. People build tells and surround them with ditches, for example, because of warlike spirit. If these practices cease, then the conflict must have ceased as well. But as our very real and present global economic crisis demonstrates, settlement and population nucleation, the imposition and sedimentation of boundaries, and contracting networks are not necessarily caused by war. The Zeitgeist may be restrictions on movement of people, goods or information, and encouraging national pride. One can imagine other crises; floods, drought, disease, ideological subversion, and yes, war. Reactions to these crises may be visible in material culture. In some cases, like the Black Sea Flood, the physical effects of the crisis are also visible. In other cases it may be harder to find direct evidence. By examining the changing networks amongst material and people, we can use Zeitgeist as a point of departure. We cannot simply cut-and-paste Zeitgeist from twentieth-century models of the Western world onto past people.

Rather we must find ways to apply it to archaeological time and data. This paper suggests that we can identify common material manifestations that may reflect Zeitgeist, and from these attempt interpretations that can explain both the shared spirit and underlying processes. For example we can observe the formation of tells, propose that social practices leading to tell formation are guided by Zeitgeist, and suggest social and environmental factors that produce the Spirit of the Late Neolithic.

### **CERAMIC TRADITIONS – A ZEITGEIST OF PRACTICE AND AESTHETICS?**

Kohring Sheila, Dept. of Archaeology, University of Cambridge (UK)

Pottery traditions are a mainstay of archaeological chronologies, categorization and interpretations of social interaction. But, what do they really represent? Pottery technologies are often domestically or locally produced, thus drawing on local production organisation, techniques and styles. This diversity of production loci lends itself to great potential for expression and variability – and this is present in pottery assemblages. But, overshadowing these variabilities, generally held characteristics can predominate and be used to create typologies linking regional geographic areas within specific temporal periods. The Bell Beaker phenomena in 2<sup>nd</sup> millennium BC Europe is an example par excellence of this type of zeitgeist tradition. And yet, within the milieu, Bell Beaker vessels can incorporate local traditions, local styles and techniques and local uses. So, what makes them all Bell Beakers – coherence within the assemblage and context or coherence as an archaeologically constructed ‘tradition’? This paper considers what links traditions, or a sense of zeitgeist, in the midst of variability created at the local level so it still retains a sense of located cohesion. In particular, two perspectives will be explored: aspect of practice – how people make and use things – and aspects of aesthetics – how people represent a certain ideal or standard. These two perspectives will be discussed as possible avenues for the creation and maintenance of widespread temporal traditions such as a Bell Beaker zeitgeist.

### **THEORETICAL ISSUES IN THE STUDY OF REGIONALITY**

Robb John, Dept. of Archaeology, University of Cambridge (UK)

Culture changes, and broad trends characterise specific eras, giving them a recognizable feel, whether “fin de siècle”, “high medieval” or “third millennium BC”. But calling such horizons “zeitgeist” risks reifying them and making them inexplicable. Ethnographic studies show that all characterisations of culture are analytical fictions which are valid at some scales and resolutions and invalid at others; their usefulness must be assessed with respect to a particular inquiry. Using the 4th - 3rd millennia BC in Europe as an example, this paper discusses both the theoretical problems of looking at broad trends in regional culture, and the theoretical problems of not looking at them.

### **THE PEOPLE ARE BACK! HUMAN IMAGES OF THE EARLY IRON AGE IN EUROPE**

Rebay-Salisbury Katharina, University of Leicester (UK) and University of Vienna (Austria)

The comeback of human images after the Late Bronze Age, a period when humans are very rarely depicted, is remarkable. In the Early Iron Age, human images appear in a range of different contexts and media, both in the Mediterranean and north of the Alps. A shared repertoire of images includes scenes of horsemen, warriors, hunting, chariot races, feasting and drinking, dancing and music, weaving and spinning, funerals and processions, as well as ploughing. Despite this common repertoire, the way in which the scenes are carried out is strikingly diverse and clearly draws on local techniques of decoration and image translation.

This paper will discuss the relationship between human representations in Europe north of the Alps and the Mediterranean and address mechanisms of transmission of knowledge, technology and beliefs. What does this ‘Zeitgeist’ of human images tell us about societies and identities?

### **THE CELTIC ZEITGEIST? A STUDY OF CULTURAL CHAOS**

Raimund Karl, University of Vienna (Austria) and University of Bangor – Wales (UK)

The concept of the ‘Zeitgeist’ became prominent through the work of Herder. It was introduced into history through Hegel’s philosophy of history, which assumed that a ‘spirit’, an ‘idea’, was the cause of every historical phenomenon. For Hegel, ‘Zeitgeist’ was the temporary expression of a ‘Volksgeist’, the ‘ethnic spirit’. In archaeology, this ‘historicist’ concept was applied by Kossinna for ethnic interpretations with his settlement archaeological method, which has



long been refuted as fundamentally flawed.

Where the 'Celts' are concerned, the assumption that they also had a 'Volksgeist', expressed in a 'La Tène Zeitgeist' has for the past two decades been seen as one of the major flaws in 'Celticist' thinking. Yet there are, quite clearly, widespread phenomena across western and central Europe during the later 1st millennium BC, not least La Tène (or 'early Celtic') art. Even if not as uniform as previously thought, at least some aspects of material culture are distributed widely across similar, though rarely identical, areas.

Thus, rather than arguing that the concept of 'Zeitgeist' just takes us back to old, refuted concepts about cultural uniformity and 'idealist' causes, this paper will redefine the concept of the 'Zeitgeist'. Rather than seeing it as the cause of archaeological phenomena, 'Zeitgeist' is an appropriate label to describe the effects of mostly random processes in 'small world' networks. These result in widespread, not 'uniform' but clustered distributions of material (and immaterial) culture that make it appear to us as if an underlying 'idea' – a 'Zeitgeist' – was causing them.

### **THE SPIRIT OF THE AGE ON FACES: NEW INTERPRETATIONS OF ANTONINIAN PORTRAIT SCULPTURE**

Świążzkowska Marika, Institute of Prehistory, Adam Mickiewicz University - Poznań (Poland)

Using broad, contextual interpretation, this paper examines the cognitive potential of ideological essences expressed through portrait sculpture. This approach will be exemplified by portrait sculpture of the Roman Antonine dynasty (96-192), a 'Golden Age' of the Roman Empire. It will be argued that portraits of emperors contain elements of propaganda, identity and philosophy - the spirit of the epoch. One can read these elements through the analysis of symbols, artistic metaphors and written sources, including the biographies of the emperors.

### **THE BARBARIAN PATTERN BOOK**

Hakenbeck Susanne, McDonald Institute for Archaeological Research, University of Cambridge (UK)

The end of the Roman Empire brought great social upheavals to central and western Europe. Historical sources inform us that different barbarian tribes waged wars, migrated and eventually set up new kingdoms. Archaeological investigation has mostly been supportive of this model and has attempted to identify the different tribes by the metalwork associated with them, in particular brooches and weapons. However, this focus on the apparent ethnic differences within material culture has ignored the startling phenomenon that much of barbarian burial practice was remarkably similar. From the Carpathian basin to northern France, from England to northern Italy, grave good inventories were variations on a common theme.

Past interpretations of early medieval material culture have mostly adopted a rigid approach to metalwork typology, in which individual objects are related to an abstract clearly definable type that fits into an evolutionary sequence. However, the practice of fitting objects into typologies is complicated because forms and decorations were frequently copied, referenced or reinterpreted. In this paper I will argue therefore, that barbarian craft workers operated with a kind of 'pattern book' from which they drew shapes, motifs and decorations that were relevant to them. With these they communicated sometimes obliquely, sometimes overtly, ideas about identity, status and authority, and their place in the world – the Zeitgeist of their time.

### **CHRISTIANITY IN NORTHERN BRITAIN AS A ZEITGEIST PHENOMENON?**

Goldberg Martin, Dept. of Archaeology, National Museums – Scotland (UK)

Christianisation is one of the dominant narratives of Late Antique/Early Medieval Northern Europe and is normally explained in terms of the diffusion of ideas during an extended period of social and economic disruption and reconfiguration. Christianity stands out as a prescribed set of human practices accompanied by the widespread occurrence of particular aesthetic styles from within the Late Roman Empire. Can the spread of Christianity beyond the boundaries of the former Roman Empire be considered a zeitgeist phenomenon? The ornamentation of the early Christian monuments of Scotland with combinations of the unique Pictish symbols, insular decorative motifs and more widely recognised biblical symbolism raises questions about scales of interaction and participation and how zeitgeist might manifest itself in a particular local context.

**THE PAST IS THE FUTURE – THE “SPIRIT OF THE AGE” IN PRE-CHRISTIAN VIKING AGE SCANDINAVIAN BURIAL RITUAL**

Artelius Tore, The National Heritage Board (Sweden)

One distinctive trait in south Scandinavian pre-Christian Viking Age (750-1050 AD) world-view and religion was the use of a mythological historical past in collective ritual life. In many senses the general purpose of religious ritual in pagan Viking society was to construct a history. In this ideology the cult of the past and ancestors was central. The ideology of Scandinavian pagan Viking Age society would, when the surrounding “European world” changed rapidly in both the political and religious sense, endure for a very long time through the constant use of this “history”. During the conversion period (900-1100 AD), the exposure of a historical past became a vital element in pagan ritual. The burial was one of the arenas where “The Old Way” could be used to strengthen society. Thus, in the pre-Christian Viking world-view, ideas about the past were the core of the “Zeitgeist” (*tidsanda*). In burial and monument architecture, in poetry and style, ideas about the past were used to uphold social stability. In burial tradition, the characteristic shapes of monuments and symbols from ancient periods were copied and the dead were buried in places that by the 9th century had been abandoned for many centuries. In pagan ritual this active use of the past as the “spirit of the time” became most obvious in the actual dealing with the dead that took place in the cremation.

**MONUMENTAL STRUCTURES AND THE SPIRIT OF CHIEFLY ACTIONS**

Wallin Paul, Martinsson-Wallin Helene, Gotland University (Sweden)

The aim of this paper is to discuss changes observed in monumental architecture. As a point of departure we use our previous studies of the ceremonial temple structures (*marae/ahu* concept) in Polynesia. The visible differences which are recorded by archaeological research have generally been explained as temporal expressions. However, our research of different types of *marae/ahu* structures, suggests that this may not be the only and chief explanation to why these structures differ in appearance. Instead we suggest that changes and variability in the architecture also be explained as resulting from the dynamics in the social relations. Here we place importance on competition among chiefs on an individual level as well as collective decisions within the society concerning the variability of the importance placed on different gods. Our discussions of the importance of “place” is founded in Pierre Nora’s reflections on *milieux de mémoire*, which indicate that these structures through their constant changes are living places which played an active part in the society in which they existed.

**ARCHAEOLOGY TODAY**

B

**B001**

**Session title:**

## **ARCHAEOLOGISTS AND CIVIL ENGINEERS. CHALLENGES OF LARGE INFRASTRUCTURE PROJECTS**

**Organiser:** Wait Gerry, Nexus Heritage (UK)

**Co-organiser:** Marciniak Arkadiusz, Mickiewicz Adam University - Poznań (Poland)

**Session abstract:**

Significant increase of large scale infrastructure projects over the last decades triggered dynamic development-led commercial archaeology across Europe. As a result, this sector of archaeological profession is now responsible for conducting a majority of field works and delivery of a vast body of research. Emergence of this kind of archaeological activity in relation to construction projects made co-operation between ! archaeologists and engineers absolutely necessary. This refers to various levels of the project including planning, designing and undertaking of work. As of today, there is a lack of understanding of professional needs between both sectors, which can have significant financial and environmental impacts. Projects can become delayed with ensuing costs a direct consequence from one side, and archaeological remains can be unnecessarily damaged or destroyed from the other. Improved co-operation between the two sectors will reduce the environmental impact of construction engineering projects and improve their efficiency by integrating archaeological considerations into the project management programme and delivery.

The session aims to discuss strategies of deepening and broadening professional understandings between these two professional sectors as well as improving skills to work together more effectively.

As part of this, the session will look at the outcomes of the Archaeology and Civil Engineering Skills project, which EAA is an active partner in, debating efficient means of communicating between professional archaeologists and engineers including methods and content of vocational training.

The session will also debate current models of co-operation between these two sectors pursued in development-led context across Europe. It will seek examples of best practice that illustrate how it is being conducted to meet professional standards in both the archaeological and engineering sectors. In order to achieve this the session's breadth will expand to bring in viewpoints from other, related professional sectors – such as planners and architects – to strengthen our discussion and understanding.



**Paper abstracts:**

### **ACES: TRANSFERRING INNOVATION, DEVELOPING SKILLS**

Wait Gerry, Nexus Heritage (UK), Aitchison Kenneth, Institute for Archaeologists (UK)

With European Commission funding, the Archaeology and Civil Engineering Skills project (ACES) has sought to develop skills-based training for both archaeologists and engineers that will help our two sectors to work more closely together.

Starting from the recognition that lack of shared understanding could lead to financially and environmentally costly impacts on our work, this project has developed training materials on the basis of asking - what do archaeologists wish engineers knew? And vice versa - what do engineers wish archaeologists knew?

The archaeologists and engineers of the ACES team sat down and explored these themes, and we have developed innovative training materials that can deliver skills and knowledge that practitioners, most likely at early stages in their careers, will need to use in both engineering and archaeology. This training extends from helping people to simply understand vocabulary, through processes and procedures and into the legal obligations that all participants in the construction process have.

Delivery of the training is through the online learning system of the Adam Mickiewicz University Poznań which will allow learners to access focussed, vocationally relevant training in any of the four partner languages (English, Norwegian, Turkish and Polish). The project partners are now looking to find opportunities to expand the training material to allow its delivery in further languages with specific support materials for countries beyond the initial partnership.

## **ARCHAEOLOGY AND CONSTRUCTION PROJECTS IN GREECE. THE CASE OF THE ATHENS METROPOLITAN RAILWAY**

Anesti Efstathia, Ministry of Culture of Greece & Attiko Metro S.A. (Greece)

In the past few years in Greece has been observed a remarkable increase of construction projects. This has as a result the parallel growth of archaeological excavations while the New Archaeological Law imposes the conduct of excavations before, but also at the duration of these projects.

Large and extended excavations were taken place at the construction of the International Airport, Egnatia Odos in Northern Greece, Attica Odos in Athens, and in a lot of other great public constructional projects, where the archaeologists and the services of the Ministry of Culture collaborated, mainly, with the civil engineers sometimes in a harmony, and sometimes in a difficult way.

One of the unique characteristics of the Athens Metropolitan Railway is the fact that its construction was actually responsible for the execution of large-scale archaeological excavation works. More specifically, in the framework of the Metro construction, the greatest archaeological excavation in the Athens area was carried out (spanning over an area of 79000m<sup>2</sup>).

In my paper I will first attempt to investigate how the archaeological research expressed through this kind of excavations, and how these construction projects could improve the development and, in a parallel way, protect the cultural heritage.

I will then focus on the case of Athens Metro, discussing my personal experience as an archaeologist, my cooperation with the civil engineers, the pros and the cons, the role of the Ministry of Culture, and many other points which relate the archaeology of Athens with this main mean of transportation.

## **INTEGRATION OF ARCHEOLOGICAL PHASE MODEL INTO MANAGEMENT OF LARGE CONSTRUCTION PROJECT**

Dilsiz Cuneyt, Erbil Project Consulting Engineering Co., Ltd. (Turkey)

Theoretically, archaeological phase model can be distinguished into some major phases that are of project planning, fieldwork, assessment of potential for analysis, analysis and reporting, and dissemination. It must be emphasized that within each phase of the large construction project that takes place in an archaeological area or vice versa, particularly at urban sites, the decision-making cycle should be undertaken based on project management. Archaeological phase model integrated construction management refers to a project management team consisting of a professional consulting archaeologists and construction engineers and other participants who will carry out the tasks of project planning, design, rescue and construction in an integrated manner. Contractual relationships among members of the team are intended to minimize adversarial relationships and contribute to greater response within the management group.

The management of large construction projects at the archaeological sites requires knowledge of modern management as well as an understanding of the archaeological phase model although they have a specific set of objectives and constraints such as a required time frame for completion. The uncertainty may come from many sources and often involves many participants in the project. Since archaeologists and engineers try to minimize its own risk, the conflicts among the parties can be detrimental to the project. While the relevant technology, institutional arrangements or processes will differ, the management of large projects has much in common with the integration of archaeological phase model in similar types of projects. Such a project management is the art of directing and coordinating human and historical material resources throughout the life of the project by using modern management techniques to achieve predetermined objectives of scope, cost, time, quality and participation satisfaction.

## **CASE STUDIES AND SCO'S FROM THE ACES PROJECT**

Nowak Paul, Minasowicz Andrzej, Polish Association of Building Managers (Poland)

## **ACTUAL SITUATION IN COOPERATION BETWEEN ARCHAEOLOGIST AND ARCHEOLOGICAL HERITAGE MANAGENT WITH CIVIL ENGINEER AND DEVELOPERS IN THE CZECH REPUBLIC.**

Ladislav Rytif, Dept. of Archaeology FF ZČU - Plzeň (Czech Republic)

Main aim of this paper is to introduce recent situation in the Czech Republic. In the first part we will show how is archaeological heritage management structured and how is Archaeology regulated.



Then we will focus on Archaeologists themselves, how they understand the legal enactments and how they communicate with competent authority and developers (we will also mention recent amount of construction activity).

And finally we will discuss how effective is cooperation between Archaeology and civil sector and what facilities for system improvement we have.

## **ARCHAEOLOGICAL CHALLENGES IN THE CO-OPERATION WITH LARGE SCALE CONSTRUCTION BUSINESS. EXAMPLES FROM THE IMMERSED TUNNEL PROJECT IN OSLO, NORWAY**

Gundersen Jostein, Norwegian Maritime Museum Oslo (Norway)

During the last few years, the city of Oslo has started the redevelopment of the central waterfront area. A new Opera house has been built, the traffic is soon to be redirected through an immersed tunnel under the central harbour, and several financial institutions have chosen new locations for their headquarters.

But under asphalt, concrete, warehouses and polluted sediments in the harbour, the remains of our past are still hidden and waiting to reveal their secrets.

The immersed tunnel project has given archaeologists challenges beyond all expectations. The co-operation with the construction business has included the surveillance of more than 1000 m<sup>3</sup> of landmasses and underwater sediments every single day, shift work, working the whole year around, in temperatures ranging from + 18 to + 20 degrees centigrade, polluted and toxic masses that demanded the use of gas-masks, and the world's (possible) largest archaeological sieve. Despite this, the adaptation to the construction business' world of methods, HSE regime, ever changing plans, expectations and demands, and even the whole language, was the most challenging experience. In addition, the involvement of archaeologists in a project "normally" completed by the construction business alone, meant teaching our values, methods and ways of thinking to a community mostly engaged in measuring time against money.

The paper will present examples from the co-operation with, and adaptation to, the civil engineering world, as well as solutions and possible success-factors for flexible future co-operation between two fundamentally different businesses.

## **RELATIONSHIP BUILDING WITH THE MINERALS INDUSTRY**

English Jon, Heritage (UK)

Three years ago a cross-sectoral working group (archaeology, minerals industry and planners) was formed to consider mineral extraction and archaeology within England – principally planning and practice with development-led archaeology. This was in response to growing concerns from the minerals industry that costs and 'demands' were escalating and archaeological practice and its application within the planning process appeared to be varying widely across the country.

Three years on and after much constructive dialogue, the working group (the Minerals and Historic Environment Forum) has successfully developed an agreed basis for new practice guidance - this is now published *Mineral Extraction and Archaeology: a Practice Guide* (<http://www.helm.org.uk/upload/pdf/Mineral-Archaeology.pdf?1245105644>) and it has been widely adopted in England by archaeologists, the minerals industry and planners.

This paper examines the lessons learned and their relevance to our relationship with other sectors and other forms of development – particularly civil engineering and large infrastructure projects which are major consumers of the products of the minerals industry.

It will be argued that although planning policy and good practice provide the operational frameworks for development-led archaeology – it is a mutual understanding and acceptance of each others' objectives, brokered by dialogue and diplomacy, which provide the real keys to building better working and sustainable relationships with other sectors.

## **LESSONS FROM TRANSPORTATION PROJECT STUDIES IN THE AMERICAN SOUTHWEST**

Ciolek-Torrello Richard, Wegener Robert, Rein Vanderpot, Graves William, Statistical Research Inc. (USA)

Population growth in the western United States over the last 50 years has been dramatic, with large cities emerging rapidly in what were recently largely rural areas. Highway system improvements are a fundamental aspect of this growth. They provide vital commodities and services not only to these growing urban areas, but also to surrounding suburban and rural communities, while facilitating and making safer movement of people between these areas. Although these improvements are tremendously important in terms of economic development and safety, they

have placed at risk thousands of historic properties. Statistical Research, Inc., (SRI) a private cultural resource management firm, has conducted archaeological investigations for large-scale transportation projects for almost 20 years in the western United States. These projects have been long, multi-year research projects involving the excavation of single large sites and long, linear projects that have included dozens of prehistoric and historical-period sites extending over large, geographically diverse regions administered by numerous government agencies. In this presentation, we discuss the solutions we have developed in response to this dynamic and multifaceted regulatory, financial, and research environment.

## **THE ROAD TO PARTNERSHIP- ARCHAEOLOGY AND ENGINEERING ON THE IRISH NATIONAL ROADS PROGRAMME**

MacDonagh Michael, National Roads Authority (Ireland)

The last 8 years witnessed a spectacular boom in archaeological excavations in Ireland and there have been many lessons learned over the years on the road to partnership between archaeology and engineering.

A level of mutual respect can be said to characterise the relationship between archaeology and engineering on the roads programme today. This replaces a historical mistrust between the two professions, caused in part by a failure to recognise risk and allow adequate time for archaeology before construction but fundamentally caused by a lack of understanding of each others needs. Design systems have been developed to allow for thorough archaeological input into the planning phase and increasing exploration of the *known unknowns* as part of design so as to assess, reduce or eliminate risk. A dedicated space is allocated to archaeological on-site works in advance of construction so as to allow archaeology to be carried out in a safe manner and allowing for the maximum retrieval of sites. This clear physical separation of archaeological work from the construction and removal of risk enables construction contractors to price their fixed price contracts with some confidence and reduces claims and delay costs. Archaeological project management levels have developed to be cognisant of budget and programme from the outset with effective cost estimation techniques developed.

The delivery of archaeological output in the form of publications, conferences, seminars, posters, leaflets etc has done much to gain respect and address Value for Money questions. Problems do arise, mostly in regard to impact. New forms of contract developed for archaeological works this year borrow much from engineering parlance and philosophy, with increased specification, focus on programme and removal of ambiguity the key to developing a level playing field for private sector tenders and quality delivery.

## **ARCHAEOLOGY, INFRASTRUCTURE AND CODES OF PRACTICE**

Desmond Catherine, Dept. of Environment Heritage and Local Government (Ireland)

It is the aim of the National Monuments Service of the Department of Environment, Heritage and local Government (DoEHLG) in the context of sustainable, on-going national economic and social development, to secure the highest possible protection for Ireland's archaeological heritage. This is done through a range of measures and interventions at both policy and operational levels. The National Monuments Service has taken the approach that caring for and managing our heritage can be considerably enhanced through Codes of Practice agreed between the Department and those organisations central to the development of infrastructure. Ireland currently has a number of Codes of Practice with various bodies.

These include:

Eirgrid

Electricity Supply Board (ESB)

Irish Concrete Foundation (ICF)

National Road Authority (NRA)

Rail Procurement Agency (RPA)

The commitment of these bodies to archaeological conservation and to a sustainable development, sensitive to the needs of our rich archaeological heritage is evident through the adoption of the Codes. These Codes successfully formalise the partnerships that are required to manage ongoing development while affording our valuable archaeological heritage the care and protection it deserves.

The aim of these Codes centres on a series of agreed actions that both the relevant body and the DoEHLG have committed to undertake. These Codes of Practice have contributed to the development of a more consistent and coherent approach to the management of archaeology and infrastructure.

**B002**

**Round Table title:**

**ARCHAEOLOGY AND THE GLOBAL CRISIS - MULTIPLE IMPACTS, POSSIBLE SOLUTIONS**

**Organiser:** Schlanger Nathan, INRAP (France)

**Co-organiser:** Aitchison Kenneth, Institute for Archaeologists (UK)

**Round Table abstract:**

Since the summer of 2007, and with increasing gravity since the autumn of 2008, the global economic crisis has affected and will continue to affect our lives for some time to come. The 'crisis' – both at face value and as a syndrome or collective representation - clearly impacts on the practice of archaeology, on its practitioners, and ultimately also on the knowledge we produce and on our understanding of the past.

Broadly speaking, these impacts can be felt in four overlapping areas: (a) Research funding and priorities (b) Professional employment and skills, (c) Conservation and public outreach, and (d) Heritage management, policies and legislation.

Papers are invited to address these impacts in different countries and situations: they should distinguish, as much as possible, the effects attributable to the crisis to those belonging to other long term processes, and also relate the specific incidence of the crisis to pre-existing structures and traditions in the countries or sectors concerned. The overall objective is not (only) to draw a map of desolation, but also, by specifically identifying the direct and indirect effects of the crisis on archaeology, to discuss and identify some 'mitigation' measures and be better positioned, when recovery comes, to better manage, protect and study the archaeological heritage.

(This session is organised under the banners of the 'Archaeological legislation and organisation' committee, the 'Professional associations in archaeology' committee, and the 'ACE- Archaeology in contemporary Europe' Working party).



**Paper abstracts:**

**INTRODUCTION: THE MANY DIMENSIONS OF THE CRISIS**

Schlanger Nathan, INRAP (France); Kenneth Aitchison, Institute for Archaeologists (UK)

Since the summer of 2007, and with increasing gravity since the autumn of 2008, the global economic crisis has affected and will continue to affect our lives for some time to come. The 'crisis' – both at face value and as a syndrome or collective representation - clearly impacts on the practice of archaeology, on its practitioners, and ultimately also on the knowledge we produce and on our understanding of the past.

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**WHAT THE CURRENT CRISIS TELLS US ABOUT DIFFERENT APPROACHES TO THE ARCHAEOLOGICAL HERITAGE?**

Demoule Jean-Paul, University of Paris 1 (France)

Since its creation, the EAA has served as a forum for debates on different conceptions of the organisation of archaeological heritage management in Europe. This has been one of the tasks of the EAA committee "Committee on Archaeological Legislation and Organisation in Europe". Two main conceptions can be distinguished. In one, it is the nation state, as representative of the community of citizen, that takes charge of the protection of the



archaeological heritage, either through a state archaeological service or through dedicated public bodies. In the other conception, the archaeological heritage is considered as a merchandise or a service, where commercial archaeological units are at the service of their clients, the developers, with only the postulate of a 'code of ethics' to ensure quality control in the overall framework of the free market economy. The current economic crisis invites a rethinking of this conception. The state, of which is used to be said that 'it was part of the problem', is now discovered as a possible solution. Without massive state intervention, a large part of the global economic and financial disposition would be in a much worse state than they already are. This observation is also relevant at the much smaller scale of archaeology, where a considerable number of private units have been serenely crippled, or even forced to fold since the onset of the economic crisis, putting in jeopardy archaeological operations, as well as documentation and publications. Here is then an opportunity for the whole archaeological community to take stock of its responsibilities and opportunities



### **UK ARCHAEOLOGY IN ECONOMIC CRISIS**

Aitchison Kenneth, Institute for Archaeologists (UK)

Archaeological practice in the UK is essentially a private sector activity, undertaken by commercial companies on behalf of property developers. One direct consequence of the global economic situation has been a downturn in the UK construction industry. This began in the summer of 2007 and accelerated in autumn 2008 and this decline in activity has directly led to job losses in archaeology. Before this crisis, more people worked in commercial archaeology in the UK than in any other European state; that is very probably still the case, but the effects on current and future archaeological practice in the UK will be reviewed and explored in this paper.

### **THE CRISIS AND CHANGES IN THE CULTURAL HERITAGE LEGISLATION IN HUNGARY: CUL-DE-SAC OR SOLUTION?**

Bánffy Eszter, Archaeological Institute HAS - Budapest (Hungary); Raczky Pál, Archaeological Institute ELTE – Budapest (Hungary)

The paper is about a planned imminent change in the Hungarian legislation concerning the protection of archaeological sites that will severely weaken provision for preventive and rescue archaeological work. The current legal definition of „archaeological site” in Hungary restricts a site to an area with accurate geographic boundaries which is also listed in the National Office of Heritage Protection (KÖH) database. The existing legal requirement is to spend at least 0.9% of a development budget on preventive archaeology. However, places and complexes of archaeological importance which are as yet unknown and/or not yet listed are not treated as sites and therefore fall outside the legislation. We cannot renounce our claims on landscape formations, sites, archaeological phenomena and finds unknown. Due to the recently planned modification the legal definition of a site will be even more restricted. With no obligatory previous survey, investors would only have to care about sites if they are officially listed on a website in authentic database. The planned modification seems to favour investors, who would face less obstacles before starting building work. But in fact it causes damage to them as well: if a site is found after earthworks are begun, they will be stopped by the Heritage Protection, but since the excavation is no more preventive, there is no assured budget for doing it. So both the investment and the excavation will suffer. The authors of the present paper offer a solution that would help with these problems, not only for the period of economic crisis, but also on the long run, that serves both the purposes of the archaeological heritage and investors.

### **ARCHAEOLOGY INSIDE AND BESIDE THE CRISIS. CURRENT STAGE AND IMPACT ASSESSMENT FROM A ROMANIAN PERSPECTIVE**

Borş Corina, Damian Paul, National History Museum of Romania - Bucharest (Romania)

Given the particular development of archaeology in Romania during the last two decades, the paper aims to provide a contemporary insight on the current situation and future perspectives of the relevant profession and discipline in this country. Since the recent history of it was linked up to 3 decades ago to the former “communist” block and yet strongly aiming the European integration immediately after the '90s, and being in the same time one of the largest country in South-East Europe and having a significant development during the last years, Romania represent an interesting study case as well as from an archaeological perspective. Considering its archaeological heritage, but also the modern trends in protecting and promoting it at the European level, but also the challenges brought by the global crisis nowadays, the paper intends to present a documented synthesis which can be useful to the general

discussion in the framework of this session and EAA for identifying a common response in the future benefit of archaeology and archaeologists in Europe. The main issues to be addressed relates to: similarities and differences of Romanian archaeology in comparison with the European one; tradition and modernity in the evolution of the Romanian archaeology during the last two decades; direct impacts of the global crisis and the assessment of medium and long terms effects; specific constrains, opportunities and subsequent trends in Romanian archaeology; future options for better protection and study of the archaeological heritage, both on local and European level.

B

### **ARCHAEOLOGY AND THE CRISIS. THE CASE OF POLAND**

Marciniak Arkadiusz, Adam Michał, Mickiewicz University - Poznań (Poland)

The paper aims to discuss effects of the current global economic situation on Polish archaeology. In particular, it will discuss the scope and amount of fieldwork over the last years and its relations to changes in the amount of construction works as well as job market in different sectors of archaeology. One of the major aims of the paper will be to present impact of the economic crisis along with its consequences upon the otherwise existing structural inefficiency of legal and practical solutions in various domains of Polish archaeology.

### **CRISIS IN DUTCH ARCHAEOLOGY?**

Bakker Corien, Municipality of The Hague (The Netherlands); Van den Dries Monique, Leiden University & Inspectorate for Cultural Heritage (The Netherlands); Waugh Karen, Vestigia BV Archeologie & Cultuurhistorie (The Netherlands)

The economic crisis has also had its impact on archaeology in the Netherlands, although the effects have not, as yet, been felt as strongly here as in many other countries. The first indication has been a visible decline in the number of field projects in the first months of 2009, in particular field evaluations by means of bore hole surveys. The number of evaluations carried out by trial trenching has remained fairly stable, although it does seem the case that the evaluations are of a shorter duration (i.e. a stricter selection is taking place). Moreover, the evaluations are less frequently followed by an excavation. These observations could be an indication that development and building plans are being postponed or cancelled and less archaeological research is required. This would imply that fewer archaeological sites are under threat. But the observations may also signal that there has been a conscious decision in some projects to pay less attention to the archaeological heritage.

In this paper we will provide some observations and factual information on the effect of the crisis on archaeological research and the archaeological community as a whole and a prognosis for further developments.

### **IMPACTS OF THE GLOBAL CRISIS IN THE ARCHAEOLOGICAL SECTOR. THE SPANISH CASE**

Parga Dans Eva, Heritage Laboratory Spanish National Research Council - Santiago de Compostela (Spain)

The purpose of this paper is to analyze the impacts of the global crisis in the Spanish Archaeological Sector as a part of an initiative that aims to analyze and systematize information about this sector. So far, we do not have quantitative data to identify the consequences of the crisis but we have designed some activities that are developing to measure these effects and that we will present in this paper.

This study is carried out with the intention of contributing towards increasing the knowledge of this sector, by carrying out an empirical analysis promoting discussion about the actual situation of the archaeology (in Spain) and mitigate the effects of the crisis. We are working on a real problem, that is the description of the sector and the impacts of the global crisis connected to the need to protect and manage archaeological heritage.

### **THE COMPLICATED SITUATION IN GERMANY**

Krause Dirk, Landesamt für Denkmalpflege Stuttgart (Germany)

The effects of the global economic crisis have been varied across Germany. With each individual Land responsible for setting the legislative structures within which archaeology operates and taking different approaches to economic stimulus, archaeology is in a very complicated situation across Germany.

## **ARCHAEOLOGY AND THE ECONOMIC CRISIS IN THE UNITED STATES**

Perrelli Douglas J., Biehl Peter F., Dept. of Anthropology, State University of New York at Buffalo (USA)

Archaeology in the United States (US) is typically performed in academic and cultural resources management (CRM) settings - arenas that are sometimes at odds with one another. Both academic and applied archaeological practice is changing in the face of the global economic crisis. Effects include job loss resulting from fewer development projects on the one hand, and cuts by academic departments on the other. Universities are at the center of such change, as they tend to operate in both spheres, preparing some students for technical careers in CRM and others for academic positions. Universities that support research that uses the data generated by CRM projects make great contributions local and regional archaeological knowledge in the US.

Crisis effects and responses have been varied across the diverse regions of the US but several themes are emerging. All are viewed through the lens of economic stimulus, something that US archaeologists have reaped little benefit from as yet. One potential effect is simply to do less archaeology. Academic institutions are shrinking and the regulatory hurdles that have created the need for CRM archaeology in the US could be viewed as stifling economic growth. Many agencies and institutions are responding by streamlining the management of projects, to perform more efficiently, but also to spend less time and money on projects that yield no archaeological data of value. There is a growing fear among archaeologists that the need to move projects quickly through a complex regulatory framework could result in policy and legislative changes.

## **ARCHAEOLOGY AND THE CRISIS IN RUSSIA: GLOBAL TRENDS AND SPECIFIC FEATURES**

Makarov Nikolaj, Institute of Archaeology, Russian Academy of Sciences (Russia)

Large-scale rescue excavations were one of the important factors of the development of archaeology in Russia in the recent decade. What we see now in Russia is that the crisis creates a new risk of the organizing of archaeological heritage management and rescue excavations as a field of commercial competition, with the domination of economical factors over scientific outcome. On the over hand, the crisis has caused serious danger to archaeologists, employed in the rescue projects, especially in the private firms. This situation needs special solutions and governmental regulation.

## **OUTLOOKS FOR AFRICA**

Bocoum Hamady, Director of Heritage (Senegal)



**B003**

**Round Table title:**

**CONTINUITY AND DISCONTINUITY IN INTERNATIONAL COOPERATION IN THE FRAME  
WORK OF RESCUE ARCHAEOLOGY-SOME RECENT EUROPEAN EXPERIENCES**

**Organiser:** Artursson Magnus, Riksantikvarieämbetet UV Syd (Sweden)

**Co-organiser:** Mats Anglert (Sweden)

**Round Table abstract:**

The inherent international character of archaeology is rarely reflected in more extensive cooperation between institutions involved in rescue archaeology. In Europe, this is mostly due to a lack of resources and funding earmarked for cooperation and research based on international contacts. The cooperation and research projects existing today is mostly based on personal initiative and contacts, and the lack of an institutionalized European infra structure, where the aims and goals of international cooperation in the frame work of rescue archaeology could be framed and administered, is a serious negative factor. In combination with an increased national and international competition based on varying national and regional legislation, international cooperation is not a prioritized activity.

Despite these poor conditions, there are some recent examples of international cooperation in the frame work of rescue archaeology, though the majority have also been based on cooperation and joint ventures with other institutions, like museums and universities. An illustrative example is the EOEC-project (Emergence of European Communities) concerning the formation of Bronze Age polities of different size and complexity, where the results from rescue archaeology have been combined with specially designed research surveys and excavations. The project was directed by the Department of Archaeology at Göteborg University, Sweden, and to a large part based on funding from the European Union. As a contrast, the project "Between Two Seas", concerning a comparative study of long time change in Southern Scandinavia and Northern Italy, will be discussed. This project was funded by the National Heritage Board, Excavation Department in Lund, Sweden, and the Soprintendenza per i beni archeologici in Trentino, Italy.

Based on these two examples, the aim of the session is to discuss future conditions for international cooperation in more general terms, where rescue archaeology could contribute to the research process concerning more wide issues with a pan-European perspective.

**LIST OF PARTICIPANTS**

Kristiansen Kristian, Göteborg University (Sweden)

Karsten Per, Museum of History, University of Lund (Sweden)

Larsson Stefan, National Heritage Board (Sweden)

Nicolis Franco, Soprintendenza per i Beni librari archivistici e archeologici della Provincia Autonoma di Trento (Italy)

Schlanger Nathan, INRAP (France)

Douglas Diane, Statistical Research Inc. (USA)

B004

Round Table title:

**DOWN FROM THE IVORY TOWER: ARCHAEOLOGY BEYOND UNIVERSITY****Organiser:** Kador Thomas, University College Dublin (Ireland)**Co-organiser:** Henson Don, Council for British Archaeology (UK)**Round Table abstract:**

Archaeology is often perceived as a discipline of experts utilising sophisticated methods to establish 'facts' about the past. Although most would accept that public engagement forms an important part of modern archaeology, this tends to take the form of briefing the public about discoveries made by specialist archaeologists. In contrast, enabling members of the community to create their own understandings of the past, and do archaeology for themselves, transforms our role from expert archaeologists providing all the answers, to facilitator, aiding others in finding their own questions for exploring the past more fully.

The opportunity to create their own understandings of the past can be extremely empowering for individuals and communities outside the academic field. Engaging positively with communities in facilitating their own production of archaeological narratives may not only restore a sense of ownership but also help address other important issues such as social exclusion, educational disadvantage and diversity. Inviting participation in archaeology can widen the research base and the range of interpretive possibilities to the benefit of the academic perspective and involving broader sections of the community in archaeological interpretation will undoubtedly greatly enhance the relevance of archaeology.

In this session we would like to hear people's accounts and/or case studies of projects that have involved communities and the wider public in archaeological research. We are not only looking for success stories but genuinely wish to learn from each other's experiences, both positive and negative, with a view of building a strong field of public and community archaeology.

**Paper abstracts:****TEAR DOWN THE TOWERS AND THE WALLS**

Carver Geoff, State University of New York at Buffalo (USA)

The title of this session seems to encompass what was probably an unintended paradox. Since most archaeology today – and historically – has not been done either in the university or within what would normally be considered “academic” contexts (archaeology has traditionally been done by people like Pitt-Rivers or Schliemann [who could afford to run their own excavations], state services, or more recently by private companies), haven't we have always been “beyond” the university anyway?

And maybe this paradox explains the perspective taken on dealing with the public, because at least those of us who work for state services and private excavation companies deal with the public (in the form of developers complaining about delays and/or cost overruns, individuals complaining about inconveniences, various interest groups, individuals with any number of questions and/or fascinating narratives to relate regarding something they saw about dinosaurs on TV once, etc.) all the time.

In a lot of cases, like Pitt-Rivers or Schliemann, we even employ members of the public to do our excavating. The presentation draws on experience working with untrained members of the public on excavations in Germany, and what this means for concepts of professionalism, and for the application of such practices as reflexive methods.

**COMMUNITY ARCHAEOLOGY, ACADEMISM AND HUMANITY**

Nikolova Lolita, The Art Institute of Salt Lake City - Salt Lake City, Utah (USA)

The development of the archaeology of the 21<sup>st</sup> century is a mission not only of continuing integration of archaeology with the all other humanistic academic disciplines and also with the people's everydayness as one of the strongest means of enculturation. However, the profession of archaeologists (as field and lab specialists, researchers or teachers) has some peculiarities that create opportunities for hierarchical pressure over the community of archaeologists, and it is our common responsibility continually to re-humanize archaeology, especially in cases in which the power erodes its core principals.



We may need to think about at least two equally important and interrelated meanings of community archaeology: first – the community of archaeologists, and second – public archaeology. Archaeology as a discipline can develop the most successfully in the 21<sup>st</sup> century not by building hierarchical visible and invisible coalitions with visible and invisible social practices and mechanism of conflicting people, institutions and individuals, but by building multiscale community archaeology with embedded humanity and academism at any level. A primary role in this mission has the non-for-profit organizations, which will be in the focus of our communication.

B

### **GREAT GODDESS FROM ÇATALHÖYÜK EMPOWERS MODERN WOMEN: ARCHAEOLOGY AND SPIRITUALITY**

Filipowicz Patrycja, Mickiewicz Adam University of Poznań (Poland)

The Neolithic site of Çatalhöyük, Turkey is very important and spectacular site.

I would argue that Çatalhöyük is not only one particular site, but there are as many “sites” as seen by different groups of people. The core of Çatalhöyük Research Project methodology is multivocality. Project’s director Ian Hodder encourages many different groups for dialogue and interpretation of the site.

One very specific group is the Goddess worshippers, consisting mostly of women, that interpret the Past through the lenses of spirituality. They claim that Çatalhöyük was sort of Neolithic capital of the cult of Great Goddess. Therefore the site is perceived as a sacred place, filled with energy of the Goddess. Women organize pilgrimages to Çatalhöyük, perform rituals and prayers on the tell, but also discuss their vision of site prehistory with the scholars and ask their own questions which archaeologists do not ignore.

### **SUPPORTING COMMUNITY ARCHAEOLOGY IN THE UNITED KINGDOM**

Thomas Suzie, Council for British Archaeology (UK)

Since January 2009, the Secretariat of the Council for British Archaeology has included a new position of Community Archaeology Support Officer. This role has a specific remit to act as an advocate for the voluntary sector within archaeology in the UK, including delivering the imminent redesign of the award-winning Community Archaeology Forum ([www.britarch.ac.uk/caf](http://www.britarch.ac.uk/caf)) based on feedback from both users and non-users, and the conducting of a nationwide research project assessing the nature, scale and needs of community archaeology. With the research phase of the project recently completed, the discussant is able to talk about her findings and conclusions, with an awareness of the types of projects currently taking place in the UK, including both ‘top-down’ and ‘bottom-up’ models.

Through researching public and community archaeologies, it becomes apparent that members of the public can become involved with their local heritage in diverse and, sometimes, surprising ways. Within this broad range of case studies, both positive and negative experiences can be identified. Finally, observations and recommendations can be made about how national educational organisations within Europe, such as the CBA, can better support and celebrate this exciting and growing range of archaeological activities.

### **PROFESSIONAL ENGAGEMENT WITH COMMUNITY ARCHAEOLOGY – STOPGAP OR TRANSFORMATION?**

Aitchison Kenneth, Institute for Archaeologists (UK)

The current and ongoing economic downturn has seriously affected professional archaeology in many countries, not least the United Kingdom where the reduction in construction work has directly led to significant numbers of archaeological job losses.

However, this has coincided with the re-emergence of the community archaeology strand of our discipline. Once very much seen by professionals as a distraction, even an irrelevance, community groups now able to attract funding for archaeological projects (particularly from the Heritage Lottery Fund) if their proposals can be seen to be delivering community benefits, including training. This has led to a surge of interest from professionals, seeking to diversify their income streams as the developer-mones dry up.

This paper will explore whether this phenomenon is reflecting a real change in the way that community archaeology is treated by professional archaeologists, or whether it is a short-term measure that will soon be forgotten when the economic recovery comes.

## **DISSONANCE, RELATIONAL AESTHETICS AND SOME LESSONS FROM INNER-CITY DUBLIN**

Russell Ian, UCD Humanities Institute of Ireland, University College - Dublin (Ireland)

Heritage spaces are often assumed to be 'from the past' or 'just about the past'. Heritage is assumed to be a 'stoppage' of time. The choice to create 'heritage' is, however, a contemporary decision requiring collaboration and social partnership. Through a recalibration of temporal expectations of 'heritages' or 'heritage spaces', the sentiments of heritage can be approached as highly contested, fluid and mobile desires to create discursive spaces for the interrogation and negotiation of social life. Approaching heritage as a contemporary, performative choice within social spaces, this paper will illustrate the value of iterative conversations, relational aesthetics and collaborative arts in the opening of heritage spaces to collaborative curation. It will explore synergies between curatorial practices in both heritage and the arts and reflect on my growing body of curatorial work in contemporary art undertaken since a departure from academic archaeological theory. A case study will be made of the collaborative arts project 'Placing Voices – Voicing Places: Dublin's Contemporary Past' ([www.projecthumedia.com/ucdcp.html](http://www.projecthumedia.com/ucdcp.html)). Engaging issues of mobility, dislocation, and change inherent to the expressions of self and community within contemporary life, the project explored the fluidity of heritage spaces and the ubiquitous presence of 'heritages' in the negotiation of social spaces in Inner-City Dublin. More information on my academic and curatorial work can be found at: [www.iarchitectures.com](http://www.iarchitectures.com).

B

**B005**

**Round Table title:**

## **GENDER AND ARCHAEOLOGY IN EUROPE**

**Organiser:** Dommasnes Liv Helga, University of Bergen (Norway)

**Round Table abstract:**

The round table is the first action of the new EAA working party, Gender and Archaeology in Europe. Through this action we want to introduce the working party, and to recruit new members.

The general goals of the working party are to create meeting places for research on gender and gender relations in the past, and also to provide the basis for a permanent European organisation aimed at improving the professional situation for women working in archaeology. Learning about the situation in different countries is fundamental for the development of new strategies to achieve these goals.

In order to give an overview of the gender situation in archaeological research and practice in different European countries, the round table will address the issue of gender and archaeology in Europe from the standpoints of individual archaeologists working from within different European academic traditions.

We have invited seven archaeologists from different regions and asked them to address briefly three seemingly simple general questions:

- what is the status of gender archaeology in your country?
- what is the professional situation of women archaeologists?
- how can we disseminate the results of gender archaeology to a wider public?

They are also invited to address one more related issue of their own choice.

After the presentations we invite all attendants to join in a discussion on the above mentioned issues, to help develop more precise strategies for future actions of the working party.



**Paper abstracts:**

### **GENDER & ARCHAEOLOGY IN EUROPE**

Lidström Holmberg Cecilia, Gatti Anna, Dept. of Archaeology and Ancient History, University of Uppsala (Sweden)

In Sweden, there is a wide variety of research on gender in archaeology. The professional situation of women in Swedish archaeology is good and improving. The last five years have for instance seen a gender balance of academic exams at the PhD level. Despite this, and despite the complex scholarship on gender and feminist theory, gender archaeology is a sub-discipline located in the margins of mainstream archaeological discourse. Notably, women archaeologists do most gender archaeology. We want to discuss this marginalization, its causes, tensions and effects. We further want to suggest some routes for the future. A key to the marginalization of gender archaeology is the political embeddedness of gender in the wider society. There is the idea that gender has command over 'objective' research. Simply put, gender is a politically sensitive field. This causes diverging lines also within gender archaeology. A central concern for many Swedish gender archaeologists is to rethink body, sex and gender and the taken-for-granted, categories and dichotomies that underpin the archaeological practice. From this perspective, gender archaeology is a method to improve archaeology as scientific practice. Currently there is, however, a more or less explicit move away from critical gender perspectives to the 'doing' of 'scientific' archaeology. Noted is also a shift from gender to other concepts, with social identity being the top candidate. Today conferences on social identity attract more people than conferences on gender. One reason for this is that identity is less burdened by feminist 'political' perspectives.

### **THE ARCHAEOLOGY OF GENDER IN SPAIN**

Alarcon Eva, University of Granada (Spain)

The inclusion of gender and women studies in the archaeological research of Spain has consolidate an important and valuable literature during the last years. This theoretical and methodological approach has been developed from different perspectives and thematic that has allowed new issues such as women's work and technology, representation of women in the past and in the present or women's bodies. Those topics have been analysed from



Prehistory to medieval times. Regarding this, one of the main research subjects in our country is the concept of maintenance activities that has allowed a new perception of past societies through an innovative reading of the archaeological record.

### **SITUATION OF GENDER ARCHAEOLOGY IN GERMANY**

Koch Julia, University of Leipzig (Germany)

The discussion about gender archaeology started in the beginning of the 1990th is mainly influenced by the English and Scandinavian publications. The second basis was the discussions about matriarchy in the past within the second women's movement in Germany. So during the last twenty years the study about women, children and gender situations in the past becomes more space within the (prehistory) archaeology. But for all that gender studies are accepted only as one part of social archaeology and not as general theme in all aspects of past reconstruction. Although there would be a wider interested public especially women the museums and heritage departments involve gender themes primarily in special exhibitions and events. So there would be a greater potential to translate the results of gender research in museums and more popular science publications.

### **THE NORWEGIAN CASE. GENDER ARCHAEOLOGY AT A MATURE STAGE?**

Skogstrand Lisbeth, Museum of Cultural History University of Oslo (Norway)

Norway was one of the first countries to introduce studies in women and gender and today gender studies are established in most fields of social science as well as in archaeology. Many Norwegian archaeological studies have gender, if not as their main perspective, then at least as an important variable or aspect of interpretation. To a certain degree gender has become a part of mainstream Norwegian archaeology. It is not considered particularly controversial and maybe it has become even too conventional?

The number of female archaeologists in Norway has increased steadily over the last decades. Today women make up the majority of undergraduates and PhD-students as well as employed graduate archaeologists in general. Nevertheless there are about twice as many male professors as female professors in Norwegian archaeology. Thus it is still important to focus on female career paths and challenge male power structures as well as androcentric studies. But if we want to disseminate gender archaeology to a wider public it has to be considered relevant for archaeology in general. It is necessary to communicate that gender archaeology is a lot more than finding women in prehistory. Gender archaeology should also study men and masculinities as significant gendered social structures and we should continue and reinforce the feminist tradition of questioning established truths.

### **GENDER ARCHAEOLOGY IN CONTEMPORARY RUSSIA**

Berseneva Natalia, Institute of History and Archaeology, Russian Academy of Sciences, Ural Branch - Chelyabinsk (Russia)

The Russian archaeology has some distinctive traits. Firstly, over a long period of time, the Soviet archaeology has been hidden behind the "iron curtain". Secondly, by virtue of the great poor populated territory, the Russian archaeology remains mainly focused on the field excavations and exclusively empirical works. And finally, the Marxist ideology dictated a preferred studying of the social inequality and the state origin. The Russian archaeological traditions are still based on the Soviet heritage. Unfortunately, such important sections of the social archaeology as gender and childhood have been little studied.

In contrast to Western archaeology, gender studies are still not widely considered in Russian archaeology. The contribution children made to past societies has largely been ignored. The archaeologists, who work on the gender problems, can be count in this abstract! I can call only two scientists, whose works were directly focused on the gender issue – Natalia Polos'mak and Elena Kupriyanova. Polos'mak has studied the social status of ancient nomadic women in the Early Iron Age of the Altay. Kupriyanova has recently published the book concerning the Bronze Age women of the Trans-Urals. Unfortunately that is all.

In contemporary Russia the gender archaeology has the great area for investigations. The archaeological material accumulated by Russian archaeologists is extremely abundant. Nevertheless the great number of problems is still left unexplored, and gender aspects require the detailed study in such vast region as Russia.

## **GENDER ISSUES IN ROMANIAN ARCHEOLOGY**

Palincaş Nona, Institute of Archaeology, Romanian Academy - Bucharest (Romania)

Based on the three main questions of interest for this round table, this presentation will comment on the following aspects:

The late beginnings of gender archaeology; its present peripheral position in the Romanian archaeology; its lack of contact with gender studies carried out in other research fields in Romania; effects of academic policies on the development of gender archaeology.

The positions women archaeologists presently occupy (in terms of number, career – lower and senior positions –, and power - head of departments or institutions - in the field), and the general tendency of evolution. Aspects of gender discrimination in the professional sphere, and the way women and men archaeologists perceive them.

The first – albeit modest - attempts of dissemination of the results of gender archaeology to non-specialists turned out to be successful. What can be done in the future?

Some aspects of the impact of archaeology as a profession on the personal lives of women and men; the relevance of gender studies in this respect.

My comments will be based on archaeological literature, personal experience and approx. 100 answers of women and men Romanian archaeologists to a questionnaire I devised in preparation of this presentation.

## **WOMEN FAILING ARCHAEOLOGY FAILING WOMEN?**

Pope Rachel, Teather Anne, British Women Archaeologists (UK)

Gender archaeology in Britain is largely practiced by female academics, is marginalised and still fighting mainstream structuralist interpretation. We see this as having a fundamental link to the gender politics of the discipline, namely a lack of women practitioners, itself the result of a peculiar historical trajectory.

Women were very active participants in British archaeology during the inter-war period and throughout the 1940s. During the 1950s, however, they were largely excluded during a societal domestication drive. This was also the era of professionalisation, leaving the growth of the discipline largely in the hands of male archaeologists during the 1960s and 1970s. The legacy today is that only 13% of our professors are women, despite the fact that the majority of our students are female.

Surveys by the IfA (Institute for Archaeologists) and the BWA (British Women Archaeologists) find many problems with the professional situation of women archaeologists. Women are found to be under-represented, under-promoted and under-paid compared with their male peers, and are leaving the profession in their 30s. Major concerns from women respondents include: the 'invisibility' of senior role models and a lack of mentoring; slow employment and promotion coupled with fast redundancy; and discriminatory comments (on the increase since the 1990s). A major concern is a perceived inability to have children and sustain a career in archaeology.

We argue that the only way to disseminate gender archaeology to a wider public is to urgently improve the working conditions for women in archaeology. Our aim is to challenge a maladjusted employment framework by: 1) educating managers regarding the female experience; and 2) campaigning nationally for equal parenting legislation.

B006

Round Table title:

**PROFESSIONALISM IN ARCHAEOLOGY****Organiser:** Aitchison Kenneth, Institute for Archaeologists (UK)**Co-organiser:** Ermischer Gerhard, Archäologische Spessartprojekt (Germany)**Round Table abstract:**

The EAA Committee on Professional Associations in Archaeology (CPAA) will stage a round table discussion exploring the nature of professionalism in European archaeology, looking at what it means to be a professional, in terms of qualifications, professional judgement, ethical codes and individual and collective responsibility.

It is a stated intention of the EAA that “professional and ethical values can be used to strengthen national laws and transcend the values of the marketplace” and this session will seek to help the CPAA to advise the Association on how this can be done.

The organisations represented on the Committee recently collaborated in the most extensive data gathering and analysis exercise ever undertaken on the European archaeological labour market. The *Discovering the Archaeologists of Europe* project gathered information concerning over 16,000 professional archaeologists working in twelve European states, approximately 70% of the archaeologists working within the European Union.

Papers will be presented that review the success of the *Discovering the Archaeologists of Europe* project and propose plans for a potentially expanded successor project.

Papers will also be presented that explore the nature of professional archaeology today and the nature of that professionalism that discuss the strengths, successes and challenges facing professional associations at regional, national and continental levels in Europe and beyond, and the roles that they will play in the future of European archaeology.

Following the round table, the Committee will conduct its business meeting and elect new officers.

**Paper abstracts:****WHERE TO DISCOVER NEXT?**

Ermischer Gerhard, Archäologische Spessartprojekt (Germany); Aitchison Kenneth, Institute for Archaeologists (UK)

The germ of the idea that was to become *Discovering the Archaeologists of Europe*, also known as DISCO archaeologists, was planted at an inter-conference meeting of the EAA Committee on Professional Associations in Archaeology in Bangor, Wales in April 2003. Peter Hinton had already put together a discussion paper called “*Discovering the Archaeologists of Europe – an EU funded project*”, and the four countries represented at that meeting – UK, Germany, Greece and the Netherlands – agreed to move forward with developing a project. Early concerns focussed on the danger of the partnership becoming too big to be manageable – but eventually, the DISCO project obtained funding from the European Commission and produced information about archaeology and archaeologists in twelve countries.

The twelve countries already involved are keen to repeat the exercise. The UK has been gathering this data on a five-year cycle since 1997-98, and the value of generating time-series datasets is enormous, as change in practice can be mapped out through the statistics.

This paper will seek to generate discussion about what a follow on project could achieve – should it be limited to the twelve participants in 2007-08, or should it expand – and if so, by how much. To the 27 member states of the EU? To the 47 of the Council of Europe? Should it limit itself to Europe?

**STUDENT LABOUR IN SLOVENE PROFESSIONAL ARCHAEOLOGY**

Pintarič Vesna, University of Primorska (Slovenia)

Through participation in the Leonardo Da Vinci funded *Discovering the Archaeologists of Europe* project Slovenia has, for the first time, compiled relevant information about professional archaeologists in Slovenia. What came to light was also the role of students (archaeology and other courses) in professional archaeology in Slovenia,



stemming from a unique system of student labour brokerage services (študentski servis). A survey conducted among the student population will help shed more light on their role in professional archaeology, as also, how this role affects their studies and entry into professional archaeology.

## **PROFESSIONALISM IN CONTEMPORARY ROMANIAN ARCHAEOLOGY. OPPORTUNITIES AND DISADVANTAGES**

Borș Corina, Damian Paul, National History Museum of Romania (Romania)

corina.bors73@gmail.com Considering that the “Discovering of Archaeologists of Europe” project didn’t include Romania and the situation of Romanian archaeology, as well as the general issues to be addressed in the framework of round table entitled “Professionalism in Archaeology” at EAA 2009, the paper will provide a documented insight on the contemporary situation of Romanian archaeology. Which is still the legacy of the recent past in terms of professional organization and academic education, which are the European influences emerging in this domain after Romania became a EU member in 2007 and a series of related question will be given a brief answer throughout this contribution. The main aims of this paper are to find out more details about good practice examples in European archaeological profession, but also to promote a better dialogue and cooperation among archaeologists across Europe, including throughout a possible participation to a potentially expanded successor of the “Discovering of Archaeologists of Europe” project.

## **THE IMPACT OF THE ECONOMIC BOOM/BUST CYCLE ON IRISH ARCHAEOLOGY**

Gowen Margaret, Margaret Gowen & Co. Ltd. (Ireland)

Using the results of two surveys of the Irish profession, undertaken in 2002 (survey undertaken by the Institute of Archeologist of Ireland, funded by the Heritage Council) and in 2007 (as part of the *Discovering the Archaeologists of Europe* project), this paper will focus on the impact of very rapid economic development, and its very recent collapse, on the profession of archaeology in Ireland.

The paper will refer to the legislative and state heritage management framework within which the rapid growth of commercial archaeology, in particular, occurred. It will illustrate the enormity of the task, largely successfully, undertaken to address the impact of intense infrastructure and commercial development pressure in Ireland, especially since 2000.

The rapid development of the profession gave rise to significant adjustments in professional practice and its management. In the first instance the profession adjusted into a variety of identifiable sectors (university/research, state heritage management and commercial sector). One of the most regrettable impacts was a marked and significant deterioration in integrating activity across the profession, seen most markedly in a limited focus on dissemination and a poor publication record.

As a consequence, foresight study (*Archaeology 2020*) and both formal and informal intra-professional reviews, in which the Institute of Archaeologists of Ireland participated actively, were conducted to examine and provide corrective strategies for the management of issues identified in the context of rapid professional growth.

Rapid downturn in the Irish economy now presents a range of new and very significant challenges to the profession. These will be identified for contribution to the discussion session.

## **FROM FIGUREHEAD TO THOSE WHO DO THE REAL WORK**

Hinton Peter, Wait Gerry, Institute for Archaeologists (UK)

Peter Hinton (Chief Executive) and Gerry wait (Chair) of the UK’s Institute for Archaeologists will speak on the Institute’s role in developing professionalism in the UK heritage management sector, on the role of the professional association in ensuring quality and the provision of public benefits, on the nature and consequences of market failure, and on work towards getting UK archaeology through the financial crisis with a discussion of changes in the market as a consequence of the global economic turmoil.

**HERITAGE**



C001

Session title:

## **ARCHAEOLOGY AND HERITAGE FOR WHOM? IDENTITY, DIVERSITY, PEDAGOGY AND INTERPRETATION IN THE PRESENTATION OF ARCHAEOLOGICAL HERITAGE**

**Organiser:** Sabatini Serena, Dept. of Historical Studies, University of Göteborg (Sweden)

**Co-organiser:** Bergerbrant Sophie, Dept. of Classics, Stockholm University (Sweden)

**Session abstract:**

The recently approved Convention on the value of Cultural Heritage for Society (Faro, Portugal 2005) states (art. 1d) the active role of cultural heritage “in the construction of a peaceful and democratic society, and in the process of sustainable development and the promotion of cultural diversity”.

At the core of this session proposal there is the idea that considering the past as a place of trans-cultural interactions and diversity of expressions positively affects not only our understanding of the past, but also our capacity to build a culturally sustainable present. The archaeological heritage is rarely presented as the evidence of cultural diversity and intercultural dialogues.

We believe that in today multicultural and trans-national society, archaeology has a lot to contribute.

In a present of extreme mobility of people and things large debates take place on cultural identity and belonging. Not to highlight the above mentioned aspects of the archaeological heritage risk creating a large gap between the latter and the public and a consequent loss of visibility and value of archaeology in the eyes of the people.

The session aims at discussing these issues and bringing forward working proposals for the future.

We welcome papers which discuss the issues under different points of view or also intent to examine international and European legal instruments for the promotion and preservation of the archaeological heritage.



**Paper abstracts:**

### **ARCHAEOLOGY BY WOMEN, BUT NOT FOR WOMEN: THE UNCONNECTED LIVES OF FEMINISM AND ARCHAEOLOGY IN GREECE**

Kokkinidou Dimitra, Dept. of Classics, Universidad Autónoma de Madrid (Spain)

Feminism has had a constructive impact on archaeology in a variety of ways in many international contexts. The engendering of the discipline has challenged conventional wisdom claims to “truth”, “objectivity”, “respectability”, and the separation of scientific practice from theory, resulting in new research avenues and more professional opportunities for women. The concept of a homogenised (androcentric) material world has been displaced by a concern with equality and pluralism to reflect diversity of women’s lives and gender power dynamics in the past and the present.

Undoubtedly, the above broad directions acquire different validity across individual countries. In this paper I present the case study of Greek archaeology, which features a striking contrast: on the one hand, women make up the overwhelming majority of workers in this sector, and occupy most high-ranking positions in both academia and the Archaeological Service; on the other hand, feminist or, at least, gender-orientated work has so far been limited to isolated exceptions. I attempt to explore the reasons for the unwillingness of local female scholars to move beyond dominant paradigms; also, I offer some suggestions that may contribute to the development of feminist discourse in Greek archaeology.

### **COLLECTING OBJECTS AND SEARCHING FOR IDENTITIES. CULTURAL INTERACTIONS IN PRIVATE MUSEUMS OF GREECE.**

Polyzoudi Archontia, University of Cambridge (UK) & Ministry of Culture (Greece)

The value of museums and heritage sites as zones of interaction between various professional communities and the general public has sharply come into focus over the past decades. Questions like of how to explain and understand the archaeological material remains of the past, how to interpret, write and present them to the public make archaeologists to produce different rhetorical strategies which have implications regarding power, authority and relationships with the audiences.

The creation of knowledge of the past in museums is an ideological process. What appears to be simply an antiquarian enquiry is conditioned by social, political and ideological factors that vary from country to country. Museums presenting private collections in Greece are much involved in this process due to the role they play in collecting information, ideas and artefacts about the past and displaying material remains through their exhibitions.

What are the strategies can make the museums as places of cultural interactions? To what extend is the public, communities and locals, engaged to the creation of museum narratives and the construction of identities? What is the role of the collector to the interpretation process?

In my paper I will first attempt to investigate how cultural diversities and identities are expressed through private museum policies and to explore the interpretive tools of making histories and alternative identities in museum exhibitions. I will then focus on discussing management practices as produced in the decision-making process by trying to reveal the potential of private collections in empowering the cultural diversity and the intercultural dialogue.

I will use case-studies from Northern Greece, private museums and collections.

### **A POSTMODERN FATE OF AN ANCIENT STONE CIRCLES IN POMERANIA, POLAND**

Pawleła Michał, Adam Mickiewicz University - Poznań (Poland)

The aim of this paper is to present and analyze social significance of ancient monuments in postmodern times for different groups of people in Poland. The large stone circles, dated back to the Roman Age, were discovered in Węsiory, Odry, Leśno and Grzybница. The Stone Circles are identified with a Wielbark Culture population and are believed to be the locations of meetings of Scandinavian tings - assemblies or courts. The single graves inside the circles are probably of people sacrificed and buried there. Nowadays they function as a nature and archaeological reserves called The Stone Circles.

The Stone Circles in Pomerania attract a lot of interest among contemporaries. In this paper I seek to analyze modern reception of these monuments. It is argued that they constitute an arena of coexistence and intersection of different discourses or interests and archeological interpretations should be seen as only one part of this story. Since these prehistoric monuments represent an enormous time depth they serve as foci for individual and collective identities and can also be linked with such diverse factors as identity, ideology, nostalgia, tourism, adventure or magical powers of nature. Consequently, they have been variously interpreted, contested and appropriated by different interest groups, e.g. archaeologists, New Agers, neopagans, archaeoastronomers, tourists, local inhabitants and/or local government.

Although these alternative discourses denote the heterotopic spaces where meaning is created, contested and negotiated by variety of agencies, archaeologists do not normally show a lot of interest in these interpretations of prehistoric monuments in question and usually dismiss them as fringe or eccentric. Thus, in order to overcome such a situation the concept of dialogism as defined by M. Bakhtin will be introduced. It is believed that encompassing of different discourses can not only enrich our understanding of the meaning of the past but also have broader implications for heritage management. Finally, it is argued that archaeology must not reject alternative interpretations of prehistoric monuments as fringe but respond to them dialogically.

### **ARCHAEOLOGY FOR ALL?**

Hølleland Herdis, Oppland County Council (Norway)

Norway is one of the few countries that has a wide-ranging outreach program for the culture and art sectors, called *Den kulturelle skolesekken* (The cultural schoolbag). The program ensures that all children (from kindergarten to high school) will meet professionals from the sectors. A recent White Paper discussing the future of this outreach program argues that the time has come to put a stronger emphasis on cultural heritage as a means to foster experiences and new knowledge in the education sector. While still in its infancy, I will discuss how the integration of the heritage sector in this public outreach program might function as a means to disseminate the cultural diversity to the children and youth through the school system. Case studies from the two recent programs focusing on history as social construction and archaeology and climate change will be drawn on to exemplify the ongoing work.

### **ARCHAEOLOGY FOR BLIND CHILDREN: NEW PROGRAM IN THE STATE HISTORICAL MUSEUM IN MOSCOW**

Shishlina Natalia, State Historical Museum - Moscow (Russia)

Archaeology is a specific historical science characterized by investigation of material culture objects. The State Historical Museum which was opened 126 years ago presents in its permanent exposition a long history of Prehistoric societies through archaeological items; in addition to that, the museum has 1,500,000 archaeological objects in its collections. The museum has specially designed rooms reflecting different historical environments.

The main idea of “the museum inside the museum” is to invite children with special needs (blind and visually impaired children) to the museum and help them understanding the historical environment of the permanent archaeological exposition. To this end, a special program has been developed. It consists of four special lessons in the museum rooms. The first lesson is a “Welcome to the Museum” excursion with a tour around all archaeological rooms. The lecture on history of the museum creation and its archaeological collections is accompanied by actual “touch and feel” of museum items such as stone images and sculptures, petroglyphic drawings, clay pots. Investigation with hands the life of Stone and Bronze Age population takes place during the next two excursions inside the museum halls. Copies of stone, clay, copper, bone items from the museum collections are placed on the table. Copies of the Chukotka petroglyphic drawings are used as well. We call these pieces of rock art a “Prehistoric Braille book”. Ethnographic objects such as a sheep skin, a nomadic lash, wool and sinew threads, plants, fruits and grains are also used during presentation of life stories of prehistoric men. At the end of the program during the fourth excursion children show what they have learnt, they are taught to make clay pots, use scrapers, harpoons and pestles. They also bring their pictures and hand-made items.

This new program shows new opportunities for mainstreaming children with special needs through specially organized lessons inside the museum that can be later incorporated into the school curriculum and help establish stronger community links.

#### **HERITAGE IN RUSSIA: PAST AND FUTURE**

Engovatova Asya, Institute of Archaeology, Russian Academy of Sciences - Moscow (Russia)

#### **SO DIFFERENT, YET THE SAME AT HAND: THOUGHTS ON THE PALAEOLITHIC HERITAGE AND ITS PRESENTATION TO THE PUBLIC**

Galanidou Nena, Dept. of History and Archaeology, University of Crete - Rethymno (Greece)

This paper diverts from the session’s main theme that views the archaeological past as a place of trans-cultural interactions and diversity of expressions, placing emphasis on ‘difference’, to discuss the Paleolithic heritage and place emphasis on ‘similarity’. Elsewhere it has been proposed that unlike the heritage from later periods that act as testimonies to cultural diversity, the Palaeolithic may be regarded as humanity’s global heritage which could potentially contribute to teaching children and solidifying to the wider audience the essentials of the human condition. Such a view is certainly justified since the Palaeolithic is the period in human prehistory that refers to a common substratum of all human cultures and offers food for thought about human origins, evolution and a foraging mode of life. There is of course a counter-argument to this which considers it essentialist and a-historic at its core, mainly in account of the diversity of the archaeological finds and of the Palaeolithic experience. Here I address both arguments and explore the relevance of the early prehistoric record (archaeological and palaeoanthropological) to the aim of building ‘a culturally sustainable present’ and future.

#### **THE ARCHAEOLOGICAL HERITAGE BETWEEN LOCAL AND TRANSCULTURAL VALUES**

Sabatini Serena, Dept. of Historical Studies, University of Göteborg (Sweden)

This paper is concerned with the necessity to redefine the significance of the archaeological heritage and to highlight its transcultural value.

It aims in the first place at analysing the relevant European treaties for the preservation and promotion of heritage (on which current national and local legislations ought to be based) in the light of the several academic studies on the issues of heritage, identity and public.

In the second place the paper will provide a concrete case study to support and define the issue in concrete terms.

#### **ARCHAEOLOGISTS, INTEGRITY AND SELF-AWARENESS**

Nikolova Lolita, The Art Institute of Salt Lake City - Salt Lake City, Utah (USA)



The development of the archaeology in the early 21<sup>st</sup> century has been facing the changing world of global society. The principles of integrity, honesty and complimentary professionalism become leading at different levels in this new world of ideals and relationships.

Today the archaeologists are thought not as business-like diggers, writers and agents of social hullabaloo pressed from funds with unclear mechanism of distribution, overwhelmed by personal ambitions and involved in visible and invisible networks of controversial social-political structures, but as potential representatives of the global humanistic society who actively need to contribute to the humanization and professionalization of the world according to the general principals of humanity. Today the question is about embedding of humanistic principles at any step of the archaeological theoretical and social practices and development of the policy of efficiency of the archaeological work and an aspect of valuable for the society practice.

In my presentation I will model the vision about the archaeologists of the 21<sup>st</sup> century and will contrast this model to some most recent archaeological practices – from controversial field-works to academic practices and publications, in order to add new insights to the actual themes about academization, professionalization and humanization of archaeology of the 21<sup>st</sup> century.

### **CULTURAL HERITAGE: A WORKING PROJECT IN THE NORTHEASTERN REGION OF COLOMBIA, SOUTH AMERICA**

Giedelmann R. Mónica J., Bolivarian Pontifical University - Bucaramanga (Colombia)

It appears that ideas about cultural heritage vary from place to place, depending on “uses” given to the past. In European countries, heritage has gained an important position in the agenda of national and local policies. Likewise, Latin American countries like Mexico and Peru have been pioneers in the recovery and protection of their pre-Hispanic traditions and have successfully developed an industry of tourism around their archaeological heritage, which contributes to the national economies with a significant income.

The idea of cultural heritage in the Northeastern region of Colombia is a working project. On the one hand, there is a flourishing industry of tourism based on extreme sports, selling of handicrafts made using ancient techniques, Colonial architecture, and the display of archaeological pieces in museums that are mostly explained by Sixteenth-Century Spanish writings. The industry of tourism develops by bringing together elements of the ancient past. On the other hand, this region shows the highest amount of cases of grave robbery, while archaeologically it is one of the least studied areas of the country. This paper intends to discuss the role that archaeology can play in the construction of the regional identity, examine the reasons why archaeological richness has been overlooked by local populations, authorities and national researchers, and point out the urgency of articulating the pre-Hispanic past in the construction of a multicultural present: where past, present and future traditions can live in a sustainable syncretism.

### **THE MATERIALITY OF THE PAST AND THE IDEA OF DIVERSITY**

Paludan-Müller Carsten, The Norwegian Institute for Cultural Heritage Research (Norway)

**C002**

**Session title:**

## **BRIDGING THE GAP: TOWARDS AN AGENDA FOR EUROPEAN POST-MEDIEVAL ARCHAEOLOGY**

**Organiser:** Belford Paul, Ironbridge Gorge Museum Trust (UK)

**Co-organisers:** Ermischer Gerhard, Archäologisches Spessart Projekt - Aschaffenburg (Germany); Finch Jonathan, Dept. of Archaeology, University of York (UK)

**Session abstract:**

The archaeology of the modern age is a relatively new discipline within European archaeology, and in many areas its significance has yet to be fully acknowledged. The archaeology of the last 500 years is extremely exciting, including several key themes which inform European identities today – processes of religious reformation and counter-reformation; agricultural modernisation and landscape change; industrialisation and urbanisation; slavery and globalisation.

This period was one when lasting relationships within Europe, and relationships between modern Europe and the rest of the world were forged. It was a period of unprecedented travel, exchange of ideas, innovations, and technology, as well as a period of extraordinary cultural and creative output. It was also a period when the material conditions of ordinary people changed beyond recognition. Traditional ways of life were radically changed by industrialization and urbanization, and poverty took on new forms within these new environments. The material nature of the period is of unprecedented importance since the evidence is so rich, and yet paradoxically our failure to recognize its significance on a European scale puts it at increasing risk. Archaeologists also have a powerful voice in the study of twentieth century upheavals, from the two World Wars and the Holocaust, to post-Soviet changes in eastern Europe.

This session will explore the very different ways in which the study of post-medieval and industrial archaeology is undertaken in Europe, and will seek ways in which we can develop a coherent international research framework for the period.



**Paper abstracts:**

### **ARCHAEOLOGY ON THE MARGINS? THE ORIGINS OF INDUSTRIALISATION AND THE MANAGEMENT OF CULTURAL HERITAGE**

Belford Paul, Ironbridge Gorge Museum Trust (UK)

The beginnings of post-medieval industrialisation often occurred in marginal areas. These may be truly marginal physical landscapes such as uplands; or they may be more conceptually liminal places - along riverine administrative boundaries, or in areas that are outwith the normal structures of authority. In many cases industrial activity itself encouraged marginalisation of the landscapes within which such activities took place; moreover entrepreneurs driving industrial development were often outside conventional society. Consequently industrial landscapes take on special social, technological and artistic meanings.

Similarly the archaeology of the post-medieval period is a relatively recent addition to the portfolio of European archaeology, and is therefore to some extent a marginal activity. Many archaeologists continue to regard more recent centuries as being within the scope of economic and social history, art history, anthropology and architectural studies. Teaching and training at University is still firmly grounded in prehistory. This attitude is often enshrined in local and national legislation. In Norway, for example, below-ground archaeology is only included in developer-funded projects if it dates to before 1537; in Hungary the cut-off date is 1711. The role of standing buildings (above ground archaeology in other words) is also ambiguous. Indeed not only is post-medieval archaeology perceived as marginal within Europe, but European post-medieval archaeology is often marginalised by new world approaches. This paper will therefore investigate some of the tensions inherent in doing post-medieval archaeology in Europe. It will be argued that European post-medieval archaeology should find the strength to create its own vision of the more recent past.

### **FROM INDUSTRY TO NATURE PRESERVE: ARCHAEOLOGY AND IDENTITY IN SPESSART.**

Ermischer Gerhard, Archäologisches Spessart Projekt - Aschaffenburg (Germany)

In many upland regions in Germany one can find traces of early industrialisation and of mining and industrial activities up to the early 20th century. But because of the low quality of the sources these industries were not compatible in a highly industrialised world. Many of these areas fell into poverty and agriculture, later tourism, became their major source of income. The former areas of industry and mining were recovered by nature, often by forest, and are barely visible today.

Artificial lakes, railway-dams and mining shafts became habitats and were eventually declared nature protection areas. Most people take them today for natural landscapes. In the Spessart, a typical upland region in Germany, many those places were investigated and rediscovered in the last years, their history given back and made visible for the casual visitor as well as the local inhabitants. This paper shall follow the way from industrial hotbed to nature preserve and investigate the potential of the hidden industrial heritage for identity building and a new perspective on our cultural landscapes.

### **SABERO AND SANTA VICTORIA: TWO EXAMPLES OF INDUSTRIAL ARCHEOLOGY IN CASTILLA Y LEÓN, SPAIN**

Sánchez Pérez Pablo, Lámpara Association – Valladolid (Spain)

### **THE POST-MEDIEVAL ARCHAEOLOGY OF MEDITERRANEAN RURAL SOCIETIES: A CASE STUDY FROM SICILY, ITALY.**

Mientjes Antoon Cornelis, Vrije Universiteit Amsterdam – Amsterdam (The Netherlands)

The interest of Mediterranean archaeologists in post-medieval periods has recently been growing. Especially, in the framework of multi-period archaeological survey projects it has become apparent that the Mediterranean countryside contains a wealth of material testimonies of modern historical developments in rural occupation and land use, which archaeologists cannot ignore any longer.

Nonetheless, a post-medieval (or 'historical') archaeology is still very much in its infancy in the Mediterranean, and therefore lacks thematic and theoretical coherence from a region-wide perspective. Some Mediterranean archaeologists have turned to the 'historical archaeology' of Britain and its former colonies and adopted themes such as Charles Oser's (1996) four haunts: global colonialism, Eurocentrism, capitalism and modernity. This paper, however, doubts the usefulness of such a global agenda for a post-medieval archaeology of the Mediterranean, especially if it concerns rural landscapes and their recent histories.

Instead, I will argue that specifically the spread of rural capitalism, commercial markets and the rise of new political structures in the form of nation states had a significant effect on rural regions in the Mediterranean during approximately the last 200 years. The view that until recently capitalist systems never penetrated entirely Mediterranean rural societies plays a crucial role in this context. Additionally, it is proposed that a post-medieval archaeology of the Mediterranean offers excellent possibilities to develop interdisciplinary approaches, which combine landscape archaeology with its focus on the material and local, ethnography and history. I will illustrate my principal arguments with an archaeological study of modern rural landscapes in Sicily, Italy.

### **NEWS FROM ABROAD: OBSERVATIONS ON EUROPEAN LANDSCAPE AND AGRICULTURAL TOURISM DURING THE EIGHTEENTH AND NINETEENTH CENTURIES**

Finch Jonathan, Dept. of Archaeology, University of York (UK)

The development of a rural capitalist economy in modern Europe on the eve of industrialisation is often set against the backdrop of conflict, revolution and empire building, leading to nationalistic narratives of improvement. Only in art history does the European 'Grand Tour' have prominence as the primary forum within which cultural ideas were shared. However, an examination of agricultural literature published over the long eighteenth century, reveals that agriculturalists were also eager to learn about agricultural improvement on a European scale. This exchange of ideas developed from the seventeenth century and was fundamental to concepts of progress at a critical period which saw the birth of industrialisation. The reports, letters and descriptions provide a unique insight into the state of European agriculture, landscape and society, but have often been neglected in favour of those reporting the industrial innovations of the period. However, the growth of agricultural tourism reveals how important rural production was across Europe, and how it was seen as indicative of broader political developments. It is therefore an

important aspect of understanding the historic landscape and identifying themes within post-medieval archaeology. This paper will explore the European agricultural landscape from the perspective of these agricultural tourists, seeking insights into an area which was critical to the development of industrialisation and which was to become symbolic of national and European identities.

### **EXCAVATIONS IN THE WORLD OF DISPLAY. AN ARCHAEOLOGICAL ANALYSIS OF THE USE OF HISTORY AT THE FAIR IN STOCKHOLM 1897**

Nordin Jonas M., Museum of National Antiquities - Stockholm (Sweden)

The paper will present the use of medieval and renaissance history in the Stockholm exhibition in 1897. Mainly, the question of how the use of architecture, archaeology, conservation and landscape planning were used in the production of an idealized notion of the past will be discussed. In relation to this I will present the results from excavations in the remaining landscape of the fair. Based in the archaeological material I will discuss how we are able to study the ideas of history in the past through the use of archaeological methods and sources.

The paper focuses on the use of history at the fair in Stockholm, the summer of 1897. The Scandinavian art and industry fair in Stockholm 1897 was a regional version of the world fairs that were emblematic for a zeitgeist of industrial and national competition. Important contemporary fairs were the ones in Chicago (1893) and Paris (1900). These fairs of the second half of the 19th century played an important role in the construction of national communities and strengthened the hegemonic position of the bourgeois society.

In this process the use of history was of great importance. In Antwerp, Budapest, Turin and Stockholm full scale copies of the ancient (usually medieval) past was reconstructed. These historical images were used to emphasise the notion of the national "self", and delineating the contemporary from the historical "other".

C003

Session title:

**BUILDING MUSEUMS AS PROTAGONISTS OF VIRTUAL REALITY EXHIBITIONS****Organiser:** Merlini Marco, EURO INNOVANET, Prehistory Knowledge Project - Rome (Italy)**Co-organisers:** Nikolova Lolita, The Art Institute of Salt Lake City – Utah (USA); Gergova Diana, National Archaeological Institute with Museum – Sofia (Bulgaria)**Session abstract:**

A study published by the European Commission “The economy of culture in Europe” includes museums into the not-economic and not-profitable sector. They can generate employment and business only for what concerns their real, physical existence, mainly when they renovate their buildings.

Against this too restrictive vision, this roundtable intends to collect, present and discuss best-practices according to which museums are protagonists of innovative synergies between cultural heritage and Internet-digital multimedia devices as to generate social-economic benefits able to trigger local economic development.

A special focus will be put on skills and tools needed to develop Virtual exhibitions that are manageable, delivered on Internet and envisaged as e- services. Key criteria will be explored such as development of tools that require limited additional training, inexpensive software or hardware, and conceived as components of museum daily work - not externally outsourced.

Consistently, it will be discussed how to create an international interacting and learning community where museums develop capacity building and technical cooperation on the subject of robust digital representation methods, exhibitions online and 3D virtual reality.

The organisers of this round table intend to solicit specific case studies relating to topics such as management of Web exhibitions and 3D virtual reality, courses online as tools to build virtual museums, supporting digital archaeological libraries, educational programmes, and 3D representations.

**Paper abstracts:****CONSERVATION MANAGEMENT, WEB EXHIBITIONS AND 3D VIRTUAL REALITY**

Merlini Marco, EURO INNOVANET, Prehistory Knowledge Project – Rome (Italy)

Merlini will deliver an introductory presentation aimed at setting the ground on conservation management, web exhibitions and 3D virtual reality. The progress of digital imagery and Internet are offering museums useful tools to develop new modalities for supplying their cultural heritage to a potentially global audience and for providing high quality e-services. However, the new opportunities are not fully exploited due to inadequacy of social and technical competences and resources in this field.

The presentation will explore – through a SWOT analysis - strengths, weaknesses, opportunities and threats of different museum cases in managing multimedia/virtual fruition via Web. Consistently, it will propose some suggestions to be discussed in the roundtable on how to strengthen museums as protagonist in the online display of cultural heritage through virtual technologies.

**ARCHAEOLOGICAL INTERNET AND VIRTUAL MUSEUMS**

Stanimirov Stiliyan, Central Archaeological Council – Sofia (Bulgaria); Nikolova Lolita, The Art Institute of Salt Lake City – Utah (USA)

The development of the 21<sup>st</sup> century archaeology requires changes not only in the general understanding of archaeology as a discipline about Past, based on the material culture, but also in the way the archaeologists communicate their knowledge on Past.

Internet is still a field of technology and universal knowledge that has been not using the most efficiently from archaeology. Although there are numerous websites, not many include rich information and the basic archaeological achievements are scanty represented. Nevertheless, the archaeological Internet is a specific field of knowledge communication in which are involved archaeologists who mostly feel as a social duty to work on making archaeology closer to public through volunteering on Internet. Their work should be highly appreciated. In many cases, it is

beneficial not only for the visitors of the websites but also for the webmasters even when the websites do not have a commercial character.

The virtual museums on Internet give a great opportunity the wealthy of the archaeological finds and features to be represented in the most sophisticated way. Cross-national, national institutional, non-for-profit, private or individual projects will be discussed in our presentation together with the general academic and humanistic benefit of the Internet virtual museums, exhibits and thematical websites. We will try to trace possible directions for their future development as an essential archaeological expression attempting to connect archaeological discoveries with both, professionals and just interested in archaeology.

### **THE DYNAMICS BETWEEN ACTUAL MUSEUMS AND VIRTUAL MUSEUMS IN BULGARIA**

Gergova Diana, Doncheva-Petkova Lyudmila, National Archaeological Institute with Museum – Sofia (Bulgaria); Haralambieva Anna, Archaeological Museum – Varna (Bulgaria); Radoslavova Galena, Museum in History in Razgrad (Bulgaria)

Following the traditions of the country, the new law for protection of cultural heritage in Bulgaria gives a wide scope of prerogatives to museums. They do not only concern the traditional competence of these institutions on movable heritage. Being national, regional, local or private, Bulgarian museums have the obligation/right to take care also of the immovable cultural heritage and, first of all, the archaeological heritage. The right to open archaeological excavations to the public, in a country with many problems concerning their preservation, gives predominance to activities mainly connected with scientific approaches to registration, preservation and excavation of the archaeological heritage.

The authorisation given to museums to manage archaeological sites and the possibilities to have financial gains out of it (mainly from cultural tourism) is in many cases decisive for the still limited interest to the modern presentation of the museums finds, the advertisement of their collections and the creation of new products for educational and other programs. Several museums in Bulgaria are already participating in European projects connected with the creation of Virtual museums.

### **DIGITAL CREATIVE ACTIVITY FOR THE DEVELOPMENT OF TOURISM**

Stanimirov Stiliyan, Central Archaeological Council - Sofia (Bulgaria)

According to the Bulgarian normative, in 2001 *digital creative activity* was added to the official definition of museum. It involves “electronic museum”, “online museum”, “digital museum”, etc. These terms focus on the technological aspects, the connection with Internet and the interactive access to the museums knowledge.

The “virtual museum” offers easy access to information through a specific technology. It offers fast and easy opportunity to communicate cultural heritage.

Visiting actual museums, tourists expect to interact with the most attractive sights, have a view on culture, and get a feeling about living in the past epoch. Virtual museums give some insight that actual museums cannot – the visitors can choose their direction of journey, stop and increase the scale of the images, see details, feel the social space in its completeness, etc.

The high-quality, attractive computer graphics and the virtual reality of an exposition may trigger the online visitors to organize a tourist trip to the actual museums. From this perspective, together with their own value virtual museums have a complimentary role to actual museums in our global culture as essential means of cross-cultural communication.

### **THE NEOLITHIC SANCTUARY FROM PARTA: FROM THE EXCAVATION TO THE RECONSTRUCTION IN THE TIMISOARA MUSEUM AND IN 3D**

Lazarovici Gheorghe, Lucian Blaga University - IPCTE – Sibiu (Romania)

The presentation will focus on the challenge to reconstruct the most spectacular Neolithic temple found at Parța (Banat, Romania) physically in the Museum of Banat at Timisoara as well as in 3D video format. Both reconstructions include not only the general architectural frame, but also internal elements such as the monumental Goddess/Bull statue, altars, columns with ox heads, ovens, place for burning offerings, benches, tables, partitions or special places, thrones and giant offering and storing vases.

The Parța temple is characterized by the Sun and Moon cult connected with measurement of time and seasons. The actual and virtual reconstructions apply archaeoastronomical study to re-enact how the Sun, before sunset of

September 23, passes through the corner of the Moon (identified with the Sun Light), comes into the temple, passes through an orifice from the two rooms (B in A), and falls on the back of the double statue where an amphora with sacred liquid is located.

### **PLAN FOR A DIDACTIC VIRTUAL MUSEUM OF THE CUCUTENI SPIRITUAL LIFE**

Lazarovici Magda, Institute of Archaeology - Iași (Romania)

The Ariușd-Cucuteni-Tripolie culture has evolved in the period 4600-3500 CAL BC within Romanian, Moldavian and Ukrainian territory. It is very well known for the rich spiritual life expressed on pots through wonderful painted decorations, as well as on the numerous plastic representations.

The presentation will discuss a feasibility plan to establish a virtual museum of the Cucuteni magic-religious approach. It will be a didactic 3D museum able to communicate not only the ancient knowledge regarding decorative and shape patterns, but also the communitarian sanctuaries (with a specific architectures and different inner arrangements), household shrines, or cult complexes, involving diverse pots, as well as anthropomorphic and zoomorphic statuettes, reflecting mainly the cult of the Great Goddess.

### **A MODEL OF VIRTUAL PRESENTATION OF CEMETERY FINDS**

Serbanescu Done, Muzeului Civilizatiei Gumelnita - Oltenita (Romania); Comșa Alexandra, Archaeological Institute – Bucharest (Romania)

Our case study is the cemetery of Sultana (Romania). It was discovered in 1974 and consists of 243 inhumations. The typical body position is on left with head towards East, with some deviations. The standard burial inventory consists of tools, seldom of bone idols and adornments, as marks of prestige.

The necropolis was assigned to the early phases of the Boian Culture (Bolintineanu and Giulesti phases), namely from the first half of the 5th millennium BC.

Being the largest Boian necropolis investigated by now, it provides a significant material for anthropological studies that indicates, for instance, that the average duration of life reached 37 years and 9 months.

We will introduce a model of the contextual virtual presentation of the finds and will discuss some problems emerging from our effort to integrate archaeology, osteology and digital technology.

### **VIRTUAL PRESENTATION OF FRAGMENTED FINDS**

Williamson Ashley, Monitoken Jennifer, The Art Institute of Salt Lake City - Utah (USA)

In our presentation, we will discuss principals and cases of virtual presentations of small finds, in particular the interrelation between shape, material, space and color. We will also focus on the similarity and differences between the museum space and the virtual space.

The archaeological finds had been characterized by the fact that many of them are fragmented. The virtual technology gives opportunity to model different variants of reconstructions and to present virtually the complete find without trying to attach missed parts to the fragment, as the guess can be wrong or the material can damage the original find. Although the reconstructed fragmented finds have important educational and enculturation roles in the museums, the virtual technology expands the opportunity for interconnecting the direct and virtual communication of the archaeological heritage.

Further, we will employ some of the principals of the interior design to the virtual presentation of small objects and will give examples of variety of their arrangements – individually and in groups. These principals can be applied during the contextual presentation of finds by modelling features like pits, houses, ditches, etc.

The interrelation between archaeology, ethnography and design will be also discussed as an opportunity to bridge different disciplines in communication of the wealth of cultural heritage.

### **THE ACHAEODROME OF VALLICELLI AND THE LIGHT OF SHADOWS**

Piperno Marcello, University “La Sapienza” - Roma (Italy); Pellegrini Enrico, Ministry for Arts and Culture – Rome (Italy)

The aim of this Archaeodrome is the development of a tourist-cultural system located in the central area of the mountainous Cilento Park, far from the tourist circuit of seaside but with suggestive traces of the Ancient Past. In

one of the numerous caves, the Vallicelli Cave, traces of Neanderthal presence were discovered and in another one, the Varlacarla Cave, archaeological remains of the Bronze Age were recovered.

Both sites do not have “hard” vestiges as walls, stones, columns, etc. However, this absence is their force: they can suggest, evoke the past instead to show. Through the Archaeodrome technology, the caves become alive and introduce the visitors in an imaginary world where the narrative elements flow along the silhouette of the mountains and the Time, unfolding in a circle that traces the human adventure. Sounds, magic and stories of this far Past are extracted from the deep of this land.

The Archaeodrome is an open-system based on several junctions: the Visitors' Centre, the Vallicelli Cave, the Varlacarla Cave, the Museum of Pino Cave, the Museum's Section of Palazzo Marone.

### **THE MULTIMEDIA ENVIRONMENT OF “LAVINIUM” ARCHAEOLOGICAL MUSEUM**

Sorti Monica, StudioAMS – Rome (Italy); Sapio Rossella, Videodirector (Italy)

We present a case study concerning a museum of innovation included in the list of the Ministry for Arts and Culture, Department of Innovation and New Technology.

The exhibition is set in a multimedia environment that reveals the story and fascinates the visitor who enters into the spirit of the story itself.

The Museum of Lavinium has been designed around the idea that archaeological objects can evoke legends, tell us about events, people, sounds and symbols, creating a chronicle that has been enhanced with the careful use of technology.

The Museum's key innovation is based on the equilibrium of the multimedia system used. *“Now, when the rosy morn began to rise/...When Thetis blush'd in purple not her own,/ And from her face the breathing winds were blown/ a sudden silence sate upon the sea/...The Trojan, from the main, beheld a wood”*, these verses from the Aeneid can be heard whispered and can be read on the printed banners that hang, swinging in the wind along the entrance path. The visitor route is not limited to two dimensional panels but is part of the scenography itself with sounds, music, videos and special lighting.

### **SETTING A VIRTUAL EXHIBITION OF ITALIAN EPIGRAVETTIAN FINDS**

Ucelli Gnesutta Paola, University of Pisa – Pisa (Italy)

The contribution of Information technology to innovate and improve the transmission of cultural heritage is particularly appreciable in case of an exhibition of Italian Epigravettian finds. These remains are often fragmentary or in miniaturize scale. Therefore, it is very difficult to exhibit them through eye-catching effects. However, the same objects can conquer the interest of audience, if they are shown in detail and in wide size and if they are presented at the same time with proper explanations concerning functions, technique of production, and spiritual implications.

The hub of the virtual exhibition that I present is organized echoing a website in which every artifact is represented in three-dimensional view. If it is fragmented, it is completed by the reconstruction of the original shape. Through links, it is possible to see the objects in relating geographic, environmental, archaeological, and anthropological contexts. Rendering techniques are used to give life to the matter.

Different levels of information are set up. As an example: manufacturing techniques such as flaking and polishing stones or decorating and firing ceramics interest everybody. Instead, a deeper level is needed to convey technological scrutiny of markings on stone and bone tools or geological and biological analysis on the composition of ceramic.

### **A COURSE ONLINE FOR MUSEUM COMMUNICATOR: ANIMI FOUNDATION EXPERIENCE**

Karadzhinov Ivaylo Valeriev, Cultura Animi Foundation – Sofia (Bulgaria)

Internal and external communication is a real challenge for museums. Internet development and its increased influence as well as on-line communication have added a new perspective, but also new solutions for this challenge.

In this presentation, Cultura Animi Foundation will discuss its experience in creating and testing an on-line course for Museum Communicators. It touches on some of the most difficult aspects of communication and puts forward the added value of virtual museum in this area.



C004

Session title:

**BUILDING THE PAST FOR THE FUTURE. OPEN AIR MUSEUMS: WHAT CHANCE IN THE 21ST CENTURY?****Organiser:** Scandolari Romana, Museo delle Palafitte di Ledro, Molina di Ledro – Trento (Italy)**Co-organisers:** Dragos Gheorghiu, UNAB (Romania); Vannini Maria Cristina, Soluzioni museali srl - Milano (Italy)**Discussant:** Paardekooper Roeland, Exeter University (UK)**Session abstract:**

In the last decades of the 20th century public archaeology has demonstrated that it became a strong component of contemporary global culture. Its materialization happened in the form of archaeoparks, an interface between science and popular culture. Archaeoparks emerged in all European countries, as part of a strategy for developing local tourism. An archaeopark usually consists of a series of reconstructed architectural buildings which are the place for experiments of different nature, to cite only Lejre (Denmark), or Buster Farm (UK). Others, like the Ledro archaeopark, represent an annex to the local museum, having mostly an exotic role in the urban structure where it is implemented.

These reconstructions which shape contemporary imagination represent the result of a negotiation between archaeology and various other disciplines (architecture, art, etc.). What this session aims to discuss is whether such a strategy is viable in the 21st century, and how a change of the current paradigm of the design of archaeoparks could influence the reception of archaeology (and of the past) by the society.

We invite all scholars interested in the social role of archaeology to join us in exploring the future of the European public archaeology.

**Paper abstracts:****THE RISE AND DECLINE IN POPULARITY OF ARCHAEOLOGICAL PARKS THROUGHOUT EUROPE**

Wood Jacqui, Saveock (UK)

In Europe at sites like Biskupin in Poland and Unteruhldingen in Switzerland the concept of reconstructing ancient settlements from the archaeological record has been accepted since the second world war as a method of understanding the anomalies encountered on excavation sites. Initially the populous in the area of the reconstruction are keen to visit and wonder at the primitive dwellings their ancestors might have lived in. Local schools universally saw the benefits of walking their classes around such reconstructions as preferable to sitting in a classroom and looking at pictures (not necessarily accurate) from text books. Biskupin in Poland initiated their 10 day archaeological festival in September 1995 to rejuvenate popular interest in their Iron Age reconstruction. Unfortunately the public enthusiasm also declined in spite of Biskupin changing their format every year by highlighting a different period or area of European archaeology. This paper will detail my own conclusions and my suggestions how such centres could rejuvenate public interest not just once a year during a festival, but all year round.

**SOCIAL AND CULTURAL SPACES IN THE CONTEXT OF THE ARCHAEOLOGICAL PARKS AGENDA**

Williamson Ashley, The Art Institute of Salt Lake City - Utah (USA)

The archaeological parks reflect the idea of the actualization of the concept of the vivid multidirectional communication of the archaeological past. Although the examples come from different parts of Europe (see links at <http://www.iianthropology.org/archparkseurope.html>), it seems that the archaeological parks depend on the peculiarities of the local European cultural heritage. However, there are common principals for framing and re-framing of the problem, one of which is the polysemantic understanding of the space and the contentious relationships among the social and cultural spaces and humans.

The archaeological parks suppose to stimulate not only the interaction between the people and monuments but also between people as individuals and social groups. The archaeological sites themselves do construct cultural space, but to be reproduced culture requires continuous actualization and expression through interhuman communication. In contrast to the museums which space is totally occupied by the cultural things and the goal of the visitors is to contact directly with the things, the archaeological parks create the opportunity the people not to be passive visitors but also active agents that in turn increases the role of the archaeological heritage in the processes of enculturation and socialization. Specific problem for discussion is how the contemporary knowledge on the articulation of the cultural and social spaces may influence the development of the concept about the archaeological parks.

### **THE MUSEUM OF LEDRO: AN INCUBATOR FOR CULTURAL, ECONOMICAL AND ECOLOGICAL DEVELOPMENT.**

Scandolari Romana, Museo delle Palafitte di Ledro, Molina di Ledro – Trento (Italy)

Among the Italian Open Air Museums, the setting of Ledro represents an almost unique reality.

Almost 650 m above sea level, it is located in a valley alongside two great [commercial crossroads?]. It is somewhat isolated but in close proximity to important tourist destinations like the Lago di Garda. Surrounded by beautiful hills and on the shore of a man-made lake, Ledro is long overdue for taking advantage of these circumstances. While the museum is contained within a single room of 300 sm, it houses 600 objects from the nearby archaeological site. The lake has been used as hydroelectric basin since the 1930s and the regular changes in water level have caused the erosion of the wooden pile foundations of the dwelling.

In the '90s a new cycle has started, pinpointed by the change of the museum's mission.

In addition to conserving and displaying the archaeological remains, the museum has added a program of activities intended to highlight what is irretrievably fading: the village. In 2006 a portion of the dwelling was reconstructed: it is not an example of experimental archaeology, but a setting – almost a stage or a “narrative background”- for the educational activities of the museum and for the imitative archaeology.

Within the last 15 years, diminutive Ledro has become a noteworthy example in the field of cultural activities (museum animation). Each year, in the 9 months in which the museum is open to the public, about 33.000 visitors view the exhibit (a not insignificant number, considering that the site occupies 2200 sml) Ledro, though a small reality, in order to continue to exist, needs to be integrated in its own territory and together, to develop a continuous exchange, networking and becoming one of the elements of a complex but delicate economical and ecological mechanism.

### **THE SOCIAL IMPLICATION OF LOCAL COMMUNITIES IN EXPERIMENTING THE PAST. A STUDY CASE FROM SARDINIA**

Gradoli Maria Giuseppina, COMET/ISSEP – Sardinia (Italy); Dragos Gheorghiu, UNAB (Romania); Hasnas Andreea, Spiru Haret University (Romania)

An interesting aspect of the role of archaeo - parks in contemporary society is linked to the social reaction of the village communities where experiments and reconstructions were carried out.

We believe that the way these communities use the archaeo-parks for improving their identity and change the local economy could be an interesting subject of analysis, in order to understand the future of the social implication of Experimental Archaeology.

The present paper we will discuss the relationship between the village community in central Sardinia and a group of archaeologists and artists during the Experimental Archaeology Session held at the Bronze Age Nuragic Sanctuary of Serri, part of the ISSEP European Project “Art Landscape Transformations” (May 2009), which consisted of the construction of an ancient kiln, the firing of clay artifacts and the experience of “Land Art” in the archaeological landscape using replicas of megaliths and betyls.

### **ARCHEOPARK OF KALISZ-ZAWODZIE AS AN EXAMPLE OF THE RECONSTRUCTION OF THE CULTURAL ENVIRONMENT OF LOCAL AUTHORITY CENTER IN EARLY MEDIAEVAL POLAND**

Baranowski Tadeusz, Żukowski Robert, IAE PAN - Warsaw (Poland); Leszek Ziąbka, Muzeum Okręgowe Ziemi Kaliskiej Kalisz (Poland)

The archaeological parks reflect the idea of the actualization of the concept of the vivid multidirectional communication of the archaeological past. Although the examples come from different parts of Europe (see links at <http://www>).

iianthropology.org/archparkseurope.html), it seems that the archaeological parks depend on the peculiarities of the local European cultural heritage. However, there are common principals for framing and re-framing of the problem, one of which is the polysemantic understanding of the space and the contentious relationships among the social and cultural spaces and humans.

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**C005**

**Session title:**

## **PRESERVING, MONITORING AND PRESENTING IN SITU ARCHAEOLOGICAL REMAINS**

**Organisers:** Fouseki Kalliopi, University of York (UK); Vorenhout Michel, VU University Amsterdam (The Netherlands)

**Co-organisers:** Arvanitis Kostas, Centre for Museology, University of Manchester (UK); Vandrup Martens Vibeke, Norwegian Institute for Cultural Heritage Research - NIKU (The Netherlands)

### **Session abstract:**

Archaeological remains, discovered mostly on rescue excavations, are often preserved in situ in open-air spaces or in basements of modern buildings such as blocks of flats. Legislation derived from the Malta Convention of 1992 and the development of preservation and monitoring techniques have contributed towards this, but have also highlighted the need for further exchange of ideas on the theory and practice of in-situ preservation. In addition, in the last few decades, there has been an attempt to present and render such small-scale and often invisible archaeological sites accessible to the wider public. Thus, in situ preservation often involves in situ presentation, an aspect that is not adequately addressed in national and international legislation.

This session invites papers on in situ preservation of archaeological remains, the monitoring of and possible presentation techniques for those sites and related policy issues. We especially welcome integrative studies on multiple aspects.

This session aims in particular:

- To provide a theoretical framework of in situ preservation and in situ presentation of archaeological remains in modern buildings and open-spaces
- To examine in situ preservation policies at regional, national and international level
- To demonstrate the current status in readily available monitoring techniques
- To examine the challenges and practical issues in making some of those sites accessible to visitors
- To explore issues of ownership, authority and identity formation with regards to archaeological remains in public or private premises
- To examine interactions between land owners, developers and archaeologists
- To explore the continuing biographies of such archaeological sites



### **Paper abstracts:**

#### **CONTEXTUALISING AND CONCEPTUALISING *IN-SITU* MUSEUMS IN EUROPE**

Fouseki Kalliopi, University of York (UK)

This paper theorises and contextualises the case of in-situ museums in Europe. In-situ museums, in this paper, refer to modern private or public buildings in the basements of which small-scale, fragmented archaeological remains, often discovered on rescue excavations, are conserved in situ and presented to the public.

Based on a searchable database of 121 European case studies, the paper will examine three main aspects of in-situ museums. These include:

i) criteria of significance that determined in situ conservation of archaeological remains in Europe since the early 20<sup>th</sup> century

ii) the driving forces that led to the in situ presentation of those remains

iii) and finally the extent to which the construction of in-situ museums under examination functioned as a compromise solution among involved parties (such as developers and archaeologists) or led to further disputes.

This analysis will allow the identification of distinctive characteristics that differentiate in-situ museums from other museum types such as the display of movable artefacts within their original context. The identification of distinctive and innovative characteristics, as I will argue, can constitute a powerful means for negotiations related to in situ conservation of archaeological remains among developers, local authorities and the wider public.

## **HIDDEN SITES: ARCHAEOLOGICAL REMAINS CONSERVED WITHIN PRIVATE BUILDINGS WITHIN THE CITY OF LONDON**

Sandes Caroline, University College London (UK)

Conserving archaeological remains in situ within buildings as part of urban redevelopment is not a new practice. In London, for example, such a site was conserved in the early 1900s. Up until about the 1980s, however, the preference was to conserve sites outside, often as part of a green space, as a public monument. Increasingly, due mostly to practical and financial considerations, the preference is to conserve archaeological remains inside, within the building constructed above them, so that it is now rare for smaller archaeological remains to be conserved outside. This raises issues of public access and whether or not such public heritage is rapidly becoming privatised? Alternatively, are considerable sums of money being spent to conserve remains for posterity, only to leave them forgotten in a basement. Using a number of case studies of sites conserved within private buildings within the City of London, this paper will examine what happens to such archaeological remains, and if and how they are accessible to the public. Furthermore the paper will ask whether posterity is a great enough value to ensure conservation and whether or not we should conserve such archaeological remains at all if they cannot or are not made formally accessible to the public?

## **TOWARDS A MUSEOLOGY OF THE INVISIBLE': PUBLIC ARCHAEOLOGICAL SITES IN PRIVATE MODERN BUILDINGS**

Arvanitis Kostas, Centre for Museology, University of Manchester (UK)

In recent years, archaeological and museological research and practice in Greece has been concerned with the display in situ of antiquities. However, this has been limited mainly to high profile sites, such as the antiquities excavated in the construction of the Athens Metro, or in the foundations of the new Acropolis Museum. Apart from those well-known cases, hundreds of archaeological sites exist 'out of sight', beneath modern developments (usually residential blocks of flats) in Greek cities. The local Archaeological Departments ('Ephoreias') of the Ministry of Culture are responsible for safeguarding and preserving the remains, which are usually not accessible to the public due to lack of sufficient staff and resources. These archaeological sites are often also 'invisible' inasmuch they are not presented in guidebooks, museum exhibitions, etc. At the same time, they have a particular type of 'public': namely, the building's residents, who share their domestic space with the archaeological remains.

This paper will draw on the initial stages of a research project that aims to explore the ways residents in the city of Veria (Greece) relate to the archaeological sites preserved in their buildings of residence or work. It will reflect upon the author's course of 're-discovering' the sites and the politics of negotiating field visits to public archaeological sites located in private premises. It will, also, touch upon the diverse and often conflicting roles that the sites acquire in the residents' daily lives highlighting, in particular, issues of access, ownership and 'display' of the antiquities.

## **EXCAVATIONS, RUINS AND VISUALISATIONS IN INSITE-MUSEUM ABOA VETUS (TURKU FINLAND) IN THE YEARS 1994-2009**

Uotila Kari, University of Turku & Muuritutkimus Co. (Finland)

Aboa Vetus (Old Turku) is a museum of archaeological history. The ruins excavated in the Convent Quarter originate from the Middle Ages. The Aboa Vetus & Ars Nova Museum and the Matti Koivurinta Foundation have been performing research in the Convent Quarter and the whole Rettig plot of land since the 1990s. In Aboa Vetus, museum visitors have the opportunity to walk through the Middle Ages and also to see how research is being carried out. The aim of the museum is to continue excavations in the area of the museum.

This paper is focusing on three main questions.

First question is: What can do in-situ museums do when they are open to the public and exhibitions are ready? How can information about the archaeological datings and interpretations be changed if new information requires it? How can the presentation be such that it is a living story and not like a closed book?

The second question focuses on presentation itself: should musea focus on conservation of everything, or should they tell the story of the preserved site by reconstructions and presentations.

The third part of this paper focuses on new technical opportunities in 2010 of in-situ and open spaces presentations, with the focus on comparing laserscanning documentation, 4D-modelings and the use of GPS in storytelling.

## **THE EXPERIENCE OF PRESERVATION OF ARCHAEOLOGICAL HERITAGE IN SITU IN THE TERRITORY OF VILNIUS CASTLES**

Kasperavičienė Audronė, State Cultural Reserve of Vilnius Castles (Lithuania)

The State Cultural Reserve of Vilnius Castles is the heart of Vilnius historical centre included into the UNESCO World Heritage list. The Reserve was founded to preserve historical, spiritual and cultural center of the state and carry out permanent scientific researches. This territory is archaeologically the most valuable and the least investigated part of Vilnius Old Town.

The greatest, integrated, consecutive and systematic archaeological researches, which gave the reason to start thinking about the restoration of the Palace of the Rulers of the Grand Duchy of Lithuania, in the territory of Vilnius Castles were started only in 1987. During these researches the remains of foundations of the Royal Palace of Lithuania were discovered. In order to protect the remains of discovered foundations, which were being progressively ripped from precipitation, the decision to restore the Royal Palace of Lithuania was made. The aim of the restored building is to protect the remains of the Palace and to serve as a capsule which covers old foundations. This is the most significant and expensive example of in situ preservation of archaeological remains in Lithuania which raises a lot of discussion in public and among the specialists. The loss and preservation of wooden archaeological remains of XIII – XIV century, which were discovered during the archaeological researches in this territory, cause public criticism and the greatest challenges for specialists.

## **SEARCHING FOR THE “REAL” ARCHAEOLOGY: REFLECTIONS ON “IN SITU” PRESENTATION FROM A CROSS-CULTURAL SINO-EUROPEAN PERSPECTIVE**

Derde Willem, Ename Center for Public Archaeology and Heritage Presentation (Belgium)

In this paper we will focus on ‘in situ’ presentation of archaeological sites from an interpretative point of view. What is it that we do when we preserve objects ‘in situ’ and what message do we give to the public and the visitor by choosing this methodology? As such this reflection goes beyond technological aspects as well as policy aspects such as the impact of the Malta Convention in favour of ‘in situ’ conservation. Recent developments in the domain of archaeological guidelines and policies, including the Faro Convention of 2005 (Council of Europe) or the Charter for the Presentation and Interpretation of Cultural Heritage Site of 2008 (ICOMOS) will be used as a starting point to reflect on the cultural embeddedness of so-called international standards, including the practice of ‘in situ’ presentation. The context for doing so will be the results and experiences of the EU Han-Pisa Project (2008-2009) that was designed as a cross-cultural dialogue on ‘in situ’ presentation in both Europe and China. Key example for Europe is the research and conservation in San Rossore, Pisa, of about 30 ancient ship wrecks dating from the classical period onwards while in China reflections were made on the conservation and presentation ‘in situ’ of the terracotta images surrounding the mausoleum of Han emperor Jing Di (second century BCE).

## **INVESTIGATIONS ON STRATEGIC INTERPRETATIONS OF IN-SITU ARCHAEOLOGICAL SITES IN MAJOR URBAN CENTRES : A COMPARATIVE STUDY**

Inoue Yoko, University College London (UK)

Major urban centres are multi-functional places where a range of values come into play and often conflict with each other. In such a diverse environment, the importance of archaeological sites is often unrecognized. For this reason, promoting their significance to the public becomes challenging and complex. In urban areas, due to renewal and development, archaeological display spaces become limited, and, consequently, site interpretations can be considerably affected. In addition, presentations need to be practical, to coordinate with the surroundings, and to maintain urban functions. So, what interpretive strategies should be implemented in major urban centres? Can archaeological sites be successfully interpreted by the visitors, or could the impact of the urban conditions take over their significance?

The case studies that I conducted are Roman Amphitheatre in London and Naniwa Palace Site in Osaka. These sites were opened to the public between 2001 and 2002. The reasons for selecting these sites are; they are located in major urban centres, their in situ remains are incorporated into modern buildings, and they share similar presentation and interpretation approaches on in situ ancient remains, such as the use of reconstructions and surface markings. In this research, I primarily focused on the visitors’ responses to the in situ remains to measure the effectiveness of the approaches.

The investigations aim to play a role in raising the subject as an international issue and introducing potential strategies for presenting ancient sites in an urban context. It will not provide a structured model since the strategies are site specific.

## **COMMUNITY ACCESS TO THE IN-SITU URBAN ARCHAEOLOGICAL HERITAGE AS ILLUSTRATED BY CASE STUDIES IN TRONDHEIM, NORWAY**

Peacock Elizabeth E., Vitenskapsmuseum, Norwegian University of Science and Technology (NTNU) - Trondheim (Norway) & University of Gothenburg (Sweden)

Large-scale archaeological excavations of the medieval cultural levels in the city of Trondheim, Norway began in the 1970s as the result of extensive urban renewal, continuing through the mid-1990s. Not only have large numbers of well-preserved artefacts of all material groups been recovered, but also substantial architectural structures. Quite early on, the decision was taken to incorporate some of these architectural features into the new buildings erected, and to make these ruins accessible to the community. Three projects in particular stand out: the Sparbanken bank building, the Trondheim City Library, and the Archbishops' Palace Museum.

The first project, in the late 1970s, entailed the ruins of one of Trondheim's early stone churches discovered under what was to become a bank building. These remains were incorporated into the basement, accessible during opening hours, augmented with an exhibition of artefacts. The second project, 10 years' later, consisted of architectural features uncovered on the site of the new city library. These were integrated into the new building, and are now seen daily by thousands of visitors. The final project, yet ten years' later, involves the integration of the remains of several medieval workshops and a precinct wall with the subterranean exhibition area of a major national museum that now stands on the site.

These urban archaeological windows are very different in their method of integration, public accessibility, financing, maintenance, host institution outreach commitment, and overall success, and well illustrate different approaches to offering local citizens (stakeholders) insights into their common buried cultural heritage.



## **ARCHAEOLOGICAL STRATIGRAPHIC AND CONTEXTUAL SIGNIFICANCE OF IN SITU PRESERVATION**

Vandrup Martens Vibeke, Norwegian Institute for Cultural Heritage Research – NIKU (Norway)

During the past 15 years or more, work on in situ preservation of archaeological remains has taken place as a consequence of the Valletta charter of 1992. However, much work has dealt with questions of the feasibility of in situ preservation without debating to which extent it is the desired solution.

There has been a tendency to be seduced by and caught up in measurements, and thus avoiding to decide what to actually do if or when critical limits for preservation are reached.

It is now time for the debate to turn to the preservation or conservation of archaeological contextual information, and this paper aims to do so. To which extent can we allow archaeological remains to degrade before they lose their stratigraphic and contextual meaning, become unreadable? If or when we can measure that such limits are reached, which actions shall we then take? And how do we finance rescuing information through excavations or further in situ conservation? By no means do we have all the answers to the above questions, but that makes it even more important that they are asked.

## **ENVIRONMENTAL MONITORING OF A NORWEGIAN ROCK ART SITE AND ITS PRACTICAL APPLICATION IN IMPLEMENTING A PRESERVATION STRATEGY**

Turner-Walker Gordon, School of Cultural Heritage Conservation, National Yunlin University of Science and Technology (Taiwan); Peacock Elizabeth E., Norwegian University of Science and Technology - Trondheim (Norway) & University of Gothenburg (Sweden); Sæterhaug Roar, Norwegian University of Science and Technology - Trondheim (Norway)

Long-term environmental monitoring is a common requirement when planning the preservation of archaeological resources in situ. Monitoring generates large volumes of data that are hard to interpret and integrate into a preservation management strategy for the archaeological site. Between September 1997 and December 2002, as part of the Norwegian National Rock Art Project (1996-2006), a programme of environmental monitoring was undertaken at the Leirfall rock art site. This project combined local meteorological data with temperature and wetness readings measured on both the inscribed rock surface and adjacent bedrock under topsoil with/without additional insulating barriers.

This data was integrated with calculated solar radiation flux and freezing episodes to understand the factors likely to contribute to deterioration of the rock surface. To summarised: solar radiation is the dominant driver of temperature fluctuations; and, episodes of shadow can be detected in the temperature data. Winter-months' fluctuations are damped by the presence of snow cover, but during spring months a combination of cold nights and sunny days leads to diurnal swings of over 25 °C. Peaking in April-May, temperature swings decline in intensity to a minimum in January-March. Temperatures of the bedrock were damped by the overburden of 15 cm of soil/turf, with few

episodes below freezing. Intercision of a 5-cm thick layer of insulation immediately above the bedrock provided an additional buffering effect.

Study results led to the development of a site management plan for covering the inscribed rock surfaces late autumn to spring to mitigate against the deteriorative effects of temperature fluctuations.

### **ARCHAEOLOGICAL REMAINS IN THE UNSATURATED ZONE: A CHALLENGE FOR THE GEOCHEMICAL AND -PHYSICAL CHARACTERIZATION OF THE PRESERVATION CONDITIONS**

Hartnik Thomas, Bioforsk – Soil and Environment (Norway)

The preservation of buried archaeological remains is closely connected to the prevention of physical, chemical and biological degradation of objects of organic and metallic origin. Preservation of these objects is dependent on the physico-chemical as well as biological conditions in the surrounding soil layers. Large volumes of archaeological deposits in many medieval towns in Europe are situated in the unsaturated zone that is located above the groundwater level and where the layers are not permanently waterlogged. Oxidation of organic and metallic material is possible if oxygen is transported with the pore gas to the anthropogenic layers, or if oxygen rich soil- or groundwater infiltrates soil layers containing cultural heritages.

While the environmental conditions in the waterlogged zone below the groundwater level are usually described by monitoring and sampling of the groundwater, adequate methods for monitoring the preservation conditions in the unsaturated zone are rare.

It seems that the combination of archaeological, geochemical and geophysical techniques is promising for the description of the preservation conditions of buried archaeological remains in the unsaturated zone. In this presentation we present a methodology to assess the environmental conditions in the unsaturated zone including both geochemical characterisation of the redox conditions in soil layers and geophysical (non-invasive) monitoring of the soil properties that control transport of air and oxygen-rich rain water in soil. The feasibility and significance of the proposed methods will be illustrated with examples from Norwegian investigations.

### **MONITORING IN SITU PRESERVATION: CURRENT STATUS OF TECHNIQUES AND COMPARATIVE STUDIES**

Vorenhout Michel, IGBA, Faculty of Earth and life Sciences, VU University - Amsterdam (The Netherlands)

Monitoring of in situ preservation is an important field of research in current archaeological management. Its application is still not standard, mainly due to lacking standard techniques and protocols. Some techniques like groundwater level monitoring are becoming a standard technique. Others like redox potential measurements, important for monitoring of degradation potential, and soil moisture content, are only recently becoming available on a commercial basis.

This presentation will give an overview of several current and new techniques used in monitoring projects in the Netherlands and UK. It will also give discuss some standard monitoring protocols that act next to in situ conservation protocols. Example projects include the standardized monitoring in the city of Almere (Netherlands) and the monitoring of a rewetted wetland area in the Northern part of the Netherlands. Lastly, some new comparative studies will be presented. Those research projects show the application of some preservation techniques like raising soil levels, raising groundwater tables and different techniques of piling. The mentioned techniques are applied in various building projects, but effects on in situ preservation are generally unknown. This overview will hopefully stimulate the formation of joint research projects within the EU.



C006

Session title:

**RURAL LAND USE AND THE MANAGEMENT OF THE ARCHAEOLOGICAL HISTORICAL LANDSCAPE: AN EUROPEAN PERSPECTIVE****Organiser:** Trow Stephen, English Heritage (UK)**Co-organiser:** Holyoak Vincent, English Heritage (UK)**Session abstract:**

A combination of agricultural intensification and the restructuring or abandonment of land resulting from changes to agriculture are now recognised as significant threats to the archaeological resource in a number of European states, both within and outside the European Union. Similarly, while forests are an important aspect of the cultural landscape, intensive and highly mechanised forestation processes can also damage archaeological remains. Changes within the land-based industries endanger not only archaeological and palaeo-environmental remains, but also the cultural aspects of landscapes and the historic buildings associated with traditional farming systems.

The processes associated with these changes (such as drainage, soil erosion, deep ploughing, and the dereliction of traditional landscape features) represent threats that generally lie outside the spatial planning and development control systems of most European countries. As a result - particularly as the spatial planning system in an increasing number of countries begins to more effectively protect archaeology from development pressure - these processes may now represent the greatest threat to the continued survival of the European archaeological resource.

This session is organised by the Joint Working Group on Farming, Forestry and Rural Land Management of the EAA and EAC. It will examine: what is understood about the nature, scale and pace of impacts acting on the archaeological resource as a result of changes to farming and forestry; current research to address the mechanics of these threats and to assess their relative impacts; and measures being adopted in some European countries designed to counteract these pressures.

**Paper abstracts:****FARMING, FORESTRY, RURAL LAND MANAGEMENT AND ARCHAEOLOGICAL HISTORICAL LANDSCAPES IN EUROPE: AN INTRODUCTION**

Trow Stephen, English Heritage (UK)

This paper will set the scene for the session as a whole. It will briefly consider the impacts of various rural land uses on the cultural historical landscapes of Europe, with particular reference to countries where this is being actively researched. It will also consider how current and future trajectories of rural land use might further impact on the historic landscape and the archaeological resource.

The paper will question whether archaeologists can successfully adopt a more proactive approach to the positive management of their resource or whether they must always remain passive bystanders in the face of major threats from intensive agriculture, commercial forestry and the restructuring and abandonment of land.

In this context the paper will introduce the Joint Working Group on Farming, Forestry and Rural Land Management of the European Association of Archaeologists (EAA) and the Europae Archaeologiae Consilium (EAC) and it will examine prospects for achieving better management of the cultural historical landscape through various policy instruments, including European Union rural development policy.

**PROBLEMS AND PERSPECTIVES OF ARCHAEOLOGICAL HERITAGE PRESERVATION IN AGRARIAN LANDSCAPES IN GERMANY - A SURVEY OF FEDERAL STRUCTURES**

Strobel Michael, Westphalen Thomas, Landesamt für Archäologie Dresden (Germany),

In Germany the relationship between agriculture and archaeological heritage conservation is marked by a deep mutual distrust. While agricultural use is regarded as one of the main reasons for the destruction of archaeological monuments in rural areas, farmers associate archaeology with a further limiting of their scope of action, financial losses etc. So far there are no approaches which present a solution for this enmity. There is a nationwide lack of effort to include archaeological heritage preservation in future strategies for sustainability regarding rural areas.

As well, federally organised heritage management and regional diversity don't facilitate the management of rural landscapes.

The main aim of the „Archaeology and agriculture“ attached to the „Verband der Landesarchäologen in Deutschland e. V.“ is a mutual exchange of information, an inventory of the different programmes of promotion and management strategies as well as coordinated lobbying. The aim of the saxonian pilot-project is the development of new strategies that could be transferred to the other German „Länder“. It therefore involves creating structures of confidence and trust, which follow the tradition of civil commitment, consolidates emotional ties and allows for a high degree of transparency and mutual exchange of information. Only a participative approach can release responsibility for cultural heritage beyond legal restrictions and confer real sustainability to the project. Thus for the first time the opportunity arises to consistently use structural changes in agriculture and rural areas for future strategies of protection and to reassert the basic concern of archaeological heritage conservation – the preserving of monuments.



## **FORESTS IN BAVARIA: AN ARCHIVE OF HUMAN HISTORY**

Suhr Grietje, independent researcher (Germany)

Forests in Bavaria are rich in prehistoric and historic monuments, such as burial mounds, the limes, remains from medieval castles and from industries of modern times (e.g. glass production). But these archaeological remains are increasingly endangered. Especially an uncontrolled use of new types of machines in forestry (so-called 'harvesters') and illegal excavations are significant threats.

In Bavaria an intensified cooperation between the Forestry Commission and Heritage Management started in 2006. It is seen as an essential contribution to the survival of archaeological sites in wooded areas. Measures adopted up until now mainly concern public relations. As a first step, owners of forests, forestry workers and politicians are provided with information about the significance of the cultural heritage in their forests (for further information see [www.lwf.bayern.de/publikationen/daten/spezial/p32808.pdf](http://www.lwf.bayern.de/publikationen/daten/spezial/p32808.pdf))

## **AGRICULTURAL CHANGES, ANCIENT MOUNDS, AND ARCHAEOLOGICAL COURSE-CORRECTIONS: SOME FIELD (AND FOREST) NOTES FROM SOUTHERN BURGUNDY**

Meyer William, Dept. of Anthropology & Research Laboratories of Archaeology, University of North Carolina - Chapel Hill (USA)

Changes within agricultural industries endanger archaeological and paleo-environmental remains. Since the mid-1970s, the French Project has followed such changes and their effects on the landscape of southern Burgundy: observing shifts in landscape management and trying to understand how more-traditional, local management schemes have come to be amended or abandoned entirely. In this paper, I discuss these issues as they impact the Bronze and Iron Age burial mounds of the region. Among the threats to these tumuli are agricultural intensification (particularly under the European Union's Common Agricultural Policy) and mechanized deforestation. I argue that the professionalization of archaeology — which has enhanced our ability to understand the past — may limit our ability to mitigate the threats posed by agricultural change. As we move forward, four adjustments will help us to better protect the sites we study: (1) a re-evaluation of how we set "research priorities", (2) the adoption of an "ethnographic approach" to better understanding the circumstances that have led to the endangerment of archaeological resources, (3) a renegotiation of the relationship between professional and avocational/amateur researchers who work in the same region, and (4) the development of a "community-based archaeology" initiative which seeks to capture the imaginations of young people, fostering a landscape ethic that recognizes the importance of historic preservation. Creating effective heritage management plans for the future will involve altering how we practice archaeology, expanding what constitutes "archaeology", and recognizing the important role played by various non-archaeological stakeholders as allies (rather than antagonists) in the preservation of archaeological resources.

## **MANAGING AGRICULTURAL AND ENVIRONMENTAL CHANGE ON THE BURREN, CO. CLARE**

Grant Christine, Dept. of Environment, Heritage and Local Government (Eire)

The Burren Uplands in Co. Clare, Ireland is an archaeological landscape of international significance. It is also internationally renowned for its geology and flora. Changes in the Common Agricultural Policy in the past number of years has seen a move away from traditional farming practice, a reduction in the number of people farming the landscape and an increase in the regeneration of natural scrubland. The Burren is also increasingly being promoted

as a tourist destination. This poses difficulties on a number of levels for managing what is a unique and very vulnerable landscape. On foot of the European Landscape Convention Ireland is proposing new archaeological legislation that will enact a provision for the designation of important historic landscapes. This is to be welcomed but it is just the beginning of a complex process. It brings with it many challenges, including how we define an historic landscape, how we devise effective management and protection policies and effective enforcement. How will these challenges be met? How will we balance the needs of protecting archaeology, geology and flora? And how do we integrate this with the needs of the local farming community and tourism. There has never been a comprehensive survey of the archaeology of the Burren. However, numerous small scale research studies have shown that there are considerably more archaeological remains than are reflected in our national inventory. So how do we evaluate the real impacts on archaeology and how do we ensure its conservation into the future?

### **A VIEW FROM BEYOND EU - NORWEGIAN CHALLENGES RELATED TO HERITAGE PRESERVATION IN THE RURAL LANDSCAPE ( AGRICULTURAL AND FOREST LANDSCAPES)**

Smedstad Ingrid, Norwegian Directorate for Cultural Heritage (Norway); Risan Thomas, Norsk institutt for Kulturminneforskning - NIKU (Norway)

This paper will present how the Norwegian heritage management work when implementing heritage management policies related to the rural landscape, and an example of how applied research try to provide a base for decision-making. The Norwegian rural landscapes, which can be sub-divided into agricultural and forest landscapes, are affected both by global economic processes as well as national, regional and local policies.

The paper presents an example of a research project that tries to provide input related to the challenges in preserving cultural heritage in forested areas. The project is a 'work-in-progress', and will first be concluded in 2010. In Norway, different regions have different forestry and logging policies and practices. These regional differences could have different impact on the preservation of cultural heritage. Furthermore, new products like bio-fuels, might lead to different logging practises, thus leading to a future change in the preservation of cultural heritage. LiDAR and predictive modelling are used to analyse the relation between heritage sites and their relation to a set of spatial parameters. The result of the spatial analyses of cultural heritage will be assessed in relation to economic, infrastructural, and environmental driving forces and the effect of such driving forces.

### **FORESTRY AND ARCHAEOLOGY IN BRITAIN: A BUMPY PAST AND A CHALLENGING FUTURE.**

Crow Peter, Centre for Human and Ecological Sciences, Forest Research (UK)

In the past, British forestry has not always been viewed as compatible with the historic environment. Some archaeological monuments were inadvertently damaged during forest operations, whilst others were hidden, often forgotten, within the newly planted trees or older woodland cover. However, British forestry has changed and the modern, multi-purpose benefits of forests require the protection and enhancement of archaeological features for current and future generations. To achieve this, it is necessary to know what survives within our forests and to obtain an understanding of how forest management and wooded environments interact with this evidence. This presentation will therefore touch upon the use of Remote Sensing technology to map many of these archaeological features hidden within our forests and consider how different forest environments and operations can influence archaeological preservation and its value to society. Whilst most forest management decisions have the potential to impact upon archaeological preservation, informed guidance can reduce the risks to acceptable levels. Many hidden archaeological features have been rediscovered within forests and research has shown that when compared to other land uses, well-managed forest environments can offer favourable conditions to allow the long-term preservation of many remains. However, any long-term protection also requires consideration of future challenges and both climate change predictions and forest policies to address them offer a new set of potential impacts that require further research and monitoring.

### **ADDRESSING ARCHAEOLOGICAL CONCERNS IN AGRICULTURAL AND FORESTRY REGULATION AND SUPPORT SYSTEMS IN IRELAND: AN OVERVIEW OF CURRENT PRACTICE AND POSSIBLE FUTURE CHANGES.**


Byrnes Emmet, Environment Section, Forest Service Inspectorate, Dept. of Agriculture (Eire)

This paper intends to summarise the systems currently in place in Ireland for the regulation of agricultural and forestry activities in terms of their potential impact on known monuments, the archaeological resource generally

and the wider cultural landscape. The relationship between hard regulation and other complimentary support and incentive schemes, e.g. the Forest Environment Protection Scheme (FEPS) and Rural Environmental Protection Scheme, will be discussed. It is also hoped to examine the implications for such agri-environment and forestry schemes in Ireland (and other comparable publicly financed supports) that could be brought about by on-going changes to European rural development policies, in particular the demand that efforts should be more firmly targeted on (if not entirely confined to) the Union's emerging environmental priority areas: climate change, biodiversity loss and water quality.

### **HERITAGE STEWARDSHIP IN FLANDERS**

Cordemans Karl, Flemish Land Management Agency (Belgium)



The Flemish Land Agency is a government agency active in the countryside. In their assignments, they are often confronted with cultural-historical elements of various kinds and degrees of importance. In order to assure the conservation and proper management of these elements, a new tool is being developed: the heritage stewardship. The mechanism and framework is largely inspired by the current agri-environmental agreements, in execution of the Rural Development Plan and Council Regulation 1698/2005. The idea is to financially compensate farmers or private persons for the loss of income, the work invested and the costs incurred because of their management of cultural historical heritage. This includes built heritage (such as chapels, pillboxes), landscape features (moated sites, dykes), green heritage (old hedges, orchards) and the soil archive (archaeological and palaeoenvironmental sites).

### **CARING FOR THE HISTORIC ENVIRONMENT IN THE UNITED KINGDOM COUNTRYSIDE: THE VALUE OF AGRI-ENVIRONMENTAL SCHEMES.**

Yates Mike, CADW (UK); Hunns Victoria, Natural England (UK); Wordsworth Jonathan, Archaeology Scotland (UK); Robinson Rhonda, Northern Ireland Environment Agency (UK)

Although the United Kingdom has sometimes claimed to be the first industrial nation of the modern world, only a small portion of our land is urban. Most of the UK – like most of Europe, indeed most of our planet – is still rural. But the rural landscape we see today is, of course, the product of human intervention over thousands of years and the evidence for this is seen in the historic features which survive in a rural context.

As archaeologists we are well aware that the survival of such features has been a function of land management which has often reflected, for example, political upheavals, economic forces and climatic change.

This continues, but the late 20<sup>th</sup> century saw the development of technologies which could affect huge areas on an unprecedented scale. Together with progressive globalisation, it also witnessed the establishment of institutions which could influence activity at a local – and sometimes remote - level. The European Union is one such institution and through the Rural Development Regulation and the Common Agricultural Policy the management of our countryside has changed. Early policies were undoubtedly damaging to our collective archaeological heritage, but the opportunities provided through Agri-environmental schemes supported by the EU can make a positive contribution. It is the purpose of this paper to examine how these have been implemented in the UK and to consider the implications of future developments.

### **PUTTING PLOUGH DAMAGE IN THE LABORATORY: THE RESULTS OF THE ENGLISH HERITAGE, DEFRA AND CRANFIELD UNIVERSITY CULTIVATION AND ARCHAEOLOGY PROJECT**

Holyoak Vincent, English Heritage (UK)

For over a century archaeologists in England have been concerned over the extent to which ever-more intensive arable agriculture has routinely degraded and destroyed our historic landscape. Following a favourable response from Government to its 2003 campaign 'Ripping up History', in 2004 English Heritage and the Department for the Environment, Food and Rural Affairs commissioned Oxford Archaeology to undertake the Conservation of Scheduled Monuments in Cultivation (COSMIC) project, the production of a desk-based methodology for assessing and mitigating the risks to sites under cultivation. Successful as it was, this project threw up a whole new series of much broader questions, leading in 2005 to the commissioning of Oxford Archaeology and the Department of Soils Science, Cranfield University on a new project which investigated how soil cultivation practices could be changed to minimise the impact upon archaeological sites. Using real time and accelerated laboratory and field tests on a series of replica archaeological sites, the five year project has challenged some existing perceptions amongst

archaeologists of just what is damaging, and why.

This paper offers an overview of this work against the policy background which has been its key driver.

### **THE POLICY OF ECONOMIC ADDED VALUE AND HERITAGE PRESERVATION - A WAY TO GO?**

Skar Birgitte, Norsk institutt for Kulturminneforskning – NIKU (Norway)

In Scandinavia the policy of economic added value has for the past 5 years become a new turn in cultural heritage management. In Norway the policy is also based on an understanding of cultural heritage as an asset for increased viability for rural areas, both socially and economically. This underlines the need for a critical focus on whether the economical and business agendas are compatible with the general sustainability scope of heritage management and how they affect local perceptions and understandings of heritage. The principal objective for our study is: When cultural heritage is activated as an asset for economic added value, what kind of selection processes are at play and what are their consequences? How do landscape features and land use/cover changes relate to the selection processes and do these changes have a feedback effect on perceptions and selection? Which public and private measures are activated; what are their effects and their degree of coordination? How can improved understanding of the selection processes serve as an input to planning and management?

A case study approach is used involving a comparison between the inland mountain region of Valdres and the coastal community of Vega. Methods cover analysis of land-use change and the physical state of cultural heritage; Interviewing key actors (farmers, cultural heritage owners, community associations, tourism entrepreneurs, planners, politicians etc), document analysis of municipal plans, strategic documents; assessment of other written material in order to convey "storylines" and representations of cultural heritage past and present (e.g. local historic literature, tourist brochures etc).



C007

Session title:

## **UNDERWATER ARCHAEOLOGY AND THE FUTURE OF SUBMERGED EUROPEAN PREHISTORY**

**Organiser:** Benjamin Jonathan, University of Edinburgh (UK)

**Discussants:** Benjamin Jonathan, University of Edinburgh (UK); Bonsall Clive, University of Edinburgh (UK); Pickard Catriona, University of Edinburgh (UK)

### **Session abstract:**

Major events of human prehistory, such as the post-glacial recolonization of Northern Europe and the spread of agriculture through the Mediterranean, took place across landscapes that are now, at least partially, underwater — the consequence of global sea-level rise and regional crustal subsidence since the Late Pleistocene. Much of the submerged landscapes lie at depths accessible to divers and can be investigated archaeologically. Prehistoric underwater research has emerged in recent decades from the western Baltic to the eastern Mediterranean and methodology can be applied to coastal regions throughout Europe and its surrounding environs. Moreover, there is a growing awareness of the potential for underwater archaeology to transform our ideas about key events in prehistory.

This session will examine new developments in the field of submerged prehistoric landscapes. Contributions will cover not only the results of current underwater research, both archaeological and paleoenvironmental, but also underwater methodology and techniques for site discovery, excavation, conservation, and interpretation. Emphasis will be placed on international collaboration and prospects for future research.



### **Paper abstracts:**

#### **AN INFRASTRUCTURE FOR RESEARCH ON PREHISTORIC ARCHAEOLOGICAL SITES AND OCCUPIED LANDSCAPES OF THE EUROPEAN CONTINENTAL SHELF**

Flemming Nic, National Oceanographic Centre – Southampton (UK)

The Continental Shelf adds 40 % to the land area of Europe. Archaeologists have known for over 100 years that prehistoric peoples occupied parts of the shelf during Pleistocene low sea levels. Over 3000 subsea archaeological sites are known in this area, including in the Baltic, Atlantic, North Sea, Mediterranean and Black Sea. A robust research infrastructure is needed so that archaeological discoveries can be routinely integrated with geophysical and palaeo-environmental seabed data, thus providing the research community with a way of logically storing new information, or searching for archived data in complete environmental context. This system should be designed to be permanent so that digital repositories of data, models, and text can be used and up-graded continuously on a European scale. The European geo-spatial data protocol INSPIRE combined with integrated data storage and access systems supported by GRID inter-operable architecture, and managed in conjunction with systems such as GENESI-DR, will provide a powerful modern basis. Acoustic surveying and geological coring for military, commercial, research and regulatory purposes provide substantial data on the geology, sedimentation, bathymetry, palynology, palaeo-coastlines, glacial limits, etc., for different Pleistocene and Holocene periods. Exploitation of these data combined with discoveries of new archaeological deposits will promote the integration of the continental shelf into the general prehistory of Europe.

#### **ARCHAEOLOGICAL APPLICATIONS OF THE JIBS DATASET: SUBMERGED LANDSCAPE MAPPING AND RECONSTRUCTION OFF THE NORTH COAST OF IRELAND**

Westley Kieran, Quinn Rory, Forsythe Wes, Plets Ruth, University of Ulster, Centre for Maritime Archaeology-Coleraine (UK); Bell Trevor, Dept. of Geography, Memorial University of Newfoundland, St. John's – NL (Canada)

Holocene relative sea-level (RSL) change around Ireland has been spatially and temporally complex, involving coastal submergence and emergence at different periods. Consequently, many coastal areas favoured by its earliest inhabitants – Mesolithic hunter-gatherers – now lie underwater. This paper will present work currently being undertaken to reconstruct these submerged archaeological landscapes off the north coast of Ireland. This

research takes advantage of the recently completed Joint Irish Bathymetric Survey (JIBS), a marine mapping program which has provided full coverage high-resolution multibeam bathymetric data for the seabed off the north coast. In conjunction with geophysical models of RSL and sub-seabed (e.g. cores and sub-bottom profiles) data, the JIBS data have been used to produce palaeo-geographic reconstructions of the past landscape, which in turn have facilitated the identification of areas of high archaeological potential. The first results of this study, presented in this paper, will form the basis of a future program of archaeological survey and prospection.

### **SUBMERGED LANDSCAPE EXCAVATIONS IN SOUTHERN BRITAIN: CLIMATE CHANGE AND CULTURAL DEVELOPMENT**

Garry Momber, Hampshire and Wight Trust for Maritime Archaeology & University of York (UK)

The end of the last Younger Dryas stadial saw the climate warm and the sea level rise inundating large tracts of land. C.7,500BP. This separated Britain from mainland Europe leaving dividing a potentially common European culture. The period prior to this perceived cultural divergence is little known as all the low lying areas of occupation, which would have been the most attractive places to live, have been swamped. The discovery of submerged occupation sites by the Hampshire and Wight Trust for Maritime Archaeology in a drowned forest 11m below the Solent, showed revealed exquisitely preserved archaeological and palaeo-environmental material. Excavation has revealed a landscape (8,000BP) containing locations with different functions including what appears to be the oldest boat building site in the world complete with remnants of a log boat. To understand these sites there is a need to interpret climatic changes and adaptations brought about by coastal geomorphological processes. Research with the support of English Heritage and the Leverhulme Trust is unravelling past events. This presentation will look at the artefacts discovered, reconstruct events that resulted in flooding of the landscape and look at the potential for similar sites across European coastal waters.

### **PREHISTORIC ACTIVITY WITHIN A CHANGING LANDSCAPE AT WOOTTON QUARR, ISLE OF WIGHT (UK)**

Farr R.H., University of Cambridge (UK); Sturt F., University of Southampton (UK); Dix J., National Oceanographic Centre, University of Southampton (UK)

Wootton Quarr encompasses 6 km of coastal zone on the north east coast of the Isle of Wight, on the southern Solent coast. The region is composed of a succession of silts and peat overlain with sand and shingle that are now being eroded as a result of vegetation loss and increased navigational dredging in the vicinity. Palaeo-channels with relict peat and salt marsh deposits run offshore. Initial dating of these deposits suggests that they provide a great resource for studying the marine inundation of the area throughout the Holocene. Much archaeological material has been preserved within this environment providing evidence of activity at Wootton Quarr from the Mesolithic to Bronze Age, and Roman and Mediaeval periods. This includes Mesolithic trackways and lithic scatters, Neolithic trackways and a possible Bronze Age settlement. This research project combines geophysical and archaeological survey and coring in the inter-tidal and sub-tidal zones in order to correlate the palaeo-environmental and archaeological data, investigating the archaeological features and their depositional relationships. This has enabled us to study environmental change on both the local and regional scale, facilitating interpretations of human activity and social change throughout the Holocene within the changing coastal environment.

### **NORTH SEA SUBMERGED PREHISTORIC ENVIRONMENTS: SOME READINGS FROM AN OBSCURE WORLD**

Hans Peeters, National Service for Archaeology, Cultural Landscape and Built Heritage (The Netherlands)

The southern North Sea basin is increasingly recognized as an important area for the study of prehistory at a NW-European, or even global scale. Numerous of Pleistocene and early Holocene mammal remains, lithic artefacts and worked bone/antler, as well as human remains provide direct evidence for the richness of the North Sea bed. However, the great majority was brought up by the fishing and dredging industry and hence lacks important context information. As such, the southern North Sea basin remains much of a black box. However, recent investigations (conducted by the University of Birmingham) into the survival of palaeolandscape surfaces in the Dogger Bank area give rise to some optimism as to the possibilities of gaining insight into find contexts or even the development of targeted surveying. In this contribution I will address some aspects of geo-archaeological approaches to the assessment of submerged prehistoric landscapes. Insights from present-day 'terrestrial environments' in the Netherlands will be used as a reference framework for submerged environments. Their characteristics of these

environments will be compared relative to possibilities and constraints for surveying and assessment at a larger 'landscape' scale.

### **THE HOLOCENE FLOODING OF THE NORTH SEA LOWLANDS: CONTEMPORARY PERCEPTIONS AND RESPONSES**

Leary Jim, English Heritage (UK)

Despite enormous increases in knowledge regarding the cartography of the sea floor, very little is known of the actual Holocene topography of the North Sea Basin, and uncertainties exist as to the speed and timings of the flooding of this area. This is probably why few people have attempted to discuss in any detail how such drastic landscape changes could have impacted on the lives of those dwelling in this landscape and there is little in the literature discussing the way people either perceived or responded to these events. The few discussions that there are of sea-level rise in the early Holocene tend to be one-dimensional. There is, however, an array of responses to major environmental change recorded in the ethnographic record. In this discussion I will use a number of examples from the anthropological and ethnographic literature to illustrate the possible perceptions and responses to sea-level rise in the early Holocene, and show the complex nature of human reactions to environmental change. This paper will also emphasise how climate change can affect people and communities on many different spatial and temporal scales, and produce a wide variety of responses, including acting to benefit individuals as much as disadvantage them. This paper will also show that environmental change should not be viewed apart from social factors; in other words such processes are only as hazardous as people make them. Critical to this discussion is an understanding that environmental changes are not something externally imposed on communities but an integral part of their world.

### **GEOPHYSICS METHODS IN LOCALISING SUBMERGED STONE AGE SETTLEMENTS**

Dencker Jørgen, The Viking Ship Museum – Roskilde (Denmark)

Research into submerged Stone Age Settlement sites in Denmark has a long history. In the 1980s the "Settlement Site Model" was developed based on a systematic reconnaissance of such sites on and around the coastal waters in Denmark. The model was verified in localities where flint artefacts lay exposed on the seabed and thus settlement sites were relatively easily identifiable. In more recent years marine geophysical methods have been used to map the submarine glacial surface from the last Ice Age, which has led to new possibilities to supplement this model and identify and localise other submerged settlement sites which have been completely covered by marine sediments or did not fit in with the previous model. The paper will present some of these new submerged settlement sites and highlight the fact that marine geophysics should be applied in marine archaeological investigations where the goal is to identify submerged prehistoric settlement sites.

### **MESOLITHIC HUNTER AND FISHER IN A CHANGING WORLD – A CASE STUDY ON SUBMERGED LATE MESOLITHIC SITES ON THE JÄCKELBERG, NORTH OFF POEL ISLAND, WISMAR BAY, MECKLENBURG-VORPOMMERN, GERMANY**

Lübke Harald, Centre for Baltic and Scandinavian Archaeology, Schleswig-Holstein State Museums (Germany); Harff Jan, Leibniz Institute for Baltic Sea Research Warnemünde (Germany); Lüth Friedrich, Roman-Germanic Commission, German Archaeological Institute (Germany); Schmölcke Ulrich, Centre for Baltic and Scandinavian Archaeology, Schleswig-Holstein State Museums Foundation (Germany); Tauber Franz, Leibniz Institute for Baltic Sea Research Warnemünde (Germany)

In the 7<sup>th</sup> and 6<sup>th</sup> millennium BC the late and early terminal Mesolithic hunter/gatherer populations of the North European plain were confronted by massive changes of their environment not only by the increasing reforestation of the landscape but also by the rapid sea-level rise of the world ocean. This process led to the final flooding of the Baltic basin and to the origin of the present Baltic Sea. The investigation of the reaction of man on this fundamental environmental change was a main task of the geoarchaeological work group of the interdisciplinary DFG Research Unit "Sincos" ([www.sincos.org](http://www.sincos.org)) from 2002 until 2009. One of the main regions of investigations was Wismar Bay in western Mecklenburg-Vorpommern. Several stone age sites were located during surveys with research vessels using geo-scientific equipment, such as side scan sonar, multi beam and sediment echo sounder, and remotely controlled underwater video camera, in 6.5 up to 11 m deep water north off Poel Island. The sites are belonging to different phases of the Late Mesolithic and the Early Final Mesolithic between 6.500 and 5000 BC. The best preserved sites were further investigated by underwater archaeological excavations. The paper will give a brief



overview about the most important geological, archaeological and archaeo-zoological results of the investigations.

### **STONE AGE HABITATION ON THE EUROPEAN CONTINENTAL SHELF – THE THREATENED TREASURY**

Fischer Anders, Heritage Agency of Denmark (Denmark)

Submerged Stone Age habitation sites in astonishing numbers and quality have been revealed on the West Baltic seafloor over the past decades. This paper presents the major approaches responsible for these scientific advances. For the moment the richest of prehistoric sites are only known from areas of less than 10 metres depth along the Danish and NE-German coasts. It is possible that similar archaeological potential exists in many other shallow areas of the continental shelf around the World. It is also likely that numerous coastal habitation sites with fine preservation of wooden artefacts, food remains, etc. exist further down the slopes of the sea floor in the West Baltic region as well as elsewhere. It is demonstrated, however, that much of the prehistoric treasury of the western Baltic is now rapidly vanishing. This sea floor erosion, apparently caused by massive deterioration of the under water vegetation which for millennia has stabilised sediments and preserved cultural heritage, appears to be the result of human activity. This ecological devastation is a very recent phenomenon, and it is reported to take place all along the European coasts. Climate change and rising sea level will likely add to the erosion problem. Therefore, it appears to be the right time for large-scale, pan-European programs for management and scientific exploration of the unique sources of cultural historical represented by the submerged Stone Age sites off the European coasts.

### **THE PREHISTORIC COASTLINE OF BOVA MARINA, CALABRIA: GEOLOGICAL AND ARCHAEOLOGICAL EVIDENCE**

Reinhardt E., Boyce J., McMaster University (Canada); Farr R. H., Robb John, University of Cambridge (UK)

The Bova Marina Archaeological Project has surveyed the San Pasquale River Valley in southern Calabria, Italy, recording sites from the Neolithic to Medieval Period. Until recently it was believed that the coastline had changed little over the last 6000 years, yet recent surveys of the inter-tidal and sub-tidal zone of the coast around San Pasquale have revealed that a large tract of the prehistoric coastline is now submerged due to rising sea-levels and local tectonic activity. Based on preliminary geological and marine geophysical survey, it appears that the Neolithic coastline was at least 0.6km from the present shoreline and may have contained extensive forests and wetlands, some of which have been preserved due to rapid burial and marine inundation. Truly 'coastal' Neolithic sites in the region may have been submerged and the evidence of prehistoric activity on the coast may now be missing from the archaeological record. This poses interesting questions as to whether our interpretation of prehistoric activity in the region may have been biased by our lack of information about how people were living in the coastal zone, particularly with regard to subsistence, maritime trade and travel. Equally, we consider how prehistoric people might have understood and interacted with the changing coastline, particularly during times of intense tectonic activity and sea-level change.

### **SUBMERGED PREHISTORY OF THE EASTERN ADRIATIC: PRELIMINARY RESEARCH AND FUTURE STUDIES**

Benjamin Jonathan, University of Edinburgh (UK)

The Adriatic coast was a major route for the spread of agriculture into both south-western and central Europe. Despite its importance, relative little is documented from the Early Holocene coastal settlements of the eastern Adriatic. Furthermore the region is often ignored within the larger discussion of the Neolithisation of Europe. Between 7000 BC and 5400 BC (the period of the Mesolithic/Neolithic transition) the Adriatic Sea rose 15 metres from -20m below present MSL to -5m. Coastal sites older than 5400 cal BC are likely to have been submerged during the transgression. Underwater archaeology has the potential to transform our ideas about the transition from foraging to farming, in this region and throughout Europe. This paper discusses the initial investigations in the submerged environments of the Eastern Adriatic. Based on preliminary findings and the analysis of the modern landscape through bathymetric and aerial data, proposed future research will also be presented.

### **SEA-LEVEL CHANGES FROM THE MIDDLE PALAEOOLITHIC TO THE EARLY NEOLITHIC PERIOD AND THEIR IMPLICATIONS ON THE COLONIZATION OF THE IONIAN ISLANDS IN WESTERN GREECE**

Ferentinos George, University of Patras (Greece); Gkioni Maria, Geraga Maria, Papatheodorou George, Voyantzakis John (Greece)

The study of sea-level changes shows that for the majority of the time i.e. between 65 and 11 kyr BP in the Middle and Upper Palaeolithic periods (100 to 10 kyr BP) when the sea level was between -120 and -60 m below the present day MSL, the present day shelf, on which the Ionian Islands lie, was emerged forming a coastal plain and that Corfu and Lefkada were connected to the Greek mainland. Therefore, the hunter-gatherers, who used or occupied these islands, have had an easy access using land bridges to reach them.

The islands of Kefalonia, Ithaka, and Zakynthos, however, were insular from the Middle Palaeolithic to the Early Neolithic period, separated from each other and from the Greek mainland by narrow straits ranging in width from 5 to 12 km. The human presence in these islands since the Middle Palaeolithic period suggests that the hunter-gatherers had the ability to sail across the straits and that they were taking the risk to travel at least to visible islands from the mainland. The overall geographical configuration of the islands in relation to the configuration of the mainland infers that the Middle Palaeolithic, Upper Palaeolithic, and Mesolithic hunter-gatherers were probably bearing in mind the concepts of “voyaging nursery” and “autocatalysis” in their movements to the islands.

### **NEOLITHIC COLONIZATION SITES ON CYPRUS COASTS ENDANGERED BY EROSION, TECTONICS, SEA-LEVEL CHANGES AND HUMAN ACTIVITIES**

Sevketoglu Muge, International Cyprus University (Cyprus); Galili Ehud, Israel Antiquities Authority (Israel); Salamon A., Geological Survey of Israel (Israel); Zviely D., Recanati Institute for Maritime Studies, University of Haifa – Haifa (Israel); Mienis H. K., National Collections of Natural History, Dept. Zoology, Tel Aviv University - Tel Aviv (Israel); Rosen B., International Cyprus University (Cyprus); Moshkovitz S., Geological Survey of Israel (Israel)

Cyprus shores, never connected to the mainland, witnessed early Neolithic colonization. Recent human activities and renewed Sea level (SL) rise endanger coastal and submerged Neolithic sites. Natural processes modifying coastal morphology are: SL rise; tectonic uplifting; coastal erosion. Beach deposits composed of marine shells, corals, and aeolianite, overly Pliocene marls. An index fossil for the MIS 5e isotopic stage, the gastropod *Persististrombus latus*, dates the deposits to 125 ka BP. The last high sea stand reached +6 m above SL. Coastal uplift was 11 m since 125 ka, and 1.2 m since the earliest colonization. Holocene SL rise was 50 m, thus the tectonic uplift effect since colonization is negligible. SL rise and coastal erosion are major causes of coastal modifications. Middle to Late Holocene beachrocks and rock-cut fish tanks retained their elevations indicating no significant SL change in the last 4000 yr. Transition between impermeable Pliocene marls and porous deposits above it create visible fresh water springs in coastal cliffs, attracting the early settlers who excavated the earliest known wells. Mylouthkia, Cape Akrotiri and Akanthou, earliest Neolithic coastal sites, are adjacent to water springs along the cliffs and support this hypothesis. Sections of such sites are probably now submerged.

### **UNDERWATER RECONNAISSANCE WORK AT THE EARLY SITE OF ASPROS ON CYPRUS**

Ammerman Albert, Colgate University (USA); Benjamin Jonathan, University of Edinburgh (UK); Howitt-Marshall Duncan, University of Cambridge (UK); Turnbull Tim, North Atlantic Research (USA)

This paper presents the results of preliminary underwater investigations that were conducted on the submarine terrace lying westward of the land site at Aspros in 2006 and 2007. Aspros is a large pre-Neolithic site, which was first identified on the west coast of Cyprus in 2004. As of 2003 there was only one good candidate for a pre-Neolithic site on the island, the rock shelter of Aetokremnos on the Akrotiri Peninsula. Reconnaissance work carried out in 2004 by the first author, led to the discovery of several new early sites on coastal formations of aeolianite around the island, including those of Aspros and Nissi Beach. Given early Holocene sea-level rise, the earliest prehistoric sites may lie submerged on the continental shelf. Thus, the main aim of the research at Aspros was to trace the extent of the land site out into the water. The investigations yielded some 40 pieces of chipped stone, including a number of tools. It is worth adding at this point that work of this kind has not been attempted at any other early site on Cyprus. The presentation will include selected footage from a documentary made of the survey by an underwater cinematographer. Overall this paper will discuss the significance of the initial investigations and propose a framework for future research on the island’s submerged prehistory.

### **THE DESTRUCTION OF SUBMERGED NEOLITHIC VILLAGES OFF THE CARMEL COAST ISRAEL**

Galil Ehudi, Israel Antiquities Authority (Israel)

Submerged Neolithic sites off the Carmel coast dated to the Pre-Pottery Neolithic C and the Pottery Neolithic, provide unique information on sea level changes, environmental processes, human economy and site desertion. Atlit-Yam, site dated to 9100-8000 yr. B.P. contains rectangular structures, storage areas, 92 human burials, water

wells, ritual megalithic installations, animal bones, botanical materials and tools made of stone, flint, wood, and bone. Findings indicate that the subsistence was based on land and sea resources. The five shallower Pottery Neolithic sites dated to 7900 – 6800 B.P. contain installations for olive oil extraction, storage pits, water-wells walled by stones and tree branches, tools made of stone, wood, bone, flint and pottery. The Pottery Neolithic Neve-Yam site included the oldest known organized cemetery with stone- built graves. The Pottery Neolithic subsistence was based on domestic animals, plants agriculture and marine resources exploitation. A suggestion that Atlit-Yam was destroyed by a tsunami generated by the collapse of Mount Etna is not supported by the archaeological, anthropological, faunal, and geological records. The data indicate that the site was abandoned around 8,000 yr B.P. due to the deteriorating living conditions caused by a gradual post-glacial sea level rise.

### **LATE QUATERNARY SEA-LEVEL CHANGES AND SUBMERGED HUMAN SETTLEMENTS IN NORTHERN PONTIC AREA**

Dolukhanov Pavel, Newcastle University (UK)

During the Late Quaternary three major periods of low sea-level may be recognised when considerable areas of Black Sea shelf were exposed and became available for human settlement: Neoeuxinian (25 – 10 ky BP); Early Neochernomorian;(10-8 ky); Varnian (6.0 – 5.5 cal BC) .There is no evidence suggesting a catastrophic character of sea-level changes and their impact on the spread of agricultural subsistence.

### **AN OVERVIEW OF IGCP 521-INQUA 0501 PROJECT “CASPIAN-BLACK SEA-MEDITERRANEAN CORRIDOR DURING THE LAST 30 KY: SEA-LEVEL CHANGE AND HUMAN ADAPTATION”**

Yanko-Hombach Valentina, Avalon Institute (Canada); Yanko-Hombach V., Avalon Institute of Applied Science – Winnipeg (Canada); Yilmaz Y., Kadir Has University, Cibali Merkez Kampüsü – Istanbul (Turkey); Dolukhanov Pavel, School of Historical Studies, University of Newcastle upon Tyne - Newcastle upon Tyne (UK)

The project started in April, 2005, to correlate scientific data obtained by diverse research groups dealing with climate change, sea-level fluctuations, coastline migration, and human adaptation within the “Corridor”. The project is aimed at providing multidisciplinary cross-regional correlation of geological, paleontological, archaeological, and historical records for the entire “Corridor” in order to evaluate the influence of sea-level change and coastline migration on human adaptation during the last 30 ky. The project incorporates four dimensions: 1. The geological dimension examines geological fingerprints of vertical sea-level fluctuations and lateral coastline change examining sedimentological and morphotectonical data caused by external (climate change, active tectonics) and internal effects altering coastal sedimentary budget. 2. The paleoenvironmental dimension integrates paleontology, palynology, and sedimentology in order to add new features to the portrait of past landscapes. 3. The archaeological dimension investigates cultural remains. 4. The mathematical dimension deals with GIS-based mathematical modelling of human dynamics underlying past/future sea-level change in the “Corridor” that can be meaningfully compared with global sea-level fluctuations. All dimensions are addressed through the integration of existing data and the testing of various hypotheses. This presentation will outline some achievements and limitations of the project in assessing the relationships between environmental changes, landscape dynamics, and human adaptive strategies in semi-isolated basins.

### **CONTINENTAL SHELF ARCHAEOLOGY: WHERE NEXT AND AT WHAT COST?**

Bailey Geoff, University of York (UK)

Until very recently the case for systematic exploration of the now submerged landscapes of the continental shelf was taken seriously by rather few mainstream archaeologists, and those who did advocate the study of underwater prehistory were usually regarded as diving enthusiasts, hopeless optimists with regard to the prospects of discovering useful information, or fringe archaeologists. Developments in the technology of underwater exploration, the steady accumulation of finds, and above all the realization that coastal regions for most of human prehistory are now submerged and most likely played a key role in many of the most important developments in prehistory, are slowly shifting the climate of opinion. The question now is not whether we should undertake underwater exploration, but how we should go about it. Here, there are still powerful inhibitions and uncertainties, especially when it comes to the deeper areas of the shelf and to the systematic discovery of archaeological sites. Large-scale international collaboration, engagement with industrial and commercial partners, development of purposeful and realistic strategies of exploration, a new and growing generation of trained practitioners, an expanding knowledge

base about the taphonomy of underwater landscapes and archaeological remains, and the progressive extension of experience from land to shallow water, and from shallow to deeper water, are all foreseeable ingredients of the next phase of investigation.



# **IDENTITY, INTERACTION AND CULTURE CHANGE**



D001

Session title:

## **ACROSS BELL BEAKER TERRITORIES AND BEYOND. COMMUNITIES, SOCIAL SPACES AND IDENTITIES**

**Organiser:** Czebreszuk Janusz, Adam Mickiewicz University - Poznań (Poland)

**Co-organisers:** Prieto-Martínez M. Pilar, University of Santiago de Compostela (Spain); Szmyt Marzena, Adam Mickiewicz University - Poznań (Poland)

### **Session abstract:**

The identity is a fashion concept in archaeology and it is nowadays used in relation to the 'Bell Beaker phenomenon'. Identity is a social strategy created with an evident intentionality to reinforce similarities and differences at various levels of social life. It looks clear that there are different identity processes in Europe during the III and II millennium BC on several spatial scales: development of social differences and connections between Bell Beaker and non-Bell Beaker communities, both within and outside of Bell Beaker Europe or using the Bell Beakers' characteristics as a tool to express the identity. In a given society processes of forming the identity are linked with some kind of power. Frontiers, peripheries, exchanges, journeys, wars, ... Identity is necessarily linked to mobility and mobility in turn is linked to identity. The way of using the different strategies establishing of identity at several territorial and temporal scales is the key factor to be able to define the 'Bell Beaker phenomenon' and to characterise it as an historical process. Therefore, we can deal with this subject in many ways. In order to justify this research project, we would like to avoid using typology as the only approach for studying the interactions outlined above and promote transdisciplinary research. We intend to answer old questions with new perspectives: To analyse Bell Beakers characteristics as a manner of manifestation for processes of forming the identity during the III and II millennium BC, which have to be consider in different scales (space, time, economy, culture, society, etc.).



### **Paper abstracts:**

#### **THE PRESTIGE HUNTERS. BURIAL CUSTOMS IN THE LOWLANDS BETWEEN ODER AND VISTULA AT THE TIME OF BELL BEAKERS**

Pospieszny Lukasz, Adam Mickiewicz University - Poznań (Poland)

In the Polish lowlands no typical Bell Beaker graves have been discovered. Instead, sparse interments of men equipped with archery gear and flint-made imitations of copper daggers are known. However, these artefacts were only added to a set of other artefacts typical for the late Corded Ware burial custom. The richest graves, of both men and women, contained amber and copper ornaments along with ceramic vessels of East-Central European style. The rules of body orientation, expressing gender identity, were not changed by the indirect Western influences. The number and frequency of daggers occurring in graves decline as receding from the flint mining and production centres in Northern Jutland and Rügen Island. A similar pattern is visible in the distribution of Single Grave burial types. The graves of men with various prestige and exotic objects suggest the rise of social inequality and evolution towards the Early Bronze Age hierarchical societies.

It is proposed to rethink the significance of the Bell Beakers in the transformations of practices and social structures in local context of the late Neolithic. The relatively limited degree in acceptance of ideas and material culture linked to the Bell Beakers did not obstruct the introduction of Bronze Age innovations.

#### **BELL BEAKERS: THE SIGNPOST TOWARDS THE NEW KIND OF SOCIETY**

Czebreszuk Janusz, Szmyt Marzena, Adam Mickiewicz University - Poznań (Poland)

There are no doubts that we can not find any uniform explanation for the Bell Beaker phenomenon. Moreover, our experience shows that it is impossible because the phenomenon was differentiated in the majority of important dimensions (e.g. taxonomy, types of finds, chronology). Nevertheless we can find a platform, which seems to be a "common denominator" for the Bell Beakers as a whole. It is a social dimension. A specific of Bell Beakers was their concentration in some regions of Europe that were located in various geographical and ecological zones between south Portugal and Hungary and between Jutland and Malta. The regions have been characterized by similar

general features of their historical contexts: an important role in terms of previous (i.e. earlier than Bell Beakers) cultural activity; inclusion in a network of long distance connections; and a long-lasting and rich regional tradition. In the second half of III millennium BC the mentioned general traits had constituted a background for processes of social changes which could be described as development of more complex social structure. They resulted in a new division of Europe: the Bell Beakers' features marked out a vast zone that differs clearly from others parts of the continent, i.e. a north-eastern (post-Neolithic) or south-eastern (under influences of Near East civilization) ones.

### **BELL BEAKERS AND THE EARLY BRONZE AGE OF SOUTHEASTERN EUROPE**

Kulcsár Gabriella, Szeverény Vajki, Archaeological Institute of the Hungarian Academy of Sciences (Hungary)

In the mid-third millennium BC the Carpathian Basin witnessed the meeting of two large, loosely integrated but rather different, cultural traditions: the central European communities characterised by the Bell Beaker package and the Early Bronze Age communities of south-eastern Europe. The aim of our paper is to investigate connections between these two in the Carpathian Basin and beyond. We will map connections through the distribution and characteristics of the local *Begleitkeramik* and other material culture items, and will try to describe processes through which common elements between the south-eastern fringe of Bell Beaker Europe and south-eastern Europe can be explained.

One of the many such elements is the possible importance of feasting in both areas, connected to the main ceramic types of the two areas: the Bell Beaker itself in central and western Europe and the typical one-handed jugs of south-eastern Europe. While formally different, both indicate the importance of feasting – a powerful and transformative social phenomenon, through which identities can be enacted and altered, social statuses affirmed or challenged.

### **CECI N'EST PAS UNE BELL-BEAKER. POWER, IDENTITY AND SPACES FOR REPRESENTING**

Prieto-Martínez M. Pilar, Dept. of History I and Heritage, Paleoenvironment and Landscape Laboratory, University of Santiago de Compostela (Spain)

Bell beaker pottery is one of the common denominators of a wide territory in Europe and northern Africa during the third and second millennia BC. Over the last few decades, detailed studies have revealed that it is possible to access many dimensions of this society beyond the object itself. A bell beaker pot is not only a bell beaker pot, and their designs form part of a system of social representation that goes beyond simple ornamentation. The purpose of this communication is therefore to define the iconography in bell beaker society from its multiple material expressions, in order to contextualise the geometric designs of bell beaker pots. Studying these spaces of representation will allow us to access to some of the power strategies and the development of the identity in these communities at a European level.

### **TYOLOGICAL ROOTS AND CULTURAL SPACES : THE EUROPEAN WIDE ORIGINS OF BELL BEAKER ARROWHEADS**

Bailly Maxence, Maison Méditerranéenne des Sciences de l'Homme - Aix-en-Provence (France)

Mainly focused on the wide variability of ceramic ware, little attention is paid to the analysis of stone tool morphology in Beaker contexts. Some confusion arises when archaeologists from eastern Europe and archaeologist from western Europe consider very different types of arrowhead as the «typical beaker type».

Mapping the main arrowhead types throughout Europe provide a quite clear picture of Bell Beaker diversity. However, looking for the origins of these tool types lead us to several parts of Europe which are neither Portugal nor the Dutch area.

### **BELL BEAKER IN SWITZERLAND : EMERGENCE OF POWER SIGNS IN THE ALPS?**

Besse Marie, Desideri Jocelyne, Laboratory of Prehistoric Archaeology and Peopling History, Dept. of Anthropology and Ecology, University of Geneva (Switzerland)

The canton of Valais lies in the Southwest of Switzerland, in the middle of the Alps, and belongs to the Vallée du Rhône – a valley extending from the Rhone Glacier to Lake Geneva. This region was much frequented during Prehistory, mainly during the Neolithic period which is well-known thanks to its many sites – settlements as much as graves. By studying domestic structures, it is possible to demonstrate a continuous occupation from Early Neolithic



up to Late Neolithic, whereas funeral monuments exist since Middle Neolithic and last until the Bell Beaker. The site of the Petit Chasseur (Sion, Valais) represents the main source for the end of the Neolithic funeral ritual in Western Switzerland. It has been possible to correlate the splendid collection of richly decorated anthropomorphic stelae and the outstanding grave goods to different chronological phases. This site shows also a Bell Beaker occupation, the last phase of the Neolithic period in Valais. The Bell Beakers appear to have both a novel and a mixed behavior. Novel because they build their own monuments very similar to those of Middle Neolithic regional graves type -, and mixed because they reused a previous monument. They would also create magnificent anthropomorphic stelae whose solar decorations would become dominant.

To aim at the symbolic and ritual identities of the Bell Beaker people, we need to isolate some characteristics. If the ornament could reveal cultural choices, - and may be a sense of belonging to a precise cultural complex -, its raw material attest the economic network, which is - probably - different from the cultural network.

### **IDENTITY, SOCIAL GROUPS AND SYMBOLIC DISCOURSE IN BELL BEAKERS**

Prieto-Martínez M. Pilar, University of Santiago de Compostela (Spain); Salanova Laure, CNRS - Nanterre (France)

In spite of the major importance pottery has had and continues to have in the investigation of the bell beaker 'phenomenon', especially the decoration and the shape of typological characteristics considered in order to define chronologies and territories, certain aspects still remain that deserve to be studied in detail. In particular, it has been demonstrated in other contexts that decoration techniques are important to understand production and social organization. Through bell beaker decoration in Atlantic Europe we will show how are expressed different identities. Nevertheless the ceramic decoration is not only a question of identity or symbolic values.

The pan-European standard and its associated techniques are the best example for delimitation of social groups and finally the re-used of particular bell beaker indicates the high value of some vessels in this society.





D002

Session title:

## **ENCLOSED SPACE – OPEN SOCIETY. CONTACT AND EXCHANGE IN THE CONTEXT OF BRONZE AGE DEFENSIVE SETTLEMENTS IN CENTRAL EUROPE**

**Organiser:** Jaeger Mateusz, Adam Mickiewicz University - Poznań (Poland)

**Co-organisers:** Fischl Klára P., Miskolc University (Hungary); Czebreszuk Janusz, Adam Mickiewicz University - Poznań (Poland)

### **Session abstract:**

The planned session will focus on the questions of contact and exchange in the context of Bronze Age defensive settlements. Considering the fact that the spreading of defensive settlements across central Europe in the first half of the 2nd millennium BC is believed to have been an effect of stimuli coming from the Aegean and Anatolia, we think this to be a key element of proposed discussions.

In European archaeology a firm view holds that defensive settlements played a key role in Bronze Age exchange systems. What is stressed in this connection is the importance of fortified settlements and certain groups of their inhabitants – elites – for the promotion and keeping alive the network of long-distance ties connecting central Europe in the north to the Aegean and Anatolia in the south. The chief facilitators of contacts between these remote areas were, it is believed, copper and amber.

What is worth noting is a significant advance in excavations on defensive settlements made in recent years. We suggest that at the session a discussion be taken up to verify the role of defensive settlements. We hope that it will be possible to name records not only bearing out the views hitherto prevailing but also supplementing them or even supporting entirely different views on the subject. As particularly interesting in this context we consider the question of the involvement of defensive settlement inhabitants in exchange on two levels: first, related to long-distance ties and, second, connected to regional links.



### **Paper abstracts:**

#### **AEGEAN ELEMENTS AND INFLUENCES IN CENTRAL EUROPEAN BRONZE AGE DEFENSIVE ARCHITECTURE?**

Alušik Tomas, independent research (Czech Republic)

The question of Aegean elements or influences in Central European fortified settlements was much debated in the last decades. The hypotheses that Aegean - mostly Mycenaean - fortified settlements served as models and influenced the genesis and especially the form and appearance of Central European citadels were, as to my knowledge, formulated mostly by Central European, and not Aegean prehistorians. So my paper attempts to examine this topic from that second perspective. I will analyse the outer characteristics (form, construction technique etc.) of defensive architecture in both areas and try to catch the reasons for the emergence and construction of fortified citadels in Central Europe. In the end the possible Aegean elements and/or influences will be summarized.

In my opinion only the general idea and concept of high situated and fortified settlements or citadels can be viewed as the only possible Aegean influence on Central European defensive architecture (in wider sense). The form and appearance and other possible similarities are in my opinion rather the results of an independent - however similar in certain aspects - development.

#### **THE MIDDLE BRONZE AGE FORTIFIED SETTLEMENTS OF THE BERETTYÓ VALLEY**

Dani János, Déri Múzeum Debrecen (Hungary)

The MBA fortified tells of the Berettyó Valley are well-known since the end of the XIX century. Some were excavated in the years of 1920's and later, between 1970-80 by Sz. Máthé M.

In the last common study with K. Fischl we have try to summerize all of the information about these tells, their outer settlements and some small satellite settlements. At the same time we have studied the settlement structure and the settlement hierarchy from geographical point of view, during the flourishing MBA of this region. Now I try to examine the fortified tells from social viewpoint. With G.V. Szabó we have created a model of the phenomenon observed in the micro-region Polgár-Island: 'tells as the centres of the Elite, the social power and wealth'. Considering some unique



finds from the tells of the Berettyó valley, I compare it with the situation on Polgár-Island (testing the hypothesis) and I attempt to outline the relationship of these MBA strongholds.

### **THE ROLE OF THE HERNÁD VALLEY IN THE SETTLEMENT STRUCTURE OF THE FÜZESABONY CULTURE**

Fischl Klára P., Miskolc University (Hungary)

The topic of this presentation is the role of the different microregions in the existence strategy of the Fűzesabony Culture by examining its settlement system, furthermore the influence of the geographical circumstances for the formation of settlement types. The category and types of the fortified settlement also will be discussed. The role of the Hernád valley trade route in the distant connections of the Hatvan and Fűzesabony Cultures will be presented particularly on the basis of new Hungarian examples.

### **THE UNETICE CULTURE'S FORTIFIED SETTLEMENT IN BRUSZCZEWO AND ITS ROLE IN MICRO- AND MACRO-REGIONAL EXCHANGE**

Jaeger Mateusz, Adam Mickiewicz University - Poznań (Poland)

The fortified settlement in Bruszczevo is one of the element constituting so-called Kościan group of Unetice Culture (western part of Poland). Apparently peripheral character of this settlement and related to it local societies is in stark contrast to the numerous evidences of external relations and influences within it. They are visible both in character and stylistic of bronzes and pottery and in occurrence of so-called princely graves.

Presented paper indicates on a potential importance of Bruszczevo settlement and its microregion in exchange of bronzes and circulation of a second strategic raw material of the Bronze Age - the amber.

### **D DIE BEFESTIGTEN SIEDLUNGEN IM KOMMUNIKATIONNETZ DES BERNSTEINS IM KARPATENBECKEN**

Marková Klára, Archaeological Institute of Slovak Academy of Sciences (Slovak Republic)

Durch die Analyse von anscheinend reichen materiellen Quellen zur Problematik von befestigten Siedlungen in der Slowakei können die älteren Feststellungen ergänzt. Die Grabung in Včelince bestätigt die Hypothese, dass die Befestigungen der Hatvan-Kultur in der Bronzezeit in der Slowakei zu den ältesten Befestigungen gehören (BA1). Die Frage der Größe und Funktion von befestigten Siedlungen könnte, wie es uns scheint, mehrere Antworten andeuten. Mehr eindeutige Antworten liefern nur die Fundstellen, die detailliert untersucht wurden. Wir kennen nicht genügend die Charakteristika der unbefestigten Siedlungen und die Beziehungen innerhalb der Siedlungsbällung. Die Luftbildprospektion deutet eine reale Möglichkeit der Existenz von Rondellen in der älteren Bronzezeit auch in der Slowakei an und es ist notwendig, diese Möglichkeit im Gelände in Form von Untersuchungen und Grabungen zu beglaubigen. Die Frage der Rolle von befestigten Siedlungen im Kommunikationsnetz des Bernsteins im Karpatenbecken wird auf Grund von ausgewählten Funden verfolgt.

### **THE DEFENSIVE SETTLEMENTS OF THE VATYA-CULTURE AND THE CENTRAL EUROPEAN BRONZE AGE EXCHANGE SYSTEM**

Reményi László, Budapest History Museum (Hungary)

The one of the main routes of the Central European Bronze Age Exchange System came through the Carpathian Basin and the territory of the Vátya culture in the first half of the second millennia BC. The routes of the exchange system changed at the middle of the millennia, and the main route escaped the Carpathian Basin. The role of the defensive settlements in the Bronze Age Exchange System is well known. The rise and down of the Bronze Age exchange system is contemporary with the rise and down of the defensive and tell settlements of the Vátya culture. We would like to study the connections between the changes of the settlement pattern (the rise and down of the defensive settlements of the Vátya culture) and the changes of the routes of the Central European Bronze Age Exchange System.

### **MIDDLE BRONZE AGE SETTLEMENT AND COMMUNICATION NETWORKS IN CENTRAL HUNGARY**

Kiss Vicotria, Kulcsár Gabriella, Szeverény Vajki, Archaeological Institute of Hungarian Academy of Sciences (Hungary)

A large portion of the Carpathian Basin in the Middle Bronze Age is characterised by the flourishing of complex, multilevel settlement systems, centred around multilayered fortified sites. In central Hungary, traditional interpretations emphasised the defensive importance of the chain of such settlements along the western “border” of the “Vatya culture”, a defensive line allegedly created against the invasion of the “Tumulus people”. An exclusively defensive role of such Middle Bronze Age settlements was postulated for other areas in the Carpathian Basin as well. Recent micro-regional studies (e.g. in the Benta valley), as well as other settlement research in other areas with similar settlement systems, have, however, pointed out the distribution of such central sites and their satellite settlements along smaller tributaries of major rivers, which could represent areas of political integration, dominated by a primary centre.

The aim of this study is to review the settlement data of the Middle Bronze Age in various parts of central and western Hungary, and to investigate whether such an interpretation is possible for these areas as well. A positive answer would considerably weaken the traditional argument identifying cultural change with migrations and ascribing fortified sites a solely defensive role, instead of one as political and economic centres and nodal points in communication and exchange networks.



**D003**

## **IDENTITY AND INTERACTION: A MACRO-REGIONAL VIEW OF CULTURAL DEVELOPMENTS AND VARIATION IN CENTRAL ASIA**

**Organiser:** Machicek Michelle L., University of Sheffield (UK)

**Co-organiser:** Johannesson Erik G., University of North Carolina - Chapel Hill (USA)

**Discussant:** Zvelebil Marek, Department of Archaeology, University of Sheffield (UK)

### **Session abstract:**

Central Asia has been witness to a unique set of cultural and technological developments that have had resounding consequences for human behaviour far beyond Eurasia. These include, but are not limited to, the domestication and eventual riding of the horse, the formation of powerful steppe confederacies that profoundly affected how settled people responded to nomadic pastoralist communities on their borders, and the establishment of the Silk Road networks which acted as a conduit for materials and ideas linking “East” to “West”. Central Asia thus represents a unique place for archaeologists to study changes in subsistence strategies, mobility, culture contact, and the construction of identity and understanding of “other”.

This panel aims to bring together archaeologists working in Central Asia to present recent findings pertaining to these matters. This will be a productive opportunity for scholars based in disparate regions of the world to present their research to others working in Central Asia and neighbouring regions. The purpose of this endeavour is to create a broader understanding of socio-cultural, economic and political transformations that were taking place across the region as a whole with particular emphasis on variation across space and time. Finally, we hope that this panel will act as a catalyst for international scholars to find promising new directions for future work that will contribute productively to our understanding of the past in this important region.



### **Paper abstracts:**

#### **SOCIO-CULTURAL TRANSFORMATIONS IN THE URALS DURING THE SECOND MILLENNIUM BC**

Koryakova Ludmila, The Institute of History and Archaeology, Russian Academy of Sciences, Ural Division – Ekaterinburg (Russia)

The second millennium BC in the southern part of Northern Eurasia is characterised by significant techno-economic rise towards the wide introduction of bronze industry and spread of pastoral stockbreeding. Instead of rather monotonous Eneolithic culture spread over vast territories, we have to deal with dynamic cultural diversity. In a general sense, the cultural situation was focused on the Andronovo family of cultures. However, the initial impulse of cultural process was given by spontaneous and unexpected appearance of the Sintashta cultural complex, the origin of which is still not very clear. Regions with rich deposits of raw materials became dominating surrounding areas, forming the centres of higher development. Besides that, one can see some indications of technological concurrence: at the end of the Middle Bronze Age two major technological traditions: western (Circumpontic) and eastern (Seima-Turbino) competed for dominance. The second millennium BC became an epoch of chariotry. The spoke-wheeled transport of southern Urals is one of the earliest discoveries in Eurasia in this field. However, we still do not know how the chariotry was organized and how the transition to back horse riding has occurred.

The descendants of the Andronovo heritage met the first millennium BC having a great experience in pastoralism, metallurgy, and high ecological and spiritual culture. However, their social structure was not so strong to resist to growing crisis issued from combination of many factors. In my paper, I am going to develop above mentioned statements and to highlight some recent discoveries in the study of the Sintashta culture.

#### **CHINGGIS KHAN AND PRE-INDUSTRIAL GLOBALIZATION CREATION: A WORLD-SYSTEM PERSPECTIVE**

Kradin Nikolay, Institute of History, Archaeology and Ethnography, Russian Academy of Sciences, Far Eastern Division, - Vladivostok (Russia)

One of the popular methodological approaches of the recent decades is the world-system analysis. The world-system relations are formed by four networks: bulk goods networks, prestige goods networks, political and military

networks, information networks. The networks of information and prestige goods are the widest ones. The networks of information exchange have played the most significant part in these processes. From this standpoint, the role of nomads in world history shows up, in principle, in a different way. The domestication of horses and expansion of wheeled traffic contributed to the acceleration of the transfer rates of information and prestige goods. In spite of the fact that the nomads themselves have not changed much over time they contributed to development of trade contacts, expansion of religions and geographic knowledge, development of the information networks, and technological exchanges between different civilizations. Mongols have exerted great influence on the cultural and political development of the Old World. They have enclosed a chain of the international trade into the common complex of land and marine ways. For the first time, all large regional civilizations of the medieval Old World (Europe, Islam, India, China and Golden Horde) proved to be so integrated into the common macroeconomic space that it resulted in the global information, technological and cultural exchange between the civilizations. It was the first globalizing trend in human history - medieval globalization of the XIII century.

### **CENTRAL ASIA IN PREHISTORY: KEY ISSUES AND NEW EVIDENCE**

Dolukhanov Pavel, Shukurov A., School of Historical Studies, Dept. of Archaeology, University of Newcastle (UK)

The key issues of Central Asian prehistory are focused on (1) the initial penetration of Anatomically Modern Humans (AMH) and (2) the spread and social consequences of early agriculture. Newly available evidence (Dolukhanov et al. 2008) strongly suggests the prolonged survival (until 14-12 kyr) in the Caspian – Turanian area of Mousterian technologies supposedly associated with Neanderthal populations. Obi-Rakhman rock shelter allegedly provides evidence of Mousterian-Upper Palaeolithic transition stage at 48-40 ka yet according to Vyshnyatsky (1996) it lies within the Mousterian industrial variability. No less controversial are hominid remains which apparently combine both archaic and AMS features.

The spread of agriculture in Europe and western Asia may be statistically approximated as a gradual expansion from the Levantine centre either enhanced or slowed by environmental factors creating bottlenecks. The earliest signals of agriculture in the Kopet Dag piedmont (Sang-e Caxmaq) suggest the age of 7000-6400 cal BC, with 14C dates for early agricultural Jeitun site being 6200-5800 cal BC (Harris et al. 1993). Significantly, a network of culturally related pottery-bearing foraging sites arose along the waterways further north. The stratum with early pottery was dated at Jebel Cave (Turkmenistan) to 5300-4800 cal BC. Radiocarbon dates of early pottery sites in the Lower Volga and North Caspian Lowland suggest an older age of 8000-6500 cal BC.

In view of the new evidence, one might suggest much earlier appearance of agriculture and pottery-making in the entire Caspian-Turanian area. The cool and dry '8200 ky BP event' (6400-6000 BC) might have triggered an outflow of surplus population from the early farming area, which acquired hunter-gathering strategies and transmitted the pottery-making technologies to local foragers. This process encompassed the entire semi-desert and steppe areas during the subsequent Altithermal period.

### **POR-BAJIN – THE MONUMENT OF TUVA'S ANCIENT HISTORY**

Arzhantseva Irina, Institute of Ethnology and Anthropology, Russian Academy of Sciences (Russia); Zav'ialov Vladimir, Institute of History of Material Culture, Russian Academy of Sciences - St. Petersburg (Russia); Inevatkina Olga, State Oriental Museum - Moscow (Russia); Panin Andrey, Geographical Faculty, Moscow State University (Russia); Modin Igor, Geological Faculty, Moscow State University (Russia); Ruzanova Svetlana, Institute of Ethnology and Anthropology, Russian Academy of Sciences (Russia)

The archaeological site of Por-Bajin («Clay House» in Tuvian) is situated on an island of Lake Tere-Khol (Republic of Tuva). The monument was known from 18<sup>th</sup> century, but large-scale research was carried out at the site in 2007-2008. Building materials and technologies show that Por-Bajin was erected within the Chinese building tradition. Probably the planning of the monument combined features of the "ideal town" and those of the "ideal Buddhist or Manichean monastery" where residential zones were placed along the inner perimeter of the fortress walls. Very likely the monument was built in the time of Uyghur Kaghanat, in the second half of 8<sup>th</sup> century. The negligible occupation layer implies a very short-lived functioning of the site.

Por-Bajin is situated in peculiar environment in a unique landscape zone, hence the need for scientific study of the site to address the following questions.

1. History of the monument and lake.
2. Processes of the monument's destruction.

As a result of applying scientific methods, important conclusions concerning the history of origin, functioning and

desertion of the site were drawn and predictions about its future made.

1. Lake Tere-Khol existed long before the building of the palace complex but was smaller.
2. The fortress was probably erected at the tip of a large peninsula or in the island.
3. Permafrost is found everywhere
4. Bank erosion is stimulated by frost fissures.
5. In the course of the excavations, traces of earthquakes were identified at the site.

Thus, the main factors of the complex destruction process have been identified. These are thermokarstic processes and the resulting bank erosion, earthquakes and subsequent fires.

### **DJANKENT - A MEDIEVAL OGHUZ SITE ON SYR-DARYA (KAZAKHSTAN)**

Ruzanova Svetlana, Arzhantseva Irina, Zilivinskaya Emma, Institute of Ethnology and Anthropology, Russian Academy of Sciences (Russia)

The archaeological site of Djankent is situated at the mouth of Syr-Darya not far from modern town Kazalinsk. S.P. Tolstov included Djankent to the group of sites named “marshy towns” which is connected with Oghuz Turks. Since 2005 the Russian-Kazakh team has been excavating the site. Today Djankent is a rectangle hill of 8 m of the height. At the north-western part of the site the Citadel is distinguished. The archaeological work is carried out on two main zones: 1) fortification: the joint of the Citadel wall and external wall; 2) dwelling complex in the north-eastern part of the site. The artifacts, architecture and building traditions show the combination of the ancient settled culture and nomadic (oghuz) culture. The paper will present the results of the research of the fortification and the dwelling complex.

### **BRONZE AGE MOUND STRUCTURES (KHIRIGSUURS) IN NORTHERN MONGOLIA: FACTS AND FICTION**

Frohlich Bruno, National Museum of Natural History, Smithsonian Institution (USA); Littleton Judith, University of Auckland (New Zealand); Amgalantugs Tsend, Mongolian Academy of Sciences - Ulaanbaatar (Mongolia)

Throughout northern, western and central Mongolia, large numbers of Bronze Age mound structures also known as Khirigsuurs have been reported. Variation in interpretation abounds, ranging from burial mounds to ceremonial or sacred monuments. In 2003, a collaborative project between the Smithsonian Institution and the Mongolian Academy of Sciences was initiated to conduct large scale survey and excavation of Khirigsuurs in the Hovsgol aimag (province). As a result, 2,000+ mounds have been recorded, and 35 excavated. Survey and excavation data show that Khirigsuurs are human burials dating to between 3,449 BP and 2,798 BP (Sigma-1) and that they exhibit a large range of variation in size and architectural design. Intrusive disturbance of mounds has occurred both in early antiquity and in modern times. The motivation for the former appears not to have been theft, as none of the Khirigsuurs either disturbed or undisturbed have yielded any artefacts. It is believed that a deliberate desecration of the human remains took place shortly after internment. This is supported by archaeological evidence, suggesting that those who constructed the mounds were aware of this possibility. It is proposed, that part of the Khirigsuurs' function as a place of burial was as a visual statement of control and rights over land use. The human remains uncovered from the Khirigsuurs depict a wide demographic set, including males and females and all age cohorts. Demographic profiling, suggests that the surveyed mounds are statistically representative of Bronze Age Mongolians and that the study of this past population and its associated mortuary practices, will allow us to reconstruct the social and biological history of the people who lived in northern Mongolia more than 3000 years ago.

### **AGE IDENTITY IN NOMADIC PASTORALIST COMMUNITIES: HIGHLIGHTING ASPECTS OF MORTUARY PRACTICE IN IRON AGE BURIALS FROM THE CENTRAL ASIAN STEPPES**

Machicek Michelle L., Dept. of Archaeology, University of Sheffield (UK); Johannesson Erik G., Dept. of Anthropology, University of North Carolina - Chapel Hill (USA)

It is commonly recognised that in archaeological discourse various group members are often left out of the equation when it comes to reconstructing certain characteristics of past societies. Various Issues pertaining to children and childhood in the past continue to be examined as a peripheral topic within general anthropological debate. Furthermore, questions concerning older and elderly individuals in societies are also rarely examined. Without a thorough consideration of these group members meaningful reconstructions of prehistoric societies cannot be undertaken. This paper examines burial contexts from the Bronze to Iron Age transitional period in the Central Asian steppes and focuses primarily on the burial practices of the *Xiongnu* polity in this region during the Iron Age

proper. This study will highlight variability in burial rites and mortuary monument types and discuss how these transformations may be influenced by the age of the interred individuals. Additionally, questions pertaining to hierarchy, social stratification and gender are relevant to this enquiry and will also be explored in this discussion. This assessment is intended to provide a preliminary overview of social circumstances, specifically addressing the question of age as it is reflected in mortuary practices of nomadic pastoralist communities of the Central Asian steppes during this period.

**AN INVESTIGATION OF HUMANS AND ANIMALS IN MORTUARY PRACTICE DURING THE BRONZE-IRON AGE TRANSITION IN MONGOLIA (CA 800-200 BCE)**

Johannesson Erik G., Dept. of Anthropology, University of North Carolina - Chapel Hill (USA); Machicek Michelle L., Dept. of Archaeology, University of Sheffield (UK)

When investigating the adoption of pastoralism in prehistory archaeologists often focus on identifying and distinguishing between domestic and wild animals, which disregards the dynamic changes in the social roles and values placed on different species in human-animal interaction. The development of pastoralism involves changes in human behaviour that relate to socio-economic practice, identity formation, and relationship to the environment. Nomadic pastoralism is believed to have arrived in Mongolia relatively late when compared to other parts of Central Asia, but the precise date for its establishment is still subject to debate. This paper explores the emergence of pastoral economies in Mongolia by investigating the changing role of faunal remains in mortuary practice at Baga Gazaryn Chuluu in the north Gobi Desert of Mongolia. The Bronze to Iron Age transition in Mongolia (800-200 BCE) is characterised by the emergence of new mortuary monuments and funerary practices that accompanied the emergence of material culture associated with the Xiongnu. When approached from a diachronic perspective, the use of faunal remains in mortuary rituals indicates an increased preference for pastoral resources over wild animals. Moreover, the inclusion of pastoral resources in the funerary assemblage becomes more standardized over time implying the increased importance of pastoral animals in ceremonial and ritual practice. When viewed against the backdrop of the emergence of nomadic pastoralism these changes indicate an increased reliance and value placed on resources associated with herding and attendant ideologies.



D004

Round Table title:

## **INTERACTIONS BETWEEN ETRUSCANS, VENETS AND EARLY CELTS - STATE OF THE ART**

**Organiser:** Jerem Erzsébet, Archaeological Institute, Hungarian Academy of Sciences (Hungary)

**Co-organiser:** Potrebica Hrvoje, Dept. of Archaeology, Faculty of Philosophy, University of Zagreb (Croatia)

### **Round Table abstract:**

Because of the spread of imported Etruscan artefacts in Northern Italy and beyond the Alps, research on this topic has a long history and extensive literature. Over the last few years a major international project ([www.fuerstensisitze.de](http://www.fuerstensisitze.de)) has dealt with the impact of Mediterranean high cultures on Early Celtic princely sites in Central Europe with special focus on settlement structure and urbanisation in Southern-Germany. In addition, several exhibitions and workshops explored the cultural connections between Etruscans and Picens, which included the Adriatic area and sea routes as well as the distribution of particular Italian find types.

In this round table session we would like to focus especially on recent discoveries and publications which could provide new information about the interactions between Etruscans and other Iron Age populations living in their immediate neighbourhood or in farther territories from the 8th to the 4 centuries BC.

Our aim is to go beyond the artefacts and explore all kinds of communication channels which made the transfer of know-how possible. We plan to realise this by examining metallurgy, by analysing pottery making and decoration styles as well as the distribution of ritual related ideas, such as grave architecture, offering, symposium or the representation of similar events. The presence of invisible goods sometimes quite far from the core territory refers to intense and continuous contacts. We would appreciate contributions discussing the way people might have communicated using different road systems and taking advantage of the landscape where they lived (close to the sea, lakes or harbours/ports) and how they profited from the multilateral exchange system.



### **Paper abstracts:**

#### **INTRODUCTORY THOUGHTS**

Jerem Erzsébet, Archaeological Institute, Hungarian Academy of Sciences (Hungary); Potrebica Hrvoje, Dept. of Archaeology, Faculty of Philosophy, University of Zagreb (Croatia)

#### **LES CELTES ET L'ETRURIE PADANE (V<sup>E</sup> ET IV<sup>E</sup> SIECLES)**

Vitali Daniele

#### **INTERACTION AND TRADE BETWEEN NORTH-ITALY AND BOHEMIA IN THE IRON AGE**

Sankot Pavel

#### **A SANCTUARY OF THE VENETIAN STYLE IN SOUTH BOHEMIA? THE HALLSTATT PERIOD RITUAL SITE ON THE BURKOVÁK HILL (CZECH REPUBLIC)**

Chytráček Miloslav, Chvojka Ondřej, John Jan

The paper summarises information on a ritual site dating to the period of the Hallstatt Tumulus Culture and located on Burkovák Hill near Nemějice in Southern Bohemia. Activity at this site can be dated to Reinecke's schema periods Ha C2-D2, or perhaps Ha D2/3. This hill top site is well known for plentiful finds of small ceramic sculptures. The assemblage of sculptures from Burkovák is unique in Central Europe for its size, and the authors see the closest parallels to this site in the Venetian shrines in Northern Italy.

The total number of extant sculptures from Burkovák to date, including the fragments of ceramic vessels, is 1855. The majority of the sculptures are symbols of the sun, horses, parts of a yoke, number of spools, weights and imitation jewellery or objects made of organic material. These votive objects were probably deposited on the site within some ritual ceremonies. Fragments of pottery funnels and vessels allowing us also speculate about drink-offerings.

Some of the motifs held strong significance also in the religious beliefs of the preceding period of the Urnfield culture and the ceramic objects from Burkovák reveal a link to symbols from that period.



D005

Session title:

## REINDEER AND HUMANS

**Organiser:** Svein Indrelid, University of Bergen (Norway)

**Co-organiser:** Helskog Knut, Tromsø University Museum - Tromsø (Norway)

### Session abstract:

Reindeer (*Rangifer tarandus*) has to all times been an important resource for people living under arctic and sub arctic conditions in Europe. Archaeological investigations of prehistoric societies exploiting reindeer in the middle and southern parts of Europe have to a large extent been related to middle and late Palaeolithic cultures, in the northern parts to Mesolithic and later hunting cultures.

At the present reindeer are extinct in most of Europe, with the exception of Norway, the northern parts of Sweden, Finland and Russia where large reindeer populations have prevailed from the beginning of Holocene. They were of great importance for Mesolithic and later also for some agricultural societies. In certain areas both reindeer hunting and herding are still an important economic resource.

Recent archaeological investigations of sites, hunting devices, rock carvings as well as osteological and genetic research of bone assemblages, have contributed to our knowledge on reindeer as a resource in the Nordic countries and have provided new understanding of settlement patterns and social organization in prehistoric societies. Of special importance are historical and ethnographic sources.

This session will focus on the exploitation of reindeer in a time perspective spanning from Palaeolithic cultures to recent times in all regions of Europe. We want to bring together archaeologists, osteoarchaeologists and biologists working on different aspects of reindeer and reindeer hunting. The aim is to discuss themes as reindeer migrations and consequences for the topographical and geographical locations of settlements and organization, different hunting techniques and hunting devices, as well as the use of bone assemblages in the interpretation of migration patterns, body and population size, sex identification and butchering techniques.



### Paper abstracts:

#### ANCIENT DNA ANALYSES GIVE NEW INSIGHTS TO THE EARLY RELATIONSHIPS BETWEEN HUMAN AND REINDEER

Røed Knut H., Norwegian School of Veterinary Science - Oslo (Norway)

Genetic analyses of contemporary reindeer populations through Eurasia reveal genetic structure with distinct haplogroups reflecting varying human use of the reindeer as domestic or wild animals. The structure suggests different origin of the early domestication process of reindeer across Eurasia. Genetic comparisons of mitochondrial DNA variation in reindeer material from archaeological excavations and contemporary material reveal that an extensive genetic change has occurred since the medieval period in several central reindeer areas Norway. The genetic change is discussed in relation to transition from hunter-gather to use of reindeer as of domestic animals.

#### A REMARKABLE COLLECTION OF LATE PLEISTOCENE REINDEER (*RANGIFER TARANDUS*) REMAINS FROM WOERDEN (THE NETHERLANDS)

Van Kolfschoten Thijs, Van der Jag Inget, Zoe Beeren, Argiti Vicky, Faculty of Archaeology, Leiden University (The Netherlands)

Woerden is a locality where the amateur-archaeologists Pieter Stoel collected thousands of fossil mammalian remains of Pleistocene age. The fossils are from dredged sediments yielding a mixed-assemblage includes a variety of taxa e.g.: Carnivora, *Mammuthus primigenius*, *Elephas antiquus*, *Equus*, *Coelodonta antiquitatis*, *Stephanorhinus*, *Hippopotamus*, *Megaloceros giganteus*, *Alces alces*, *Bos primigenius* and *Bison priscus*. *Rangifer tarandus* is very well represented in the faunal assemblage from Woerden.

Detailed investigation of the reindeer remains indicates that the assemblage from Woerden represents one population with juvenile as well as adult individuals. The adult specimens show a female/male ratio of 2:1 which is also characteristic for natural living reindeer populations. This suggests that we are dealing with one distinct

population. The dimensions of the limb bones indicate that the reindeer from Woerden is extremely slender. Taking the slender size into account, conclusion about the age of the faunal assemblage as well as the climatic condition during which the reindeer lived in the region can be drawn.

The locality Woerden yielded also Palaeolithic artefacts. A direct relationship between the reindeer bones and these artefacts could not be indicated; not a single reindeer bone or bone fragment shows traces of human interference such as clear impact or cut marks. This is remarkable considering the many European Palaeolithic sites where reindeer hunters left their traces.

### **DEFINING THE AHRENSBURGIAN CULTURE. CONTRIBUTIONS FROM A TECHNOLOGICAL STUDY OF REINDEER ANTLER ARTEFACTS**

Eriksen Berit Valentin, Archaeological State Museum, Centre for Baltic and Scandinavian Archaeology - Schloss Gottorf (Germany); David Eva, Université Paris X - Nanterre (France)

Late Glacial reindeer antler clubs and mattocks – also known as Lyngby axes – have often been associated with the classic Ahrensburgian culture. The spatio-temporal distribution of the Lyngby axes, however, is somewhat different from that of Ahrensburgian lithic inventories and may likely correspond to that of the Tanged Point complex *sensu lato*. Based on a re-examination of the Lyngby-axes from Stellmoor and other north European sites this pilot study will attempt to answer questions pertaining to the socio-cultural importance of these implements.

### **PREHISTORIC REINDEER HUNTING IN FINLAND**

Rankama Tuija, Institute of Cultural Research, Dept. of Archaeology, University of Helsinki (Finland)

Contrary to popular belief, reindeer have not been a particularly important resource in most of post-glacial Finland in prehistory. The Late Glacial tundra reindeer never reached Finland from the south but died out, probably due to rapidly warming climate and its consequent changes in vegetation, in Estonia, never reaching the northern shore of the Gulf on Finland. The earliest hunters in most of Finland, thus, did not follow herds of migrating reindeer into the country, but depended on elk and beaver and subsequently shifted to seals as their main prey.

It is only in Northern Lapland that reindeer have been economically significant. The earliest North Lapland sites show a refuse fauna almost totally dominated by tundra reindeer that had probably migrated into the area from the Barents Sea coast in the north. Later, another species of reindeer, the forest reindeer, appeared in Finland from the east. A much less gregarious species than the tundra reindeer, the forest reindeer were usually hunted as a part of a more mixed fauna, with only a few individuals appearing in refuse faunas. During the Postglacial Climatic Optimum, the forest reindeer appear to have replaced the tundra reindeer even in Northern Lapland, which was at that time covered by pine forest. Later, as the pine forest retreated, reindeer-dominated refuse faunas reappeared in the archaeology.

### **REINDEER-ENCLOSURES 3300 - 4500 BC. MYTHS OR REALITY?**

Helskog Knut, Tromsø University Museum - Tromsø (Norway)

In arctic Norway, at 70° N., 8 enclosures into which reindeer are driven to be killed or tended are depicted in rock art. In addition, two long semicircles can be interpreted as barriers to stop and change the direction of animal movements

They were made between 3500 and 4500 BC. by coastal/coastal-inland hunter-gatherer-fisher populations. Firstly, the details in some of the images give direct clues to the construction of the enclosures and the associated drive and indirectly about the organization needed, including the share of the catch, in these types of undertakings. Secondly, the ethnographic and environmental records give ample clues as to when the drives of reindeer would have taken place. The selectivity of the figures associated with the enclosures includes only a part of the activities one would expect were associated with drives, plus animals that from a subsistence point of view, normally would not be a part. In this perspective, do the depictions represent real fences? In essence, the rock art is likely to represent an integrated selection of legends and myths, totems and other-than-human power in beliefs expressed in rituals, as much as animals and cultural items. As such, the depictions might represent an understanding of the environment where culture, nature and beliefs are integrated rather than separate parts. It is within this framework the function of the images will be discussed.

### **MEDIEVAL MASS-TRAPPING OF REINDEER IN THE NORWEGIAN MOUNTAINS**

Svein Indrelid, Historical Museum, University of Bergen (Norway)

The subject of this paper is mass trapping of reindeer in the South Norwegian mountains in the second half of the 13<sup>th</sup> century AD. By the use of long rows of cairns and poles in funnels-shaped systems, reindeer herds were led or driven into lakes where they were killed by hunters in boats. The animals were dragged ashore and butchered outside nearby stone huts, where there are still middens consisting of large amounts of reindeer bones. Based on the bone material and artefacts found during excavations, the cultural and economic background of this large scale reindeer hunt will be discussed. Who were the hunters, and who were the organisers, local farmers from the nearby valley and fjord districts – or somebody else?

### **THE USE OF BUTCHERY PATTERNS IN REINDEER BONE ASSEMBLAGES IN THE INTERPRETATION OF MEDIEVAL TRADE ECONOMIES AND SUBSISTENCE**

Hufthamme Anne Karin, Historical Museum, University of Bergen (Norway)

At the Hardangervidda high mountain plateau in southern Norway and in the mountainous area of Dovre in middle Norway, mounds of reindeer bones have been excavated. These assemblages date to Late Iron Age and Medieval time and are products of a mass hunt of reindeer. In this study bone assemblages from five sites have been examined; Sumtangen, Nordre Krækkja and Ørtern at Hardangervidda from the medieval period and Vesle Hjerkin and Tøftom at Dovre from the late Iron Age and Medieval period. By the use of Principal Component Analysis of bone element frequencies, and in some cases also the weight of the bone elements, the variation in butchery patterns and differences in the economy is discussed.

### **CONTEMPORARY AND PREHISTORIC CARIBOU HUNTING IN WESTERN GREENLAND**

Odgaard Ulla, Pasda Kerstin Sila, The national Museum of Denmark - Copenhagen (Denmark)

When contemporary hunters of Western Greenland go caribou hunting, the ideal is that “nothing is wasted”, suggesting that nearly everything of the animal will be eaten or used in some way. Archaeological and archaeozoological investigations on prehistoric sites show, however, that this ideal was not always followed in the past. Based on archaeological surveys, historical sources and observations in a camp of contemporary caribou hunters in Western Greenland, this paper will discuss aspects of caribou hunting such as hunting techniques, territorial organisation and exploitation strategies as well as slaughtering and transportation methods.

### **REINDEER AND HUMANS IN PREHISTORY AND NOW - DO WE UNDERSTAND WHAT IS GOING ON?**

Grøn Ole, Langelands Museum - Rudkøbing (Denmark)

The paper discusses general aspects of human reindeer exploitation on the basis of ethnoarchaeological observations from the Siberian Evenk. It focusses on different types of man-animal relation and on the domestication theme and goes into a discussion of how early reindeer were domesticated.

### **THE REINDEER LANDSCAPE AS A SOURCE TO UNDERSTAND THE AGE OF REINDEER HUSBANDRY**

Andersen Oddmund, Árran Lulesami center - Ájluokta/Drag (Norway)

The lecture will focus on the reindeer culture. The main purpose is to discuss the age of reindeer husbandry, based on written sources and archaeological investigations. The presentation is divided in to three parts. First and foremost it is important to have clear definitions on what we mean about reindeer husbandry. I therefore begin by saying something about this. The second objective is to put forward some criteria that I believe can be used to define settlements from reindeer husbandry. In particular, I believe that it is important to discuss the criteria in relation to hunter-gather society's use of the area. Lastly I will use these criteria on the archaeological material in the high mountains to say something about the age of reindeer husbandry.



D006

Session title:

## **THE END OF EMPIRE: THE ARCHAEOLOGY OF BORDERLANDS IN THE EARLY MEDIEVAL PERIOD**

**Organiser:** Hakenbeck Susanne, McDonald Institute for Archaeological Research, University of Cambridge (UK)

**Session abstract:**

During late Roman and early Medieval Periods the borderlands of the Roman Empire occupied a complex and paradoxical place in the worldview of the populations that lived near them. From the third century AD onwards, the Empire had increasingly made use of barbarian groups to defend its frontiers against other barbarians. After the end of the Roman Empire some of these areas developed into the new barbarian polities that came to define themselves as the inheritors of the Roman Empire. The activities in these frontier zones thus represent both geographically and temporally 'the end of Empire'. Yet in the late Roman and early Medieval periods the borderlands were also areas of intense and complex interactions between the populations along the edge of the (former) Empire. Not all structures were defensive, frontier lines could shift, and barbarians could be settled on both sides of the border.

The aim of this session is to initiate a discussion on the role of borderlands in the collapse of the Roman Empire and in the subsequent creation of the barbarian polities. Contributions are invited that question rigid notions of frontiers and instead aim to examine the complex relationships of different peoples, material culture and social practices in these areas. A variety of questions could be addressed, such as: how did people negotiate frontier structures such as fortifications? What was the impact of migration and mobility in these areas? To what extent did populations in the borderlands identify as Roman or barbarian? How did they deal with the heritage of the Roman Empire after it came to an end?



**Paper abstracts:**

### **'BARBED SPEARS AND BARBARIANS': EVALUATING MOVEMENT AND BOUNDARIES IN SOUTHERN SCANDINAVIA DURING THE LATE ROMAN AND EARLY GERMANIC IRON AGE**

Birch Thomas, Institute of Archaeology, University College London (UK)

The weapon hoards in the bog deposits of southern Scandinavia have been the centre of a great deal of discussion. One of the most widely accepted interpretations is that the weapons belonged to defeated armies, subsequently sacrificed as 'war booty'. The movements and identity of these armies has largely been defined by typological classification systems, but are still an ongoing discussion.

A comprehensive scientific investigation into these weapons is needed in order to question the extent to which these hoards are informative of identity in the late Roman/early Germanic Iron Age. By looking deeper into the artefact, it may be possible to evaluate the credibility of the origins and boundaries of these armies that have been suggested. A comparative analysis is needed of the technological traits and provenance of the iron to other contemporaneous metal assemblages to see if they indeed show a different 'identity', or whether they appear technologically more "Roman" or "Germanic". The technology and provenance behind these weapons maybe studied through their metal composition and microstructure, which may be related to different cultural practices or ethnic groups.

The movement of objects, people or ideas may be discernable through a detailed scientific examination of the weapon hoards. The relationship between the weapons and the Roman frontier may be examined and the boundaries between armies better understood. This paper will propose a research methodology that will aim to address the following questions: how do these items fit into the broader cultural context of metalworking in the North? What can be learnt about technology and identity?

### **SOCIAL DIFFERENCES BETWEEN BAVARIAN BORDERLAND AND BAVARIAN MAINLAND IN MEROVINGIAN TIMES: A CASE STUDY**

Gutsmiedl Doris, Institut für Kunstgeschichte und Archäologie, Universität Bonn (Germany)

The main archaeological source of the continental Merovingian Period are cemeteries and graves. These graves are often richly furnished, and the grave goods show a close connection to the buried person. Weapons are often

very dominant in the burials of men, but are mostly not the only objects that followed the deceased into the grave. In the examination of recently excavated Merovingian cemeteries the archaeological analysis of the grave goods was followed by an anthropological analysis of the skeletons of the dead – so details of the grave and the finds on the one hand and information about the age and diseases of the buried persons on the other hand are available.

The cemeteries of Aschheim-Bajuwarenring and Aschheim–Am Wasserturm, both part of the dissertation of the author, and the graveyards of Altenerding, München-Aubing, München-Perlach and Pliening, cemeteries of the Munich Gravel Plain which had been published with both archaeological and anthropological analysis of the graves and the deceased, are considered in this paper as examples for the Bavarian mainland of Merovingian times. The cemetery of Straubing-Bajuwarenstraße, that has also been published with archaeological and anthropological data, will be used as an example for a cemetery of the Bavarian borderland, located near the former frontier of the Roman Empire.

Connecting sex/gender, age and grave goods of the deceased, a picture of the social and age structure of the contemporary societies is displayed in the graves of the named cemeteries. This paper will especially focus on the differences that can be seen between the graves of the Bavarian borderland and the Bavarian mainland.

### **ABOUT PLOUGHSHARES, SWORDS AND STIRRUPS; THE ROLE OF A MEROVINGIAN PERIPHERY BETWEEN THE 6TH TO 8TH CENTURIES AD IN TECHNOLOGY TRANSFER**

La Salvia Vasco, University of Chieti (Italy)

Among the numerous finds dating from the 6th to 8th centuries AD in northern Italy and within the entire eastern Merovingian area, there are several metal objects that apparently reflect non-Mediterranean characteristics. Instead, they have features typical for an allochthonous derivation from a northern and/or central-eastern European cultural milieu. Since some of these objects, such as some particular types of plough, iron and copper alloys stirrup, were unknown in the region before the Migration Period, it has to be considered that this event, beside having political and military implications, had a deep influence on the development of this aspect of the material culture too. Through evaluation of some of these finds and of their manufacturing methods it is possible to assess the contribution of the people of the area to the development of the tool assemblage of the European Early Middle Ages. Moreover, it seems clear that the Lombard kingdom was a vital part of the cultural and commercial network that connected and permeated the entire Eastern Merovingian area. In this way, a fairly uniform zone was shaped that, marking the border of the Merovingian world with the east, far from being simply on the periphery of the Frankish kingdom, played an important role in the transmission of technological and cultural patterns from Northern and Eastern Europe into the Mediterranean regions.

### **MEMORIES OF EMPIRE: AUTHORITY AND IDENTITY IN FRONTIER ZONES ALONG THE UPPER DANUBE IN THE EARLY MEDIEVAL PERIOD**

Hakenbeck Susanne, McDonald Institute for Archaeological Research, University of Cambridge (UK)

When centralized authority broke down at the end of the Roman Empire, the areas on either side of the Rhine and Danube frontiers became zones of complex social interactions between populations living in these areas. Even though the frontiers had been increasingly fortified since the third century, they became more permeable to population changes, resulting in greater regionalization. Funerary practice of the late fifth century drew on both late Roman and barbarian traditions in terms of craft-production, dress styles and aspects of ritual practice. But as the new barbarian polities became consolidated in the sixth century, aspects of the burial practice increasingly disconnected from their Roman heritage and became more and more barbarian. Subsequently, we see another shift towards artefacts and dress styles that make references to Byzantine imperial fashion and Christian imagery. Drawing on changes in burial practice, this paper will present an overview of some of the developments in the frontier zones along the Upper Danube. I argue that central to the emerging new forms of authority and identity was the re-defining and re-working notions of the 'old', of ideas of Romanitas and memories of the Roman Empire.

### **THE DISINTEGRATION OF URBAN CENTRES IN NORTHERN ILLYRICUM FROM THE 5TH TO THE 7TH CENTURY**

Ilić Olivera, Institute of Archaeology, Belgrade (Serbia)

We are familiar with the process of the disintegration and ruralisation of the cities in the interior of Illyricum, south of the Sava and Danube rivers, not only from written sources, but we also find its reverberations in the archaeological

traces. The results of archaeological research on the Danubian limes indicate that the Roman defence system was powerfully shaken by the Ostrogothic incursions throughout a period of 380 years. However, living conditions in the cities remained fundamentally unchanged until the devastating Hunnic raids in the middle of the 5th century. From the incursions by Attila's Huns until the renewal of Justinian I in the thirties of the 6th century, the cities in the northern provinces of the Illyrian prefecture almost completely disappeared from the historic scene. The reconstructed cities in the time of Justinian's vast construction works survived a whole series of Avar and Slav attacks in the years 595/6, when the Danubian limes was wiped out, that is till 614/15, when all the urban centres of northern Illyricum that had been under siege, surrendered: Singidunum, Viminacium, Aquae, Ratiaria, Nassus, Remesiana, Iustiniana Prima, Iustiniana Secunda etc. In some regions, this disintegration of the city structure and its ruralisation was accompanied by a greater or lesser degree of barbarisation.

### **NEW DATA ON ROMAN-SARMATIAN INTERACTIONS FROM THE GREAT HUNGARIAN PLAIN; OIL AND WINE IN THE SARMATIAN BARBARICUM**

Sóskut Kornéli, Gábor Sz. Wilhelm, Field Service for Cultural Heritage (Hungary)

The large-scale rescue excavations begun in Hungary in the 1990s have resulted in a great amount of new data on Sarmatian society, economy and material culture in the Great Hungarian Plain. The largest assemblages of the excavated materials are composed of ceramic vessels consisting of well-known barbarian and Roman imported ceramic finds (for example, terra sigillatas, painted and glazed wares). However, a great number of new artefact types has been also discovered that were previously unknown from this particular region.

In our paper, we seek to explore the wheel-made amphoras with yellow surface and two handles that originated from the Northern Black Sea, the North Pontic region. Our research has pointed out the significance of these amphoras in the studies of interaction between the Roman Empire and the Sarmatian Barbaricum, between the 2nd and the 5th centuries. We argue that the studies of Roman amphoras considerably alter our earlier views on the Roman-Sarmatian interaction and draw the attention to new possible long-distance trading routes.

### **ENCLAVES OF THE GOTHES NEAR LATE ROMAN CITIES IN PRESENT-DAY NORTHERN BULGARIA**

Haralambieva Anna, The Roman Baths of Odessos, Museum of Archaeology - Varna (Bulgaria)

Until recently, we had to rely on written sources for information about the invasions and settlement of the Goths south of the Lower Danube, within the boundaries of the once-existing Later Roman Empire. In the last 10 to 15 years, however, archaeological discoveries have compensated this deficiency significantly. Enclaves of the Goths have been identified outside the Roman cities Marcianopolis (Devnya), Novae (Svishtov) and the village Khan Krum. In the latter two places, graves of dignitaries and wealthy Goths were found, as well as basilicas where Wulfila and his followers preached Arianism. In the 5th century Ostrogoths lead by Theodoric Amala found refuge with the Goths already settled in these places. The archaeological traces left behind them are abundant. Ostrogoths had a settled lifestyle; they had a leading role in the military and they defended the Lower Danube border provinces. Their military power secured their administrative autonomy and they lived according to their rites within the boundaries of the Later Roman Empire. Their potential was used by the emperor in Constantinople and in repayment they were given lands in Italy to settle in and to defend. In spite of these circumstances, Goths remained on the Balkans, and their heritage is captured by archaeology.

D007

Session title:

## THE INNER ALPS, 5500–2500 BC: DATA, MODELS, PERSPECTIVES

Organiser: Della Casa Philippe, University of Zurich (Switzerland)

Co-organiser: Reitmaier Thomas, University of Zurich (Switzerland)

### Session abstract:

Research into the prehistory of the Alps has been intense and widespread over the last decades, focusing in particular on the Mesolithic, the Iceman discovery and related finds, intensification of settlement in the Bronze Age, and trans-alpine contacts in the Iron Age. While the principal components of the early utilization and colonization of the Alpine range now appear more or less pinpointed, many questions concerning the environmental, economic and social contexts of early human presence and settlement still remain unanswered. This is specifically true for the «Inner Alps», the regions between and beyond the major river valleys up to the Alpine pastures and watersheds, and the periods of the Neolithic and Copper Age, for which archaeological sources are scant in many regions.

The session will thus address the following objectives:

- Definition(s) of the «Inner Alps» and their relevant parameters
- (Proxy) data concerning human activity / human impact in the period envisaged
- <sup>14</sup>C-dates and interpretations on chronology
- Cultural schemes and concepts for the Alpine Neolithic and Copper Age, in particular resource exploitation, transhumance and alpine economy
- Debates on «seasonality» vs. «sedentism»
- Modeling of processes of utilization and colonization
- Perspectives of future research

Keywords: Human Ecology, Thresholds, Liminality, Proxy Data, Meso-/Neolithic Transition, Push & Pull Factors, Neolithic, Copper Age, Subsistence, Resources, Mobility, Alpine Economy

### Paper abstracts:

#### THE INNER ALPS, 5500–2500 BC: DATA, MODELS, PERSPECTIVES (KEYNOTE)

Della Casa Philippe, Reitmaier Thomas, University of Zurich (Switzerland)

Research into the prehistory of the Alps has been intense and widespread over the last decades, focusing in particular on the Mesolithic, the Iceman discovery and related finds, intensification of settlement in the Bronze Age, and trans-alpine contacts in the Iron Age. While the principal components of the early utilization and colonization of the Alpine range now appear more or less pinpointed, many questions concerning the environmental, economic and social contexts of early human presence and settlement still remain unanswered. This is specifically true for the «Inner Alps», the regions between and beyond the major river valleys up to the Alpine pastures and watersheds, and the periods of the Neolithic and Copper Age, for which archaeological sources are scant in many regions. Therefore, the keynote lecture will present a definition of the geographical and chronological frame and provide a general overview of current cultural schemes and concepts for the Alpine Neolithic and Copper Age. Moreover, new data from recent research projects can clarify the repeated processes of inner-alpine human occupation and point out some perspectives of future research.

#### PREHISTORIC COLONIZATION OF CENTRAL ALPINE VALLEYS RELATED TO CLIMATE DEVELOPMENT

Oeggli Klaus, Institut für Botanik, Universität Innsbruck (Austria)

Climate impact on ecosystems is a matter of thresholds and scale. Here we present the compilation of the prehistoric colonization of central Alpine valleys tracked by pollen analyses, which we correlate with the record of sub-fossil logs from altitudes above 2000 m, as well as with the oxygen-isotope curve from Greenland ice cores (NGRIP). Both serve as proxies for the climate development in the Alps, but also on a larger (northern hemispheric) scale. On long-term scales no relationship between settlement and climate is detectable, but shorter time-scales (< 500 years) indicate a positive correlation, at least for parts of the Neolithic between ca. 4500 and 3000 and ca. 2800 and 2400 BC. A negative correlation is indicated for the period from ca. 3000 until 2800 BC. Climate deteriorations (e.g.



as around 2700 BC) seem not to have severely affected the settlement in central alpine valleys indicating robust and resistant agricultural structures. From the Bronze Age onwards there is no significant correlation between climate and settlement of the Alps apparent. These examples suggest that climate has been an important trigger, but the relationship between climate and settlement seems to be more complex (e.g. influence of socio-economic structures, ore resources, etc.). For example this is shown by the striking early indications of transhumance in connection with the Neolithic Iceman "Ötzi", which needs further detailed examinations.

### **NEOLITHIC TRANSHUMANCE IN THE INNER ALPS: A CASE STUDY FROM THE VINSCHGAU (BOZEN, ITALY)**

Festi Daniela, Oeggl Klaus, Institut für Botanik, Universität Innsbruck (Austria)

This paper discusses the theory of the practise of transhumance considering the economical, climatic and ecological factors that trigger the development of this socio-economical model. Palynological analyses, conducted in the vicinity of the Iceman discovery site, gave an indication of possible pasture activity during the Neolithic (4500 yr cal BP), which suggests that the Iceman was involved in a local kind of transhumance between the Vinschgau valley bottom (his site of origin) and the high altitudes north of the main Alpine ridge. Starting from this hypothesis a multi-disciplinary study has been developed in order to scrutinize the onset and possible practice of early alpine summer farming at that time. The study aims to explore the causes that made the practice of transhumance necessary for the agro-pastoral system of the local Neolithic communities. This implies a reconstruction of the environmental and anthropic situation of the Vinschgau valley bottom, and of the possible local prehistoric transhumance route. In this context we present preliminary results regarding the Copper Age settlement of Latsch, located in the Vinschgau valley floor.

### **LATE NEOLITHIC SETTLEMENT ACTIVITIES IN THE ALPINE INN VALLEY**

Schwarz Anton Stefan, Institut für Botanik, Universität Innsbruck (Austria)

Late Neolithic settlement in the inner Alps is scarcely known. In the Tyrolean lower Inn valley excavations at the Mariahilfberg and at Mauken near Brixlegg are presently the most famous ones as they are connected to early copper ore mining and revealed several charred plant remains connected to early farming. An additional dwelling place was excavated at the exposed Kiechlberg (1028m) at Thaur since 2007. Oldest radiocarbon data (4050-3810 BC and 3930-3650 BC) and numerous ornate fine-ceramics indicate a first occupation period belonging to the South-German 'Pollinger Kultur'. Younger Data (3020-2870 BC, 2470-2200 BC, 2200-1950 BC) suggest an occupation during the latest Neolithic and Early Bronze Age. Pieces of copper ore and slag, black copper fragments and copper artefacts indicate local ore smelting. Furthermore charred plant remains enable a first insight into the subsistence of these early settlers. Cereals, mainly caryopses of barley (*Hordeum vulgare*) and cultivated emmer (*Triticum dicoccum*), peas (*Pisum sativum*) and several weeds show an import of crops grown in the valley at lower altitudes. Gathered plants like rowan (*Sorbus*), black elder (*Sambucus nigra*), hazelnut (*Corylus avellana*), strawberry ground cherry (*Physalis alkekengi*) and also oak (*Quercus*) were collected in the vicinity of the site. The charcoal as well as the wood anatomical parameters reveal the composition of the local forests and suggest a collection of timber from the surroundings for fuel and construction.

### **EARLY METALLURGY AT KIECHLBERG/THAUR (NORTH TYROL, AUSTRIA) – RECENT DISCOVERIES FROM THE SFB-HIMAT**

Tochterle Ulrike, Institute of Archaeology, Universität Innsbruck (Austria)

The Kiechlberg is a small hill on the south face of the Karwendel mountain range a few kilometers to the northeast of Innsbruck. During the winter months, the 1029 masl situated Kirchberg is heavily exposed to avalanches. However, the isolated position above the Inn valley and steep and rocky slopes made this site interesting for prehistoric settlement. Superficial finds of artifacts and metallurgical slags led to first archaeological excavations during the last years (HiMAT PP06). Metal objects made of copper and bronze were collected during these excavations of a garbage dump, indicating a Neolithic to Early Bronze Age occupation of the site. Together with the archaeological finds and almost in the upper layers of the studied stratigraphy, various slags and copper rich semi-products (unrefined copper) occur and prove primary copper metallurgy at the site during the Later Copper Age. These processes generated questions on ore provenance and prehistoric smelting technologies, on settlement structures and transalpine trading routes from the 5<sup>th</sup> to the 2<sup>nd</sup> mill. BC.



### **LATE THIRD AND SECOND MILLENNIA CHANGES IN THE SOUTHERN FRENCH ALPS**

Walsh Kevin, Mocci Florence, Richer Suzi, Dept. of Archaeology, University of York (UK)

The assessment of the important changes that occurred in late third and second millennia societies across Europe often emphasises, for obvious reasons; changes in technology and the emergence of associated objects and art forms, changes in burial rites, and developments in economic practices. Notions relating to the evolution of *homo economicus* dominate many of the discourses, and the evidence for increased long-distance trade/contact across Europe is used to bolster this assessment. These themes are underpinned by an obsession with ever-refined chrono-typological phases, and the production of tables of pan-European correspondences across these phases. In an attempt to present a more socially embedded perspective, this paper considers the changes that occurred in the uses of the high-altitude, sub-alpine and alpine zones in the southern French Alps during the third and second millennia BC. The early part of this period saw the continued use of this landscape as a hunting zone, as represented by lithic scatters, with pastoralism concentrated towards the lower altitudes. From c. 2500 BC onwards, there was a fundamental change in the use of and engagement with this landscape. The appearance of the first substantial pastoral structures at high altitude (2000m and above) made from stone appear at this time. This departure in the use and structuring of the alpine space would have included concomitant changes in the nature of mobility, notions of territory and memories associated with this area. This contribution will consider the archaeological and palaeoecological evidence from the southern French Alps within a framework that assesses the evidence for so-called “cultures” that were present in this region, and assess the difficulties of identifying these so-called archaeological cultures.

### **PREHISTORIC LANDSCAPE DYNAMICS AND OCCUPATION IN THE HIGH MOUNTAIN PYRENEES: AN INTERDISCIPLINARY CASE-STUDY IN THE MADRIU-PERAFITA-CLAROR VALLEYS (ANDORRA)**

Orengo Héctor A., Ejarque Ana, Palet Josep Maria, Catalan Institute of Classical Archaeology - Tarragona (Spain); Miras Yannick, University of Blaise Pascal - Clermont-Ferrand (France); Riera Santiago, University of Barcelona (Spain)

This paper presents evidence drawn from an ongoing integrated archaeological and palaeoenvironmental research program which aims to understand the long-term shaping of this high mountain cultural landscape, included in the UNESCO World Heritage List. The Madriu-Perafita-Claror valleys (Eastern Pyrenees, Andorra) show a pronounced spatial variability in geomorphology, vegetation and human practices. This is closely related to the valleys' verticality (from 1050 to 2905 m.a.s.l.) and the predominant N-S slope exposure.

Palaeoenvironmental and archaeological studies have been carried out in high spatial and temporal resolution. The distribution of the more than 400 archaeological structures recorded from the Early Neolithic to Modern times also suggests a highly dynamic organization of the valley's land-use in the past. On the basis of archaeological and palaeoecological data, different chronological patterns and spatial land-use distribution could be formulated at a micro-regional scale during the Prehistory. The pollen record suggests a potential earliest human occupation up to the subalpine belt at the Mesolithic-Early Neolithic transition (ca 6400-6000 BC). However, it is during the Early and Middle Neolithic (ca 4500-3050 BC) that both archaeological and palaeoecological data attest pastoral activities in the highest alpine areas. From the Late Neolithic (ca 2300 BC), an altitudinal landscape structuration is registered, a process which becomes more pronounced during the Early Bronze Age (ca 2100-1700 BC). The extension of grazing activities is archaeologically reported at high altitudes, while local fire activities are registered in the subalpine belt, and the intensification of arable activities is recorded at lower altitudes. It has been also reported that land use differs from closer valleys, corroborating the idea of heterogeneity in the management of high mountain areas during prehistory.

D008

Session title:

## THE ROMAN EMPIRE AND BEYOND, III. THE EAST EUROPEAN ROMAN PROVINCES IN THE 3RD CENTURY AD: THE STATICS AND DYNAMICS OF PEOPLE, GOODS AND IDEAS

Organiser: De Sena Eric C., John Cabot University - Roma (Italy)

Session abstract:

The 3rd century AD crisis of the Roman Empire has been approached in various ways and scholars are aware of many of the political, economic and social patterns and trends. Some scholars have even questioned whether there was indeed a crisis, considering that despite grave political and economic difficulties faced by the Romans between the late Severan period and the development of the Tetrarchy, the Empire was stable enough to remain intact. Crisis or not, significant changes were occurring and a strong underlying factor of change depended upon the dichotomy between heightened stability and mobility – of people, goods and ideas.

Many of the challenges and changes during this time occurred in Eastern Europe which hosted a strong, multi-ethnic concentration of soldiers and veterans and felt the mounting pressure of native European populations, such as the Goths. The military centers and provincial cities/towns of this region were by now quite stable and served as a bridge between Europe and the Mediterranean and between the Adriatic, Aegean and Black Seas. As such, there was a significant amount of movement – transport of coins, food and supplies for the army and for provincial cities, new soldiers arriving from all corners of the Empire as many veterans returned to their homelands, native populations moving toward the *limes* and even entering Roman territory. The proposed session focuses specifically upon socio-economic stability and mobility within the East European provinces (Dalmatia, Illyricum, Pannonia, Dacia and Moesia/Thrace) from the time of Caracalla until the ascent of Diocletian.



Paper abstracts:

### HISTORICIZING ETHNIC IDENTITY: THE CASE OF THE BATAVIANS

Mata Karim, University of Chicago (USA)

The formation of the Batavian community was a direct result of the Roman military operations in the Lower Rhineland during the late 1st century BC and early 1st century AD. References to a Batavian identity on altars, funerary stones, military diplomas and other media have been found throughout Europe, most notably in the Roman provinces of Britannia and Pannonia but also in Raetia, Noricum and Dacia. The majority date to the 1st and 2nd centuries AD but references survive from the 3rd and 4th century AD as well. Batavians, it seems, were part of an 'international' community which for centuries facilitated the movement of ideas, people and goods throughout the Roman Empire. Why was this identity referred to over the course of several centuries by people of different backgrounds and origins? By discussing the case of the Batavians I aim to show how ethnic identity was understood and used in different ways by various individuals, communities and institutions, both pragmatically and ideologically. As such, this paper stresses the operative multiplicity of identarian practices and discourses by recognizing that these shape and are shaped by different agents under ever-changing conditions. By historicizing ethnic identification, by placing ethnic references against the social, economic and historical background of the referrer, we can come to a better understanding for each case what 'ethnic origin' meant on the ground.

### ROMAN CAVALRY IN THE 3RD CENTURY. COMPLICATED PROCESS OR ONE REFORM?

Narloch Krzysztof, Institute of Archaeology, Nicolaus Copernicus University (Poland)

The reign of Gallienus represented a period of relative peace and inner stability in the European provinces. During this time, prior enemies were generally pushed out and kept outside the eastern borders of the Empire, beyond Rhine and Danube.

The army before reign of Gallienus is generally understood as the 'classical' army when the heavy armed infantry dominated. The Roman army evolved and adapting to new challenges. Mounted units took the highest role in Roman military system. The primary reason for this reorganization was the fact that cavalry units in the armies of Rome's enemies were of major importance.

The military reforms introduced a change of proportion between infantry and cavalry units and are traditionally arrogated to Gallienus. A “new army” was created during his reign. Later, these forces became the core of the military power of Diocletian and other Emperors.

The first cavalry units based on eastern model were formed in the 2nd century. A new type of formation appeared, the famous *ala I Gallorum et Pannoniorum catafractata* was developed no later than the time of Hadrian. Septimius Severus doubled the imperial horse guard regiment, which was also employed as a tactical reserve during battle, suggesting that the process of increased mobility of Roman forces may have started much earlier than is commonly thought. The great significance and quantity of mounted soldiers was not only a result of Gallienus’ reforms but an effect of a sophisticated process which proceeded under military, social and cultural conditions.

### **THE TRANSITIONAL CENTRE OF TIBISCUM, DACIA: SOLDIERS AND TRAVELERS**

Timoç Calin, “West” University of Timișoara (Romania)

### **IMMIGRANTS FROM ASIA MINOR - A SOURCE OF NEW IDEAS IN 3RD CENTURY THRACE**

Topalilov Ivo, Archaeological Museum of Plovdiv (Bulgaria)

### **SUPPLY PATTERNS BETWEEN AQUILEIA, THESSALONICA AND THE EAST EUROPEAN PROVINCES IN THE 3RD CENTURY**

De Sena Eric C., John Cabot University - Roma (Italy)

This paper explores the mechanisms of trade between the ancient city of Porolissum and the Roman Empire, based upon a review of primary and secondary literature as well as archaeological evidence from the Porolissum Forum Project.

The city of Porolissum, located in north-western Romania, was founded by the Romans in CE 106 in the aftermath of Trajan’s defeat of the Dacians. Situated on the border of the Roman Empire, this city hosted an ethnic mix of several thousand Roman soldiers and citizens as well as native Dacians. The Roman phase of the city continued until CE 271 when Aurelian withdrew Imperial administration from Dacia.

Based upon the qualitative and quantitative study of the pottery excavated from stratified deposits in the area of the Forum, De Sena has determined the basic supply patterns of Porolissum. Between the founding of the city and the later second century CE, there were many local varieties of pottery, but also a notable proportion of imports from as far away as Italy, Spain and North Africa. In the late second and third centuries, many quotidian goods were procured from Dacia and the neighboring area of *Barbaricum* with some goods such as wine and olive oil arriving from other parts of the Empire.

The numismatic evidence from Porolissum as well as ancient literary sources, such as Claudius Ptolomeus, suggest that Porolissum was connected to the rest of the Empire via two primary routes along which were large regional market centers, like Apulum. One of these routes began at Aquileia at the head of the Adriatic Sea in north-eastern Italy. From Aquileia a Roman highway passed through modern-day Croatia, Serbia and Bulgaria before reaching the southern bank of the Danube River at Lederata; the main marketplaces were Neviodonum, Siscia, Sirmium and Viminacium. From Lederata, the route followed a roughly NE trajectory, encountering Berzobis, Tibiscum, Ulpia Traiana Sarmizegethusa and Apulum. The other primary route has its origin at Thessalonica and passed through Herakleia, Stobi, Scupi, Naissus, Bononia and Drobeta on the south bank of the Danube. After crossing the Danube, the route continues to Dierna and then merges with the western route at Tibiscum.

### **NEW WORK AT ROMAN ILIDZA (SARAJEVO, BOSNIA HERZEGOVINA)**

Atiyeh Christine Z., Kutztown University of Pennsylvania (USA); Busuladzic Adnan, National Museum (Bosnia Herzegovina); Mujezinovic Nermina, Institute for the Protection of the Cultural-Historical and Natural Heritage of Canton Sarajevo (Bosnia Herzegovina)

Located in the province of Dalmatia, the Roman settlement known as *Aquae Sulfuræ* is today part of Ilidza National Park, situated approximately ten kilometers outside the modern city of Sarajevo along the western bank of the Željeznica River and near the source of the Bosna River. Probably founded in the first century CE and occupied through the fourth century, today the site is comprised of the exposed remains of a later Roman bath building and several later Roman *domus* discovered in the nineteenth and early twentieth centuries. Though the ancient settlement at Ilidza has been known at least since the early nineteenth century and excavations have taken

place at the site sporadically for the past 100 years, no systematic archaeological study of the site has ever been undertaken.

New work was carried out at the site in the summer of 2008 through a partnership between Kutztown University of Pennsylvania, the University of Sarajevo, and the Institute for the Protection of the Cultural-Historical and Natural Heritage of Canton Sarajevo. The generation of a comprehensive surveyed archaeological and topographical map was undertaken, and both selected gradient magnetometer and ground penetrating radar surveys were conducted over 1500 square meters of unexcavated fields within the boundaries of Ilidza National Park.

In July 2009, in partnership with the National Museum of Bosnia and Herzegovina and Institute for the Protection of the Cultural-Historical and Natural Heritage of Canton Sarajevo, excavations will be undertaken in an area of the site in close proximity to the known Roman *domus* and where our GRP profiles indicated organized anomalies and reflections parallel to the exposed features of the adjacent *domus*.

The aim of the current project at Roman Ilidza is to understand the archaeological history of the settlement itself thus making it possible to integrate the site more meaningfully into the history of the region. In this paper, we will discuss both the archaeological history of this strategically situated settlement and its regional significance in the central Balkans in the later Roman Empire, particularly the third century, a period during which the site seems to have flourished.



D009

Session title:

## TRANSITIONS AFTER “THE TRANSITION” IN THE UPPER PALAEOLITHIC

**Organiser:** Lengyel György, Dept. of Prehistory and Archaeology, University of Miskolc (Hungary)

**Co-organiser:** Mester Zsolt, Institute of Archaeology, Eötvös Loránd University (Hungary)

### Session abstract:

When the word Transition appears in any forum of the Palaeolithic research the prominent period of the Middle to Upper Palaeolithic transition comes immediately to one's mind. However, several transitions are visible in the Modern Human archaeological record between 36 and 10 k years uncal. BP, which are rarely discussed and interpreted in the archaeological community. The variable archaeological record of the Upper Palaeolithic may lead to deal with how Modern Human populations became (archaeological) culturally diverse. The Palaeolithic material culture is divided into taxonomic units which are assumed to represent human societies, cultures or cultural traditions and their developmental stages. According to the lithic studies the behaviour that successfully helps subsisting humans may be in practise unchanged for thousands of years, probably by passing it from one generation to another. Therefore, lithic assemblages may be tested to genetic relations within, between, and among taxonomic units or “archaeological cultures” both in time and space by comparing technical behaviours in prehistoric perspective. While this approach seemingly offers a clear method to study the transition, diversity and stability in the Upper Palaeolithic and Epipalaeolithic archaeological record, several other questions emerge which are planned to put under discussion in the proposed session:

- Do the taxonomic units indeed represent “human cultures”?
- Are the changes in the lithic record related to the adaptation to changing environment, to diffusion of new behaviour, or to population replacement?
- How is a transition detectable and how does it take place in Modern Human lithic industries?



### Paper abstracts:

#### **BETWEEN THE CHÂTELPERRONIAN AND THE AURIGNACIAN: RUPTURE OR CONTINUITY?**

Bordes Jean-Guillaume, Bachellerie François, Université Bordeaux 1 (France)

The Châtelperronian is mostly seen as the last culture of Neandertal, and the Aurignacian the first one of anatomically modern Humans. Then, comparisons between these two techno-complexes often conclude with terms as “abrupt gap” or “rupture”.

Based on recent techno-economical and taphonomical analyses of lithic industries belonging to these techno-complexes, here we defend that this idea is wrong.

Indeed, modern analyses of the Châtelperronian show that:

- this industry is fully an Upper Palaeolithic one;
- the continuity with the first stages of the Aurignacian is as consistent as the ones we could observe inside the upper Palaeolithic.

We conclude that there is no particular process between the Châtelperronian and the Aurignacian that could explain the demise of Neandertals.

#### **LINEAGE IN THE GRAVETTIAN-SÁGVÁRIAN-EPIGRAVETTIAN TECHNICAL BEHAVIOUR IN THE CARPATHIAN BASIN**

Lengyel György, Dept. of Prehistory and Archaeology, University of Miskolc (Hungary)

The Gravettian period according to the Hungarian archaeological research covers the middle and late stages of the Upper Palaeolithic, between 29 and 12 k years uncal BP. It is divided into three archaeological and chronological units: Early Gravettian between 29-26 k years uncal BP, Ságvárian between 20 and 17 k years uncal BP, and Epigravettian between 18 and 12 k years uncal BP. Each of these represents a new migration of people into the Carpathian basin. This division is based upon the different range of radiocarbon dates and the dissimilar features of basic lithic technological elements. Thus, the Early Gravettian and the Epigravettian are characterized by classic

blade production, while the SÁGVÁRIAN'S main feature is the pebble processing that produced short blades and especially flakes. Typologically no differences are observed between the two blade oriented units while these comparing to the SÁGVÁRIAN have more backed elements and blade tools.

Recent analysis of the radiocarbon dates and the technical behaviours of the Hungarian Gravettian family point out anomalies in the absolute chronological system and in the interpretation of lithic technology. Re-organization of the technological features according to reliably dated sites brings new characters for each unit and a technological lineage becomes observable between the sites, redrawing the regnant hypothesis of the Upper Palaeolithic cultural complex in the territory of Hungary.

### **RELATIONS BETWEEN THE EVOLVED SZELETIAN AND THE GRAVETTIAN IN CENTRAL EUROPE**

Mester Zsolt, Institute of Archaeology, Eötvös Loránd University (Hungary)

Szeletian is considered as a transitional industry of the EUP in Central Europe. The hypothesis of a Szeletian development model in Hungary suppose direct lineage from Micoquian-like Bábonyian through Early Szeletian to Evolved Szeletian in the Bükk Mountains region. Some Gravettian tool types discovered in the Szeletian layers of Szeleta Cave are thought to be elements of the Szeletian industry. My recent technological analysis of bifacial leaf-shaped tools of the Szeleta Cave demonstrates fundamental differences between the technical behaviour of Early and Evolved Szeletian tool makers. These results argue against the conception of these industries as developmental phases of a same cultural unit. My research concludes that it is necessary to reconsider the possibility of the existence of a leaf-point associated Gravettian in Northeast Hungary, consequently the role of leaf-points as cultural markers in the Upper Palaeolithic in Central Europe is to be reconsidered.

### **SETTLING INTO THE LANDSCAPE: THE PALAEOOLITHIC/MESOLITHIC TRANSITION IN THE VALE OF PICKERING, NORTH YORKSHIRE**

Milner Nicky, Dept. of Archaeology, University of York (UK); Coneller Chantal, Dept. of Archaeology, SAHC, University of Manchester (UK); Taylor Barry, Dept. of Geography, SED, University of Manchester (UK)

This paper uses the case study of the Vale of Pickering, North Yorkshire, UK to illustrate change in the use and understanding of landscape across the Palaeolithic/Mesolithic transition. On the Federmesser (12,000-11,000BP) sites which represent the initial occupation of the area, people appear to have carried their raw material in the form of finished tools, permitting high levels of mobility. The Long Blade/Belloisian (10,000 BP) occupation immediately after the Younger Dryas is the most north-westerly in Europe. This appears to have been a colonising population, transporting large quantities of raw materials in the context of unfamiliarity with local sources. Finally, during the Early Mesolithic (c. 9500 BP) the Vale appears to have become a familiar landscape with local raw materials being exploited and finds of caches. There appears a more intimate relationship with the landscape, with evidence for both living structures and ritual deposition. This paper will provide a detailed examination of patterns of mobility and settlement over this period of dramatic environmental fluctuations.

### **AURIGNACIAN-GRAVETTIAN TRANSITION IN CANTABRIAN REGION (SPAIN)**

De la Pena Paloma, Universidad Complutense de Madrid (Spain); Maíllo-Fernández José Manuel, Departamento Prehistoria y Arqueología, UNED (Spain)

In this paper we reflect on the Evolved Aurignacian – Early Gravettian Transition at the Cantabrian Region of Spain. Therefore, we must ask: What is a Palaeolithic transition and, how can we identify that in the archaeological record? Besides, it is important to re-think what techno-complexes and cultural traditions mean in Palaeolithic times. To answer these questions we must analyze the technology and typology, chronology and settlement dynamics during the Evolved Aurignacian-Early Gravettian period. Finally, to achieve our objective we analyze the most important Cantabrian sites like El Otero, Hornos de la Peña, Cueva Morín and El Castillo.

### **THE EMERGENCE OF THE SOLUTREAN IN SOUTH-WESTERN FRANCE. NEW DATA ON A PROTO-SOLUTREAN OPEN-AIR SITE (MARSEILLON, LANDES, FRANCE)**

Renard Caroline, Préhistoire et Technologie (France); Teyssandier Nicolas, CNRS, TRACES, Université Toulouse 2 (France)

This paper presents the newly discovered open-air site of Marseillon (Landes, south-western France), located in the Chalosse region known to include sources of Maastrichtian flints that were transported over large distances during the Upper Paleolithic. The lithic industry is characterized by the presence of Vale Comprido points, associated to a core-reduction system oriented towards the production of convergent blanks. Bladelet productions are diversified and dominated by carinated cores that are equivalent, in a typological perspective, to carinated “end-scrapers”. This lithic assemblage is attributed to the Protosolutrean, such as it was defined in Portugal, thus filling a gap between the Portuguese costs and the Aquitain basin. We make a first presentation of the lithic industry and then try to question the place of the Protosolutrean in a broader chronological and geographical context. We are more particularly interested by the question around the filiation of Vale Comprido industries with the classical Lower Solutrean with “pointe à face plane”. We thus explore the question of the mechanism that led to the emergence of the Solutrean techno-complex in the context of the Last Glacial Maximum in Western Europe.

### **EVIDENCES OF LITHIC TECHNOLOGICAL EVOLUTION BETWEEN THE AURIGNACIAN AND THE GRAVETTIAN IN HUNGARY**

Szolyák Péter, Dept. of Archaeology, Herman Ottó Museum Miskolc (Hungary)

The Aurignacian sites of Hungary represent the oldest modern human groups toward 40–35.000 BP in Europe. Although the lithic assemblages of Istállóskő, Peskő and Herman Ottó caves are classified as Aurignacian, those do not have the typical cultural markers recorded at Western European sites. The lately published assemblage of Nagyréde sites, which is known by field-survey, is the first “perfect” Aurignacian in Hungary. Although the radiocarbon age of the oldest Gravettian site (Bodrogkeresztúr-Henye) in Hungary is 28.000 BP, we can also find Gravettian elements in some assemblages of Aurignacian. The lithic technology is based on the blade production in both archaeological cultures, but the different types of stone tools show soft changes in the technological approaches. These changes may indicate the evolution of the manner of life through time because of changing environmental conditions and propose two other important issues to focus on. Do the different technological approaches show a real transition or represent separated groups in the same sites with different horizons? When and where did the first Gravettian appear in Hungary? The paper will answer these questions.

### **ACROSS THE URAL MOUNTAINS: TRANSITIONS IN THE OLD STONE AGE SIBERIA COMPARED WITH THE EUROPEAN UPPER PALAEOOLITHIC SEQUENCE**

Vasil'ev Sergey A., Institute for Material Culture History, Russian Academy of Sciences - St. Petersburg (Russia)

In this paper I will discuss the culture transitions in the Upper Palaeolithic Siberia in the light of recent discoveries (so little known beyond Russia), and make a comparison of the North Asian and European Upper Palaeolithic sequences illuminating resemblances and differences. The territory of South Siberia witnesses the surprisingly early appearance of the Upper Palaeolithic (from ca. 43-42 kyr BP). The Early phase of the Upper Palaeolithic development, corresponding to the Chatelperronian and Early Aurignacian in Europe, is represented by three coexisted variants: the large blade industries (Kara-Bom and other sites at the Altay and Trans-Baikal areas), the Aurignacian (Ust-Karakol I), and archaic-like Mousteroid industries, mostly known at the Trans-Baikal. The Middle Upper Palaeolithic (from ca. 29-28 to 20 kyr BP; the time span roughly corresponding to the Gravettian in Europe) evidenced the development of blade industries fully corresponding to the European Upper Palaeolithic pattern, occasionally with some Gravettian affinities (Anui II). At the same time archaic-like flake industries continued to exist. The rich and diversified Late Upper Palaeolithic record evidenced the vast human dispersal in Siberia after the LGM. In the time corresponding to the Magdalenian and Final Palaeolithic in Europe, the majority of the Siberian industries demonstrated the lithic assemblage composition with repetitive co-occurrence of the Middle and Upper Palaeolithic tool types and technologies, while the subsistence and settlement patterns are very similar to the Magdalenian of the Western Europe. Different models striving to explain the culture change and continuity in Siberia in connection with the Late Pleistocene environmental changes have been proposed and discussed. The Program of the Russian Academy of Sciences ‘Culture-Historical Heritage and Spiritual Values of Russia’ has supported this research.

### **TRANSITIONS FROM DIFFERENT POINT OF VIEWS - THE EARLY GRAVETTIAN KREMS-WACHTBERG SITE**

Ziehaus Johanna, Österreichische Akademie der Wissenschaften & Prähistorische Kommission (Austria)

The Krems-Wachtberg site is famous at first hand for its exceptional children burials. Beyond this the place offers interesting insights into the spread of the “Pavlovian”, which is defined as the early stage of the Gravettian in the middle Danube region.

The author likes to point out different kinds of “transitions” at the hand of the case study of Krems-Wachtberg: A geographical and a chrono-technological changeover.

Transitions can be shown from a geographic point of view. The study of the site indicates its interpretation as part of a microregion within the Earlier Gravettian of Central Europe. It shows both connecting and dividing characteristics from other Pavlovian microregions in Moravia, Silesia and Southern Poland. Several components, such as some imported raw materials from Moravia, clay figurines, burials, microsaws etc., link the industry of Krems-Wachtberg to the Pavlovian. Other characteristics seem to originate locally in Lower Austria, e.g. the almost exclusive use of local raw materials for chipping stone tools.

Looking at the Krems-Wachtberg sample from a chrono-technical point of view, the chaînes opératoire of siliceous raw material shows evidence for “aurignacian-like” behaviour. The dismantling of nodules was probably done by soft, direct strikes, characteristic for the Aurignacian. This manner has already been observed in other Lower Austrian Gravettian samples. On the other hand a typical tendency to the production of smallest pieces in course of the Upper Palaeolithic is evidenced by microdenticulates and backed bladelets. Therefore several characteristics of former and later Techno-complexes feature the early Gravettian assemblage in Lower Austria.

### **TECHNOLOGICAL DIVERSITY IN THE EARLY UPPER PALAEOLITHIC OF GORNY ALTAI: A CLOSER LOOK TO SMALL ELEMENTS**

Zwyns Nicolas, Max Planck Institute for Evolutionary Anthropology (Germany); Rybin Evgeny P., Institute of Archaeology and Ethnography - Novosibirsk (Russia)

We are presenting here the results of a recent analysis of the Kara-Bom Early Upper Paleolithic assemblage. By focusing on both blade and bladelet production, we are trying to tackle techno-economic and taphonomic issues. The results are then put into regional context, comparing the specific features of this industry with the Ust-Karakol tradition. Is there any evidence for a local evolution of such industry in the Altai? Or can we rather argue about a diffusion of exogenous techno-complex? In the light of a precise description of small laminar element production system, we want to discuss the relevance of the models explaining the Upper Paleolithic development in the area.





D010

Session title:

## UP-DATING THE REASONING ON MIDDLE TO UPPER PALAEOLITHIC BIOLOGICAL AND CULTURAL SHIFT IN EURASIA

**Organiser:** Longo Laura, University of Siena & Museo Civico di Scienze Naturali – Verona ( Italy)

**Co-organiser:** Ronchitelli Annamaria, University of Siena (Italy); Condemi Silvana, CNRS - Marseille (France); Caramelli David, University of Firenze (Italy)

### Session abstract:

The symposium proposed herein proposed would integrate the biological and cultural aspects:

1. The effects of human palaeogenetic data in the research of Neandertals and modern human origins
2. Discussion of models in Middle Palaeolithic and Upper Palaeolithic for the interpretations of cultural changes.

DNA data from Neanderthal fossils in Europe have modified the view of the scientific community regarding the unlike interbreeding between Neandertals and early modern humans. The palaeogenetic data coming from the Italian MP and EUP sites are definitely supporting those data. These human groups were producing, implementing, and managing different resources following different adaptive strategies. If so, what happened on the behavioural side of Neanderthal/Sapiens shift? Can we recognize indices for behavioural modernity like complex stone designs, compound used from different resources, marine or different faunal and vegetal supplies, pigment used and personal adornments? How to interpret the presence in the same areas (sometimes in the same sites) of the two different human species?.

The questions raised by the genomic data point to a dispersal of ancestral Homo sapiens populations, within Africa before 100 Kyr. Then happened in Eurasia? What are the interpretations of the new data on Far-north-eastern Neandertals recovered in Siberia (Altai region)? What relationship between the essential features emerged earlier and gradually on the African continent and the evidences of Eurasians “Early Upper Palaeolithic”: what about the contention model proposed by McBearty and Brooks in 2000, since revolutionary data coming from the Russian site of Kostenki (Markina gora or K14)? Does it make sense to argue about “Transitional facies” for lithic assemblages eg. Uluzzian, Castelperronian, Bahunician...? On which data can we consider the “evidence” of contemporaneity between Neandertals and modern humans? Which “value” can be given to the claimed inter-stratification between Castelperronian and Aurignacian at Grotte du Fees, Roc du Combe and Piage? How to consider the possible/presumable contemporaneous presence of late Neandertals and Sapiens?

In our opinion Uluzzian and contemporaries (Late Mousterian) assemblages played a major role in modelling evidences for a Southern European colonization. Indeed, the role of selective pressures in eliciting specific behaviours should be better investigated (relict environments, raw material availability, food supplies, both animal and vegetal, this last one definitely underestimated). This is why we are proposing a special session regarding this issue within the EAA annual meeting, this year held in Italy. This special session would also be beneficial, in order to improve communication between archaeologists working in a traditional manner “culture-historical research” and the ones working on archaeological evidences in an evolutionary ecological perspective.

This meeting would allowed a better dialog between geneticists, palaeoantropologists and archaeologists especially considering the recent chronological data and the major pieces of evidence showed by genetic investigations.



### Paper abstracts:

#### A MOLECULAR APPROACH TO THE NEANDERTHAL EXTINCTION

Dodge Danae, Graduate School of Archaeology, University of Sheffield (UK)

Neanderthals (*H. neanderthalensis*) arose in Europe from *H. heidelbergensis* populations after 600 kyr BP and were widespread in Eurasia. Their extinction approximately 30 kyr BP has been contentious issue in archaeology where the role of the deteriorating climate and/or the arrival of modern humans (from 40 kyr BP) could have played a part.

With other mammalian species going extinct at around the same time during (61 kyr - 25 kyr BP), such as the bison (*Bison cf. priscus*) in N. America, the cave bear (*Ursus spelaeus*) and hyena (*Crocuta crocuta*) in Europe, it is likely

that the climatic oscillations contributed to their extinction. Particularly for the cave bear and the hyena, the potential for similarity with the Neanderthals in demographics and the ever-decreasing genetic diversity may be indicative of specific ecological triggers that led to their extinction.

One approach to identifying such ecological triggers is to establish the evolutionary history of a species alongside the changing palaeo-climate. BEAST (Bayesian Evolutionary Analyses of Sampling Trees) is a software programme which does just that. It is important in the use of BEAST that the genetic data is of sufficient quantity and quality. However, for the Neanderthals, the genetic data is limited.

This study aims to identify the minimal quantitative and qualitative requirements of BEAST through the use of the aforementioned mammalian species in the hope that they may be applied to the Neanderthal data set to finally address the question: can we determine the ecological factors that led to the Neanderthal extinction?

### **LATE PLEISTOCENE DEMOGRAPHY AND THE APPEARANCE OF MODERN HUMAN BEHAVIOUR**

Thomas Mark, Research Dept. of Genetics, Evolution and Environment, University College London (UK)

The Upper Palaeolithic Transition, sometimes referred to as the origin of behavioural modernity, is associated with the appearance of a package of increased symbolic and technological complexity. It occurred around 45,000 years ago in Europe and western Asia but somewhat later elsewhere in the old world. However, many of its features appear transiently some ~45 to 25,000 years earlier in sub-Saharan Africa. Proposed explanations for this significant cultural shift include: biological / cognitive change, innovations in social structure and language, fluctuations in ecological / socio-economic conditions and the effects of population size increase on

inter-group interaction / competition. However, none of these mechanisms adequately explain the spatiotemporal structuring of markers of behavioural modernity in the last ~50,000 years or their earlier appearance in sub-Saharan Africa. We present a cultural learning simulation model that reflects key features of Pleistocene human demographic conditions. We show that the level of a cultural skill that can be maintained is related to the level of migratory activity amongst subpopulations but not to the number of subpopulations, when greater than ~50. We also show that geographic heterogeneity in local subpopulation density or migratory range leads to stable spatial structuring of skill accumulation in contiguous space.

Genetic estimates of population size change over time indicate that population densities in early Upper Palaeolithic Europe were similar to those in sub-Saharan Africa when the markers of behavioural modernity first appear. We conclude that demography is an important variable in explaining accumulation of loss of markers of behavioural modernity.

### **NEIGHBOURS AND NETWORKS: AN ORGANIZATIONAL PERSPECTIVE ON “OUT OF AFRICA”**

Brooks Alison, George Washington University (USA)

Social networks, reified by trade and exchange, are a fundamental feature of human society. They are particularly important for hunter-gatherers, for whom they constitute the principal “safety net”. As a result, during colonization events, ideas, material culture, disease vectors and other effects often travel far beyond the actual “frontiers” where humans of different groups actually meet and interact and may constitute the first evidence of contact, albeit indirect. To what extent was this also true for the modern human colonization of western Eurasia prior to and during modern human expansion into lands previously occupied by the Neanderthals? A comparison of the development of social networks in East Africa and western Eurasia during the Middle and early Later Pleistocene, as reflected in raw material transfer distances, suggests that networking was more developed and covered longer distances in East Africa. Different networking patterns imply differential rates for the transfer of ideas and material culture within vs. beyond Africa. Despite this difference, there is some evidence for both an early ‘contact zone’ in the Levant and the spread of new technologies and ideas beyond the ‘frontier’ prior to 40 kya.

### **ABOUT NEANDERTHALS EXTINCTION: A QUESTION OF SOCIAL ORGANIZATION**

Peretto Carlo, University of Ferrara (Italy)

Recent data allow new hypotheses on Neanderthals’ decline to be advanced which allow to overcome those previously suggested regarding their inadequate capacity to adapt to specific environments or claiming a genetic diversity.

Actually the capacity to recognize oneself in those behaviours which are part of the identity of the human group (ethnos) represents a successful factor, although discriminating. With the diffusion of *Homo sapiens* throughout

Europe a certain number of signs can be detected related to an increased as well as an ethnically better defined social organization compared to that of Neanderthals. This statement becomes more meaningful when considering the lithic assemblages produced starting from ~ 150.000 years, by both Neanderthals and early sapiens, that are definitely very much alike. Moreover, in the Near East a kind of interstratification can be claimed for the two human groups, suggesting the same diffusion capacity in similar habitats.

The spread of Homo sapiens coincides with the development of a symbolic aptitude which enhance the general organization of the group, advantaging AMH both in terms of demographic increase and diffusion.

Ethnic identity should thus have a very old origin dating back to the first UP stages. The successful factors can be summed up as follows: an increasing solidarity among the individuals belonging to the same group sustained by a shared ritual of initiation practices and stated by a unique and recognizable behaviour. In this context even the adoption of an articulated language finds its highest significance. In a complex society where symbolic implications became an inalienable factor of bonds within the group, talking the same language supports unity instead of division. Its proper use supports and justifies the absolute, reducing the consequences of natural and material context.

### **IS THE MP-EUP TRANSITION ALSO AN ECONOMIC AND SOCIAL REVOLUTION?**

Djindjian François, University of Paris 1 (France)

European transition between MP and EUP industries is generally explained by the replacement of Neanderthals by Modern men between 45 000 BP and 35 000 BP. Recent results have shown such a transition were more complex than expected : after a phase of stability during the 75-45 000 BP pleniglacial period with MP industries, a phase of large regional diversification occurs between 45 and 35 000 BP with various industries and followed after 35 000 BP by a phase of standardization characterized by a bladelet and blade prismatic core reduction sequence (Aurignacian). We are focusing here on the last results concerning the dwelling occupation system, the food resource management system and the raw material procurement systems which allow reconstituting the mobility system and the territory management system of the human group network, revealing a major change between MP and EUP territory management systems. During OIS4, the MP territory system may be defined by a Local Opportunist Strategy (LOS) in which the sedentary group is emigrating when their one day walking area is exhausted. After 34 000 BP, during early Aurignacian, the EUP territory may be defined as an Enlarged Planned Strategy (EPS) where a large territory (up to 100 000 km<sup>2</sup>) is occupied by a network of human groups circulating seasonally in the whole landscape. The change is involving : localization in the landscape, identification of raw material outcrops, material culture allowing easier mobility (blade, bladelets, ivory, bone industry, etc.), emergence of art considered like an identification mark of the territory, the group and the individuals.

### **TRANSITIONS FROM THE MIDDLE TO UPPER PALAEOOLITHIC TRANSITION : NEW DATA FOR AN ALTERNATIVE MODEL**

Bordes Jean-Guillaume, Institut du Quaternaire, Université Bordeaux 1 -Talence (France)

Here we present our recent analyses of lithic industries belonging to the final middle and the early upper Paleolithic, from South-western France to Iran.

We depict a more complex image of the Middle to Upper Paleolithic transition, attenuating the impression of an abrupt and radical rupture that generally surrounds its interpretation.

### **THE BURIED LATE NEANDERTHAL SKELETONS AT SIMA DE LAS PALOMAS (MURCIA, SE SPAIN)**

Walker Michael John, Murcia University (Spain)

At Sima de las Palomas del Cabezo Gordo (Murcia, Spain) remains of several Neanderthals have been excavated recently. From about 55,000 years ago articulated parts of 3 adult skeletons (including skulls with mandibles, rib cages, shoulder blades, hip bones, upper and lower limbs, hands and feet, often in anatomical connexion) were excavated from the lower part of an accumulation of large stones sloping downwards and inwards into the cavity, along with burnt bones of large herbivores and Mousterian implements. Above the slope, finer sediment accumulated which included a fireplace and isolated teeth or bone fragments of Neanderthals including 3 mandibles, as well as Mousterian implements and faunal elements, all dating from about 42,000 years ago. Altogether at least 9 Neanderthals are represented by finds from the site (including 3 unstratified mandibles), ranging from babies to adults. Dating methods include radiocarbon, uranium-series, and optical luminescence. Pollen analysis implies conditions less severe than those of the Heinrich IV cold oscillation at 40,000 years ago, of which there is no

evidence at the site. The accumulated sediment filled the cavity up to the roof (there are no Upper Palaeolithic deposits). (Ref: Walker et al., 2008, "Late Neanderthals in Southeastern Spain: Sima de las Palomas del Cabezo Gordo, Murcia, Spain," Proc. Natl. Acad. Sci. USA, 105: 20631-6).

### **THE LATE AND FINAL MOUSTERIAN IN THE FOSSELLONE CAVE: UTILIZATION OF COLOURING SUBSTANCES IN TRANSITIONAL CONTEXTS**

Vitagliano Silvana, Istituto Beni Culturali – Servizio Archeologico, Regione Lazio (Italy); Bruno Maria, (Italy)

The Fossellone cave is one of the prehistoric sites that constitute the extraordinary group of Monte Circeo caves in the Southern Latium. The archaeological, geostratigraphical and ecological (paleoenvironmental) peculiarities of this settlement make it a natural centre of scientific interest. A new study of the later part of the Middle Paleolithic sequence (layers 27-23 of the stratigraphical deposit), started in 1989 and has given the opportunity for a deep analysis of the lithic assemblages belonging to the evolved and final facies of the Mousterian complex. The industry of those layers testifies the Middle to Upper Paleolithic transition and the human change from *Homo neanderthalensis* to *sapiens sapiens*. The restarting of the scientific researches in the Fossellone cave involved also a new examination of the stratigraphy and of the sediments. The reconstruction of the environmental context and the systematic analysis of the raw materials that had been used for the industry has been carried on as well. The study of the concretions and of the coats on the artefacts pointed out to the presence of a coloured powder on many tools. The comparison among the powder samples from the industry and those gathered in a stratigraphical section of Monte Circeo gave the opportunity to localize the origin and nature of the deposit far from the cave. The spatial distribution of the coloured remains and the frequency of its occurrence in the archaeological deposit of the Fossellone cave make us think that the coloured powder might have been used intentionally by the Neanderthals living there (layers 27-23).

### **THE LITHIC INDUSTRIES OF GROTTA DEL CAVALLO FIIIIE LEVEL (NARCÒ, LECCE): BLADE AND BLADELET PRODUCTION IN A LATE MOUSTERIAN CONTEXT**

Carmignani Leonardo, University of Siena (Italy)

The puzzles arising from the fragmentation of the Mousterian expressions in their late phases, as emerged from the archaeological evidence, have always been of interest for prehistoric research, as far as they are concerned with both cultural and biological aspects of human evolution. The cultural complexity that can be observed between 40.000 and 28.000 years ago in Europe depends on the variety of Neanderthal economic and symbolic attitudes, in relation to both the advent of new technical expressions (Castelperronian, Uluzzian and *sensu lato*, transitional complexes) and to the persistence of productions that are still rooted into the traditional variability of the Mousterian groups. At the same time the appearing of techno-complexes attributed to the Upper Palaeolithic has been related by some authors to the emergence of particular cognitive abilities, ascribed to the arrival of the anatomically modern humans (AMH) in Europe. In the last years the recognition of blades and bladelets productions in Mousterian context in France, Italy and in the Near East has mitigated this hypothetical relationship between these productions and the spread of the AMH.

This paper reports the results of the study of Mousterian lithic industries of Grotta del Cavallo FIIIIE level (Nardò, Lecce). The technological study shows the development of an autonomous schéma opératoire (along with other types of productions) oriented in the direction of blades and bladelets production by means of a volumetric exploitation. The recognition of this type of production - not recorded until now in the Salentin area - gives us the possibility to review the production systems that we can attribute to the late Neanderthals.

### **MIDDLE-TO-UPPER PALAEOLITHIC TRANSITION (MUPT): RECENT DATA FROM BELGIUM**

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The chronological and palaeoenvironmental background of the industries identified in Europe for the MUPT is not accurately known. This situation is mainly due to an insufficient knowledge of the archaeological data context, mostly coming from old excavations. Any major progress in the understanding of the MUPT can only be achieved with the study of long sedimentary sequences providing a semi-continuous record and presenting archaeological remains in a reliable palaeoenvironmental and chronological framework. Strong attention must also be paid to stratigraphic controls and site formation processes.

Interdisciplinary studies developed these last years in Belgium contribute to this MUPT problematics. Placed in an interesting position thanks to a specific geological context that combines numerous caves, a well-developed loess cover which acts as a reference sequence for the Upper Pleistocene and the presence of tephras. This allows a detailed reconstruction of climatic changes and an accurate chronological control in cave sequences (Pirson et al., 2006). The first results, integrating new excavations and new analyses of old material, show that between 40,000 and 38,000 BP, Belgium was still occupied by Neandertals associated with a Late Middle Palaeolithic industry, as attested by the Neandertal premolar found at Walou Cave. Spy Neandertals were directly dated by  $^{14}\text{C}$  to 36,000 BP (Semal et al., 2009) but the antiquity of the excavation prevents the clear identification of the associated industry (LRJ or Late Mousterian, both recognized in the site). The oldest convincing  $^{14}\text{C}$  date for Belgian Aurignacian is about 33,000 BP (Maisières-Canal and Spy).

Pirson S. et al., 2006. Belgian cave entrance and rock-shelter sequences as palaeoenvironmental data recorders: the example of Walou cave. *Geologica Belgica*, 9/3-4, p. 275-286.

Semal P. et al., 2009. New Data on Late Neandertals: Direct Dating of the Belgian Spy Fossils. *American Journal of Physical Anthropology*, 138, p. 421-428.

### **NEW RESEARCH ON THE CHRONOSTRATIGRAPHY OF THE EARLY UPPER PALAEO-LITHIC IN CENTRAL EUROPE: EXCAVATIONS IN WILLENDORF II, AUSTRIA (2006 & 2007)**

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In 2006 we started new excavations at Willendorf II, a site originally excavated between 1908 and 1955. The site's deposits cover the time period of > 55.000 to 23.000 years uncal. BP and include 9 archaeological layers separated by sterile loess. The early levels from Willendorf II play a key role in the discussion of the dispersal of modern humans into Europe and of the origin(s), dating and dispersal of the Aurignacian. In recent years, however, the evidence has been debated both for the  $^{14}\text{C}$  dates and for the cultural attribution of the Early Upper Palaeolithic (EUP) assemblages.

Our new work at the site is aimed at clarifying these issues and at placing the EUP occupations in their climatic and environmental context. For this, samples covering the entire stratigraphic sequence are being collected from the site's main section. Special attention is being paid to better understanding the site formation processes, collecting dating samples (large dating program:  $^{14}\text{C}$ -AMS on bone and charcoal, OSL and TL), expanding the EUP lithics sample, and obtaining malacology samples for environment reconstruction. We further collected abundant samples for palaeomagnetic, tephrochronological and pollen analyses.

Here we present the results to date, reassess the known sequence and discuss our findings in the context of the Middle to Upper Palaeolithic transition in Central Europe. A special focus is put on the implications of our findings for the chronostratigraphy of the OIS 3.

### **FROM THE DANUBE TO THE DON: NEW INSIGHT ON THE CLIMATIC AND CHRONOLOGICAL BACKGROUND OF THE EARLY UPPER PALAEO-LITHIC IN CENTRAL AND EASTERN EUROPE**

Haesaerts Paul, Chirica Vasile, Damblon Freddy, Royal Belgian Institute of Natural Sciences (Belgium); Koulakovska Larissa, Pirson Stéphane, Dir. de l'archéologie du Service Public de Wallonie & Royal Belgian Institute for Natural Sciences (Belgium); Sinityn Andrey, Institute for the History of Material Culture, Russian Academy of Sciences - St. Petersburg (Russia); Van Der Plicht Johannes, CIR, Groningen University (The Netherlands)

During the last decade our investigations were devoted to long middle pleniglacial loess successions related to Palaeolithic settlements rich in charcoal from the Middle Danube Basin, the East Carpathian Area and the Russian Plain. The conjunction of these complementary sequences provides for the first time an almost complete

palaeoclimatic record for the period from 26 to 55 ka uncal BP encompassing almost fourteen interstadial events chronologically positioned on the ground of some hundred radiocarbon dates on charcoal from Gröningen and Oxford laboratories. This integrated palaeoclimatic and chronological sequence, very similar to the Greenland ice record, confirms the predominance of highly unstable environmental conditions during OIS 3 at the scale of the European Continent. It also allows a new insight on interaction of short time climatic changes and Palaeolithic occurrences ranging from Mousterian to Early Gravettian, including Early Upper Palaeolithic, Bohunician, Szeletian, Stretleskaian, Gorodtsovian and Aurignacian.

Haesaerts P. et al., 2009. Climatic signature and radiocarbon chronology of middle and late pleniglacial loess from Eurasia: comparison with the marine and Greenland records. *Radiocarbon*, 51 (1), 301-318.

### **LATE OIS 3 NEANDERTHALS/MODERN HUMANS IN NORTHERN ITALY: A POSSIBLE CO-EXISTENCE?**

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**D** The presence at Mezzena Rockshelter of classic Neanderthals during late OIS 3 producing Levallois industry including typological elements recalling “Upper Palaeolithic types” – dihedral burins, nose and carinated endscrapers, backed points - poses questions about the possible co-existence of two different human species in the Lessini Mountains. Peresani (2008) had claimed the Uluzzian industry presence at Fumane cave whose radiocarbon datings, about 34-33 kyr BP, are consistent with the Uluzzian levels of Castelcivita (Campania), but at Fumane cave most of both the Mousterian and Aurignacian dates largely overlap in the interval 40–30 kyr BP.

By acknowledging this situation during OIS 3 in the Lessini Mountains (Verona, North-eastern Italy), since 2005 we built a research project devoted to investigate the role played by the ecological settings and the economical sources management in order to seek for similarities or differences in Neanderthals and modern humans behavioural choices. The environmental features of the area are characterized by extremely rich flint sources, along with favourable geography and exposure and the presence of caves and rock shelters, which all together have allowed to establish an excellent balance among economic, environmental and climatic variables, favouring human settling over the last 400.000 years.

In order to verify the theoretical model of possible co-existence in a limited area - but not interbreeding - of two different human species and the possibility to reconstruct different techno-economical development and environment exploitation strategies carried out during late OIS 3, we are presenting the related data coming from the “Human Fossils of the Verona area” project.

### **OIS 3 EVIDENCES FROM PALAEOOLITHIC SITE IN SOUTHERN ITALY**

Ronchitelli Annamaria, University of Siena (Italy)

The first part of the paper deals with a brief analysis of the palaeo-environmental variations in Italy during the transition period interesting the final Mousterian - Uluzzian (as defined in 1963 by A. Palma di Cesnola) and the Early Upper Paleolithic - Aurignacian, whose diffusion modalities are then discussed.

Considering only the sites where these cultures are present in stratigraphical sequence, the Author analyses: the composition of the fauna hunted by man and the exploitation strategies of the carcasses, the selective choices, what introduced in the camps, etc.; the techno-functional and typological characters of the lithic and bone industry, and the ornaments production.

An evaluation whether there are changes in subsistence strategies, raw material exploitation and land-use (and what occurred) during this period will be critically examined, together with their interaction with a palaeoenvironmental changes considering both the chronological time span and assorted geography of the Italian peninsula.

### **ULUZZIAN BONE TECHNOLOGY AND ITS IMPLICATIONS FOR THE ORIGIN OF BEHAVIOURAL MODERNITY**

Borgia Valentina, University of Siena (Italy); D’Errico Francesco, PACEA, Institut de Préhistoire et de Géologie du Quaternaire, Université Bordeaux I, France & Institute for Human Evolution, University of the Witwatersrand, Johannesburg (South Africa); Ronchitelli Annamaria, University of Siena (Italy)

We present results of the analysis of bone tools from Uluzian contexts of Grotta della Cala, Grotta del Cavallo, and Grotta di Castelcivita (Southern Italy). They consist of 14 bone artefacts, two of which unpublished.

Archaeozoological, technological and functional study of these objects evidences recurrent morphologies, manufacturing techniques, use wear pattern and intensity of development, demonstrating previously unrecorded consistencies in the production and use of these tools.

Comparison with bone tools from other Early Upper Palaeolithic Western European technocomplexes highlights similarities suggesting that the production of formal bone tools was clearly in the realm of Uluzian and Chatelperronian cognition. Implications of our results for the debate on the origin of behavioural modernity will be discussed.

### **EVIDENCE FOR TECHNOLOGICAL CONTINUITY BETWEEN MIDDLE AND UPPER PALAEOLITHIC BLADE ASSEMBLAGES IN THE EASTERN BALKANS: THE CASES OF SAMUILITSA, TEMNATA AND BACHO KIRO**

Tsanova Tsenka, Dept. of Human Evolution, Max Planck Institute for Evolutionary Anthropology– Leipzig (Germany)

The Early Upper Palaeolithic assemblages of northern Bulgaria (Bacho Kiro, level 11 and Temnata, level VI and 4) are the earliest evidence for the Aurignacian, traditionally associated with the arrival of AMH (Anatomically Modern Humans). These techno-complexes, believed to be the first Upper Palaeolithic manifestations in the eastern Balkans, are considered to be intrusive on a regional scale (Drobniwicz et al. 2000, Kozłowski 2004).

These lithic industries are characterised by a blade production and a use of technologies close to those of the Middle Palaeolithic traditions. We believe that the lithic assemblages from Bacho Kiro (~43 Ky <sup>14</sup>C BP; ~37-38 Ky <sup>14</sup>C BP-AMS) and Temnata (~45-46 Ky BP TL; ~39-38 Ky <sup>14</sup>C BP) may be considered as part of the technological innovations and marked variability of the late Middle Palaeolithic of Central Europe and the Near East (Tsanova 2008).

In light of the new data from the late Middle Palaeolithic site of Samuilitsa Cave (~42 Ky <sup>14</sup>C BP), we may observe a local tendency towards Upper Palaeolithic blade traditions. A techno-economic analysis of the late Mousterian-Levallois of Samuilitsa was carried out in order to highlight a potential link between the two traditions, with a particular emphasis on the laminar component in both the late Middle Palaeolithic and Early Upper Palaeolithic industries.

The general interest of this research is to isolate the characteristics of the passage from Middle to Upper Palaeolithic through regional sequences, and to then demonstrate general tendencies on a larger geographic scale.

### **STRELETSKIAN, EMIRAN AND THE QUESTION OF CULTURAL CONTINUITY BETWEEN THE NEANDERTHALS AND ANATOMICALLY MODERN HUMANS**

Vishnyatsky Leonid, Institute for the History of Material Culture, Russian Academy of Sciences - St. Petersburg (Russia)

Despite many decades of paleoanthropological research and recent contributions from paleogenetics, we still do not know whether Neanderthals and anatomically modern humans (amh) interbred or had any contacts at all. In this paper, I explore the possibility of 'double authorship' for some transitional industrial traditions. The demonstration that a tradition was initially associated with Neanderthals and then continued to exist among AMH would imply cultural continuity and contacts between the former and the latter. Of special interest in this respect are two industrial lineages from the eastern half of the former Neanderthal area. The earliest assemblages of the Streletskaya culture in the Russian Plain may predate 40 kya, while the latest survive to the end of OIS 3. The former gave no human remains, but the latter (Sungir) seem to be associated with burials of AMH said to display also some archaic traits. The Streletskian retains many Middle Paleolithic features and according to a well-known (and hotly contested) hypothesis has its roots in the Micoquian of East Europe. In the Near East, the Emiran-Ahmarian tradition too is associated with AMH remains on its later stages, but its early assemblages yielded a number of fossils with possible Neanderthal affinities (Ksar Akil, Uçağizli). While the origin of Emiran is unclear, it has some traits linking it with the late Mousterian of the region. Though neither Streletskian nor Emiran can be accepted as proven cases of 'double authorship', the "signal" for continuity appears to be much louder in the eastern part of the Neanderthal area, than in the western one. This parallels the situation with Neanderthal morphological variability, showing clinal change from west (classical traits) to south-east (mixed traits).

### **THE FORMATION OF EARLY UPPER PALAEOLITHIC TECHNOCOMPLEXES IN THE EASTERN EUROPE**

Sinityn Andrey, Institute for the History of Material Culture, Russian Academy of Sciences – St. Petersburg (Russia)

Everywhere in Europe the Early Upper Palaeolithic (36-28 ka nonCal) has the bimodal structure, one component of which is the Aurignacian of pan-European distribution, while the other is represented by a series of local “Transitional” cultures (Lincombian, Chatelperronian, Uluzzian, Szeletian). For Eastern Europe it is the association of Aurignacian and Streletskian, both of very wide spatial distribution without any relation to geographic zones and without relations to any environmental conditions.

Some evidences of the last decades show that neither Aurignacian, nor Streletskian are the most ancient Upper Palaeolithic of the Eastern Europe. The most obvious appears to be the situation in the Kostenki group, where the most ancient Upper Palaeolithic or Initial UP (37-42 ka) is represented by the Spitsyanean and the original cultural tradition of the lower (IVb) cultural layer of Kostenki 14 (Markina gora). Neither industry can be distinguished as Aurignacian nor as “transitional” also as some assemblages outside Kostenki (Buran-Kaya 3C in Crimea, Sokirinita 1A, Korolevo 1-Ia, Korolevo 2-II in Transcarpathia, and Zaozerie 1 in Middle Urals).

East European IUP stratum appears to be comparable with some West European assemblages distinguished as proto-Aurignacian, according to similar non-Aurignacian and non-transitional taxonomic status.

Two general ways of interpretation of this phenomenon are proposed as a matter for discussion:

- 1) as pioneering Upper Palaeolithic wave(s), separated in time from the principal Aurignacian dispersal;
- 2) by resuscitating the concept of G. Laplace as a formation of undifferentiated Upper Palaeolithic technocomplexes without any necessity of migration to be attracted as an explicative model.

### **LAMINAR TECHNOLOGY IN CENTRAL ASIA: NEW EVIDENCES FROM OBI-RAKHMAT (UZBEKISTAN) AND KARA-BOM (ALTAI) IN THE CONTEXT OF THE MIDDLE TO UPPER PALEOLITHIC TRANSITION**

Zwyns Nicolas, Dept. of Human Evolution, Max Planck Institute for Evolutionary Anthropology - Leipzig (Germany); Krivoshapkin A.I., Rybin Evgeny P.,

Recently, much attention has been paid to bladelet and micro-blade technology, mainly within Early Upper Palaeolithic assemblage in Europe and the Near-East. Described by some authors as a part of Modern Human Behavioural Package (McBrearty, Brooks, 2000), the production of small-sized laminar elements seems to appear sporadically in Africa during the MSA, during early part of the Middle Palaeolithic in the Levant and during OIS4 in Western Europe. However, the conditions of appearance and development of such technology in Central Asia remain poorly documented. By describing new evidence from the Middle Palaeolithic sequence of Obi-Rakhmat (Western Tian Shan, Republic of Uzbekistan) and from the EUP layers from Kara-Bom (Gorny Altai, Russian Federation), we are trying here to address issues such as the timing of the first appearance of bladelet reduction sequence in this area, understanding the techno-economy of bladelet production, the biological attributions of these assemblages, and the significance of these industries within the frame of various transition scenarios.

McBrearty S., Brooks S.A. 2000: The revolution that wasn't: a new interpretation of the origin of modern human behavior, *Journal of Human Evolution*, 39, 453–563.

### **PESTLE-GRINDER STONES: TYPOLOGY, FUNCTION, CULTURAL MEANINGS**

Skakun Natalia, Sinitsyn Andrey, Institute for the History of Material Culture, Russian Academy of Sciences - St. Petersburg (Russia)

Russian prehistoric archaeology has some particular traditions that dealt with pestle-grinder stones following the work of A.N. Rogachev. Based on morphological analyses of these tools made by the abrasive-piquetage method he proposed a hypothesis connecting them with a particular kind of domestic economy, related to the preparation of vegetal food for a long-term storage. This then became the basis for hypothesing “complex gathering” as an initial stage of farming. The chrono-spatial distribution of these tools showed no connection with any specific cultural entities, territories, ecological zones or any internal chronological subdivisions. The most important find was their identification in Mousterian assemblages (Molodovo 5). This indicates an argument in favour of similar domestic behaviours of Neanderthals and Modern humans.

Last year microscopic analyses made in Italy of some “pestle-grinders” from Kostenki 16 (Uglanka) (14C: 28-29 ka nonCal) provided evidence of plant remains on their surface that provides an additional argument supporting of Rogachev' idea

Use-wear analyses of separate pestle-grinders (N. Skakun) of Kostenki's sites provided some important conclusions according to their multifunctional using.

In spite of recent results from use-wear analyses, Rogachev's idea that pestle-grinders indicate complex gathering remains the most probable interpretation. New identification of microscopic plant remains appears to be the most important argument in its favour. Complex gathering as a precursor to farming seems to be an argument for a long-



term evolution of domestic activity that led to agricultural economy, without the need for revolutionary theories to explain its appearance.

### **PLANTS IN EVERYDAY LIFE OF LATE CAUCASIAN NEANDERTHALS (BY MEANS OF SEM ANALYSIS)**

Levkovskaya Galina, Institute for the History of Material Culture, Russian Academy of Sciences - St. Petersburg (Russia)

It is obvious that Neanderthals used plants in their everyday life. There are evidences of using flowers even in burial rituals (Leroy-Gourhan, 1978). But visible proofs of various uses of plants are hard to find in the scientific reports. Plant-gathering patterns are discussed for the Mousterian layers of the time span 45-35 kyr BP and for the layers with anthropological remains of the Neanderthal children which were found in Barakayevskaya (Lubin, 1987), Monasheskaya [Belyayeva, 1995] and Mezmaiskaya (Golovanova, 2000) cave sites. They are based on the results of SEM analysis of vegetal remains.

The author's method of sample preparation for the SEM – analysis allowed to obtain about 200 SEM images of rich palaeobotanical complexes with finds of micro remains of wood, seeds, diatom algae, pollen, spores, etc. for the Caucasian Mousterian layers. Plants macro remains were absent in this layers even after sediments flotation.

The patterns are presented for the following cave dwellings of the West Caucasus: Akhshtyr and Malaya Vorontzovskaya (Sochi region, modern subtropical belt of Colhcis), Kudaro 1, Kudaro 3 and Mezmaiskaya (modern upper mountain belt of the Central and North-west Caucasus), Matouzka, Monasheskaya and Guppsky (Nort slope of West Caucasus, down part of forest belt).

The report presents a comparison of plant resources use by the inhabitants of each cave site. It shows what plants could be used as food, vitamins, medicine, firewood, joiners or weave resources in the Neanderthals time. The finds of anthropohores (e.g. water plants) in all cave sites are especially convincing evidence of Neanderthals plant-gathering.

### **NEW EVIDENCES FROM MP/UP CAVE SITES IN WESTERN GEORGIA (SOUTH CAUCASUS)**

Tushabramishvili Nikoloz, Georgian National Museum - Tbilisi (Georgia)

The study of the caves of Imereti region (Western Georgia) raised questions about the possible coexistence, adaptations and allocation of natural resources and subsistence areas among different groups of prehistoric people.

Evidences for contemporaneous presence of different Modern Human groups during Upper Paleolithic, inhabiting the nearby river gorges running parallel at a distance of 1-2 km, shows the differences within these groups hunting traditions.

Undo Klde and Bondi Cave are two just discovered sites which give us important information about the issues mentioned above.

The layers of Bondi Cave date back to 35.000 BP, 20.000 BP and 11.000 BP.

Pollen analysis have revealed presence of textile and coloured twisted wool in all layers of Bondi Cave.

At the same time LMP from Orvala Klde Cave, situated just 2 km from Bondi Cave, is dated 36-35.000 BP.

The MP and UP layers have been excavated in Undo Klde Cave. MP material is represented by approximately 80% of elongated mousterian points. At present a small number of the material shows the recurrent uni-directional levallois technique.

A fragment of Neanderthal tooth was found during the excavations.

On the wall of the cave was found the engraved symbol. Rather deep (47 m) natural karstic pit has been discovered at the end of the corridor. It is full of faunal and anthropological remains. It is rather probable that the material was intentionally thrown in the pit.

The presence of mentioned features is promising for evidence of the origin of initial forms of religious thought and art.



**MATERIAL CULTURE**



E001

Session title:

## **“BALKAN FLINT” IN SE EUROPEAN PREHISTORY: CHRONOLOGICAL, CULTURAL AND SOCIAL PERSPECTIVES**

**Organiser:** Gurova Maria, Bulgarian Academy of Sciences (Bulgaria)

**Co-organisers:** Borić Dušan, Dept. of Archaeology, University of Cambridge (UK); Voytek Barbara, University of California - Berkeley (USA)

**Discussant:** Bonsall Clive, University of Edinburgh (UK)

### **Session abstract:**

Bulgarian Early Neolithic chipped stone assemblages reveal coherent and diagnostic formal flint toolkits for the vast Karanovo I and II cultural area, characterized by long, regular blades with (bi)lateral semi-abrupt high retouch and sometimes with rounded or pointed ends, as well as highly (re-)used sickle inserts. These tools are made from high quality yellow-honey-waxy coloured flint with sporadic whitish spots (well known and often referred to in the literature as ‘Pre-Balkan Platform flint’, or simply ‘Balkan flint’). One of the essential questions in relation to these toolkits is the identification of their raw material outcrops, supply strategy, and the network of their distribution (local and supra-regional). According to recent geological research in Bulgaria, the term “Pre-Balkan Platform” is an incorrect term for Moesian Platform. “Balkan flint” probably means every type of flint in the Moesian Platform and adjacent parts of the Balkan Alpine Orogen including both Lower Cretaceous (Aptian) flint and Upper Cretaceous (Campanian and Maastrichtian) flint.

The spatial distribution of tools made of this type of raw material is very wide: the artefacts defined as made of ‘exotic’ Balkan flints are reported from Neolithic Greece, Serbia (including Vojvodina), Romania, Macedonia, Hungary etc., i.e. from whole area of Pre-Sesklo–Starčevo–Karanovo I–Körös–Criş, cultural complex. One of the most challenging questions is to elucidate the interactions and impacts of this particular flint and tool repertoire with adjacent Early Neolithic cultural groups and identities.

The organisers of this thought-provoking session intend to solicit interdisciplinary contributions and specific case studies relating to this longstanding research problem, in order to stimulate real debate based on empirical data and sound theoretical concepts.



### **Paper abstracts:**

#### **ARCHAEOLOGICAL BACKGROUND OF THE ‘BALKAN FLINT’ PROBLEM: BULGARIAN EVIDENCE**

Gurova Maria, National Institute of Archaeology and Museum, Bulgarian Academy of Sciences (Bulgaria)

Although the ‘Balkan flint’ problem has inherently been linked to the Neolithisation debate this problem remains insufficiently elucidated. In spite of theories about routes and ‘waves of advance’ of the Neolithic spread into the Balkans, it has not been possible to explain the appearance of the (formal) flint toolkits made of yellow (waxy) white spotted ‘Balkan flint’. It remains difficult to know whether they were brought with the migrants along their currently unknown routes from some part of Anatolia (central or north-western), or were created in the milieu of local pre-Karanovo enclaves? According to current archaeological evidence and knowledge, there are two potential candidates for this ‘nuclear area’ for the development of technological and stylistic features of such a toolkit: 1) the region of the Struma and Vardar valleys, which might have been directly and independently colonized by Anatolian migrants, and 2) the area of ‘monochrome’ pottery in northern Bulgaria, where people were already sufficiently experienced in lamellar production, and capable of moving to the east and reaching the Ludogorie region with its abundant high quality flint outcrops. A crucial and still unresolved problem with regard to this flint relates to the question from which part(s) of the Moesian platform the raw material called ‘Balkan flint’ came from? From this question stem challenging questions, such as when did it start being used, how did the ‘trade’ patterns develop, what ‘messages’ did this material convey.

## SEDIMENTOLOGICAL EXAMINATIONS OF NEOLITHIC FLINT ARTEFACTS AND FLINT RAW MATERIALS FROM BULGARIA

Nachev Chavdar, National Museum "Earth and Man" (Bulgaria)

Geographic and stratigraphic distributions of the main two levels of siliceous concretions with significance for the Neolithic in Bulgaria are as follows: (1) Ludogorie or Luda Gora (Dobrogea) flint ( $K_1^a$ ). The silica concretions are hosted in Lower Cretaceous (Aptian) micrite or grain limestones. This flint has a broad geographic distribution in the East Danube Plain. Two types of Ludogorie flint are microscopically distinguished: type Ravno is observed in the central part of area; the second - type Kriva Reka - is observed in the southeastern part of area. (2) Moesian flint ( $K_2^{cp-m}$ ): the silica concretions are hosted in Upper Cretaceous chalk, chalk-like limestones (Campanian age) and fine grained biomorphic limestones (Maastrichtian age). There are three major areas of outcrops of this flint in northern Bulgaria (from west to east): between Montana and Lovech, between Pleven and Nikopol and between Shumen and Devnya. Only the flints from the Pleven-Nikopol region have good knapping characteristics. This fact and convenient transport connection along the Danube River, determined the big outcrops on the Danube coast near Nikopol and Somovit, as the most probable source of flint raw materials for vast territories in recent Serbia and Romania.

The paper discusses samples/artifacts from 7 main Early Neolithic sites in Bulgaria (Kovachevo, Slatina, Rakitovo, Yabalkovo, Karanovo, Dzhuljunitsa, Ohoden) and one EN site from Danube Gorge region in Serbia (Aria Babi). Their thin sections are compared with the etalon thin section collection, which included 700 microscopic samples from 65 natural outcrops of flint raw materials from the whole Bulgarian territory.

## CHARACTERISATION OF 'BALKAN FLINT' ARTEFACTS AND SOURCES IN BULGARIA USING ICP-MS AND EPMA

Bonsall Clive, School of History, Classics, and Archaeology, Edinburgh University (UK); Hayward Chris, University of Edinburgh (UK); Pearce Nick, Aberystwyth University (UK); Gurova Maria, Bulgarian Academy of Sciences (Bulgaria); Nachev Chavdar, National Museum "Earth and Man" - Sofia (Bulgaria)

This paper discusses the initial results of the chemical sourcing of Balkan flint artefacts from Early Neolithic sites in Bulgaria, Romania and Serbia. The trace-elemental analyses were undertaken in two laboratories using EPMA and LA-ICP-MS. The trace-elemental signatures of the archaeological samples were compared with those of flint samples from Lower Cretaceous outcrops in northeast Bulgaria: Ravno, Drianovets (Razgrad district), Goliam Porovets (Isperih district), and Kriva Reka (Novi Pazar district); and Upper Cretaceous outcrops in northwest – Mramoren (Vratsa district), north central – Somovit, Nikopol, and Mouiselievo (Nikopol district) and northeast Bulgaria – Shumen. The results have implications for previous interpretations of lithic exchange networks in the region during the Early Neolithic.

## VISUAL AND TECHNOLOGICAL ALLURE OF YELLOW-SPOTTED FLINT IN THE NEOLITHISATION OF THE CENTRAL BALKANS

Bogosavljević-Petrović Vera, University of Belgrade (Serbia); Borić Dušan, Dept. of Archaeology, University of Cambridge (UK)

One of the most recognisable novelties in the material culture of the first farming communities in the eastern, central and northern Balkans is the appearance of both low-fired pottery and a new type of raw material used for knapping: 'Balkan flint' or yellow spotted flint. This paper first explores differences between the technological aspects of industries that use this raw material in comparison with the knapped stone industry characterising the preceding Mesolithic communities found in the Danube Gorges. Second, the merging of the material property of the yellow spotted 'Balkan flint' and the technological aspects used in the core reduction sequence along with the types of artefacts made from this material, notably macroblades, are examined as a particular technological aesthetic of the Early Neolithic visual and cultural vocabulary in the Balkans. In the central Balkans, the use of the 'Balkan' flint shows a decrease from the east to the west of the territory that remains an unsolved dilemma (from 66% in Lepenski Vir III to only 10% at the settlement Grivac I). The paper examines social and geographic/communicational specificities that led to such a regional patterning in the course of the Early and Middle Neolithic (c. 6200-5500 cal. BC).

## **REVISITING THE QUESTION OF BALKAN FLINT IN SOUTHEASTERN ROMANIA: DETERMINING THE DEGREE OF LOCAL AND DISTANT PROVENANCE**

Crandell Otis, University of Cluj-Napoca (Romania); Dimache Madalina, University of Targoviște (Romania)

In addition to reviewing the previous work of Eugen Comșa on the topic of Balkan flint artefacts from southeastern Romania, lithic artefacts from excavations in this region will be reanalysed and compared to one another and to local sources of lithic materials. The objectives of this study are two-fold. Firstly, we consider whether the Balkan flint artefacts represent a single type of material or in fact a mixture of various subtypes. Secondly, we consider to what degree lithic materials were imported versus locally acquired by the inhabitants of this region.

## **THE USE OF 'BALKAN FLINT' IN THE EARLY NEOLITHIC OF THE ROMANIAN IRON GATES**

Bonsall Clive, School of History, Classics, and Archaeology, Edinburgh University (UK); Boroneant Adina, University of Bucharest (Romania)

The Romanian-British excavations at Schela Cladovei have provided new information on the use of lithic resources by the Late Mesolithic and Early Neolithic inhabitants of the Iron Gates region. Among the 'exotic' materials introduced in the Early Neolithic at Schela Cladovei was a high quality, yellowish-brown, translucent chert with distinctive whitish spots, often referred to as 'Balkan flint'. This paper discusses the particular uses of Balkan flint at the site, its chronological context, and the implications of these data for interpreting other Balkan flint assemblages from the Romanian Iron Gates.

## **A RETROSPECT ON YELLOW-SPOTTED CHERT**

Voytek Barbara, University of California – Berkeley (USA)

Borrowing from a recent work by John Robb (*The Early Mediterranean Village*, 2007), this paper looks back at research into the use of "yellow-spotted chert" (Balkan flint, honey-coloured flint, etc.) during the Neolithic in Southeast Europe. The question that motivates the retrospect is basically: Why did people want the yellow-spotted chert? Was it because the chert was technologically superior or because it was prestigious? (Robb, p.198). The paper employs the list of possible motives for the appearance of the chert on several Neolithic sites, principally in former Yugoslavia. Although Robb's work deals with obsidian and therefore differs from the study presented here, the author believes that his framework can contribute to an understanding of the social mechanisms behind the finds of yellow-spotted chert in the Neolithic.

## **HONEY 'BALKAN FLINT' IN THE NEOLITHIC OF NORTHERN GREECE: PRESUMPTIONS AND REALITIES**

Kourtessi-Philippakis Georgia, University of Athens (Greece)

In Neolithic Northern Greece the characterization "honey Balkan flint" is generally attributed to a flint of fine texture and smooth surface, yellow in colour with or not white spots, usually frequent during the Recent Neolithic (5<sup>th</sup> mill. BC) and associated with blade technology. It is also generally accepted that there are no sources of this raw material in Greece and for this reason it is considered to have been imported. Recent studies undertaken by the author allow us to establish that these observations have been stated since the sixties and formulated in a continuous way by each researcher for each settlement. The repetition of these observations till today has contributed to the creation of a legend rather than a scientific process. The aim of this contribution is to distinguish presumptions and realities about this material and formulate new questions with a methodological perspective on basic subjects such as the raw material sources and distribution, the thermal treatment or not, the technology and reduction sequence, and, at least, the types of tools and their life. Besides this economic and technical approach we would like to consider the social meaning of honey 'Balkan flint' lithic assemblages in this area.

## **'BALKAN FLINT' FROM NEOLITHIC MACEDONIA**

Dimitrovska Vasilka, Skopje University (Republic of Macedonia)

Neolithic chipped stone industries from the Republic of Macedonia are largely unknown and have almost never been presented in public or published. The only exception is Anza published by M. Gimbutas. Stone tools have not received special attention so far in this area, and within Macedonian archaeology the Neolithic is still identified

primarily on the basis of ceramic production. It remains difficult to draw closer parallels on the basis of the technological characteristics with the industries of this period in the neighbouring regions owing to the lack of analyses of this material. However, these collections represent the basic source material for providing certain specific information.

Recent results of analyses of prehistoric stone assemblages from the Republic of Macedonia point to a large range of raw materials used, dominant among which is grey-coloured chalcedony and its variants well known under the term flint. However, we should emphasise that in all of these collections of chalcedony one finds yellow-brown or honey coloured flint with inclusions (sporadic whitish spots) well known and often referred to in the literature as 'Balkan Platform flint'. Each of the Neolithic assemblages in Macedonia discussed in this paper contains artefacts made from this type of raw material in the form of prefabricated tools.



**E002**

**Session title:**

**FROM NATURAL SHAPES TO ABSTRACT GEOMETRIES: NEW DATA AND CURRENT TRENDS IN THE STUDY OF PREHISTORIC PERSONAL ORNAMENTS**

**Organiser:** Micheli Roberto, independent researcher (Italy)

**Session abstract:**

The recent discoveries and developments in the study of prehistoric personal ornaments have highlighted the antiquity, the complexity of employment and the relevance of such objects in prehistoric societies. Indeed, personal ornaments constitute a fascinating field of material culture

having psychological, religious and sociological implications, since people used them to express their personality, to protect themselves from magic and illness, to indicate the belonging of individuals to particular groups and to underline their social status. Therefore, ornaments are not only simple aesthetic artefacts or costume embellishments, but rather they are effective means to convey complex information and messages which cannot always be inferred from mere archaeological evidence. Nevertheless, personal ornaments do not often receive the attention they deserve during excavations and have not yet been given due relevance in prehistoric research.

The aim of this session is to offer new data and an overview of current trends in the study of personal ornaments of prehistoric Europe. The session would allow scholars to present their latest research and discuss a number of issues, such as types and raw material variability, technological aspects, usewear and ornaments employment, circulation and trade, symbolic meaning, ancient costume. The session could be a unique opportunity to meet and debate, and could also be a starting point to establish a specific research branch on personal ornaments, with its own methodology and problems, within prehistoric studies. The session would be divided into two sections: one devoted to Palaeolithic and Mesolithic studies, the other to Neolithic studies.



**Paper abstracts:**

**PRODUCTION AND USE OF SHELL, BONE AND IVORY ORNAMENTS AMONG THE LATE GLACIAL AND EARLY HOLOCENE HUNTERS OF THE SOUTH-EASTERN ALPINE REGION**

Cristiani Emanuela, Laboratorio "B. Bagolini", University of Trento (Italy); Gurioli Fabio, Dip. di Biologia ed Evoluzione, University of Ferrara (Italy)

The importance of the ornaments in the characterization of the prehistoric groups is unquestionably remarked by the numerous findings both from sites and burials. Nevertheless, with few exceptions, most of the studies carried out on this type of objects have encouraged chronological and typo-technological interpretations, underestimating the role of the ornaments in the definition of social identity.

In the present work we present the results of a techno-functional analysis on shells, bone and ivory ornaments used by the Late Glacial and Early Holocene hunters of south-eastern Alps.

The archaeological sample was selected from Epigravettian and Mesolithic sites of Venetian and Giulie Alps, Adige Valley and Trieste Karst.

Raw material, procurement and production choices were defined for all the analyzed ornaments; then, a microscopic analysis was carried out in order to address the nature of the archaeological use-modifications to suspension, interlacing and sowing.

As a reference collection for the archaeological interpretations, experimental activity was carried out. More, ethnographic shell and osseous ornaments belonged to Arctic and Subarctic hunter-gatherers groups were observed. During this analysis, specific use-wears were identified and compared to the archaeological ones. In this way, the nature of the Epigravettian and Mesolithic southern alpine hunters' ornaments was interpreted and they were attributed to necklace pendants as well as beads for belts, clothing embroidery, bibs, etc.

The identification of different patterns of ornaments' use for Epigravettian and Mesolithic hunter-gatherers of South-Easter Alps sheds light on the potentiality of the use-wear analysis in the identification of archaeological vehicles of social information.



### MEDITERRANEAN SEA SHELLS AT PREHISTORIC SITES IN CANTABRIAN SPAIN

Fernández Esteban Álvarez, Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Unidad Asociada al CSIC (Spain)

In Cantabrian Spain, different Mediterranean shell species are found at archaeological sites dated in the Upper Palaeolithic and Mesolithic. According to the data currently available, human groups gathered these sea shells on beaches, when the animal was already dead. Most of the specimens were modified later, above all in order to make beads. The presence of these objects suggests strongly interwoven social networks existed between hunter-gatherer groups living in the Mediterranean and the Atlantic regions situated over 300 kilometres apart.

### PERFORATED RED DEER CANINES ASSOCIATED TO THE BRAÑA-ARINTERO BURIALS: HUNTING STRATEGIES, EXCHANGE NETWORKS AND SOCIAL STATUS IN MESOLITHIC IBERIA

Rigaud Solange, UMR 5199 PACEA, Institut de Préhistoire et de Géologie du Quaternaire, Université Bordeaux I (France); D'Errico Francesco, UMR 5199 PACEA, Institut de Préhistoire et de Géologie du Quaternaire, Université Bordeaux I (France) - Institute for Human Evolution, University of the Witwatersrand, Johannesburg (South Africa); Vanhaeren Marian, CNRS UMR 7041 ArScAn, Ethnologie préhistorique, Nanterre Cedex (France); Vidal Encinas Julio M., Junta de Castilla y León, Servicio de Cultura – Leon (Spain); Prada Marcos María Encina, E.P. in Biological Sciences, Physical Anthropology (Spain); Rodríguez Carlos Fernández, Natividad Fuertes Prieto, Universidad de León. Área de Prehistoria Facultad de Letras – León (Spain)

Survey excavation at the Braña-Arintero cave, Cantabria, Spain, has yielded two ochred skeletons attributed to Mesolithic; both are adult males. Twenty-four perforated red deer canines were associated with the Braña-2 individual. Zooarchaeological analysis of these personal ornaments reveals the exclusive use of male canines, the preference for adult individuals, and, with a single exception, the used of unpaired teeth. Over-representation of unpaired teeth is interpreted as reflecting acquisition over a long time span through an exchange network. The technological analysis of perforations indicates that all the teeth were perforated with the same technique, i.e. by thinning the root by scraping and subsequently piercing it by the rotation of a lithic point. Recorded variations in the motions applied during the work suggest different craftsmen were involved in the process. Wear pattern indicates the canines were originally embroidered on a cloth and worn for a long period of time. Few crowns were modified by abrasion, perhaps to increase morphological homogeneity. Others bear traces indicating a possible use as crutch for pressure retouch.

Study of recorded occurrences of perforated red deer canines at European Mesolithic sites identifies a northern region in which this ornament is widely used. Braña-Arintero cave is located at the very southern limit of this distribution area. Since red deer is attested all over Europe during the Atlantic period, the preference for the use of canines of this species in the North of Europe is the likely expression of a cultural choice.

### PERSONAL ORNAMENTS AND MARINE RESOURCES: SHELLS EXPLOITATION AT THE IMPRESSED/CARDIAL WARE SITES IN NORTHERN ITALY

Micheli Roberto, independent researcher (Italy); Zamagni Barbara, Dip. di Scienze Ambientali “G.Sarfatti”, sez. di Ecologia Preistorica, University of Siena (Italy)

The paper presents the personal ornaments of the Impressed/Cardial Ware groups recovered along the Italian coast of the Northern Tyrrhenian sea, dated to the VI millennium cal. BC. The early Neolithic is an interesting phase for observing the changes which affected the material culture and the ideology of the first Neolithic groups during the process of Neolithization. The production of personal ornaments improved and new types appeared: in fact, beads, pendants, rings, buttons, armlets and bracelets are attested on a large scale for the first time. A new kind of personal adornment was often linked to a new costume, and therefore to new messages to convey.

The sample considered is mainly formed by perforated shells, while perforated teeth and bones are attested only occasionally. Besides, the incidence of stone or shell elaborated beads or bracelets is sporadic, which seem to testify the persistence of the ornamental tradition characteristic of the hunter-gatherers. The incidence of the simple perforated *Columbella rustica* shell is very high in almost each site; therefore, its spreading is not fortuitous, but rather it is related to a conscious choice of Neolithic people and it is probably a peculiar element of the Impressed/Cardial Ware costume.

The archaeological data reveal differences in shapes and raw materials used for personal adornments between the Impressed/Cardial Ware groups and the early Neolithic people of the Alpine-Padan region. This contrast underlines a noticeable separation also as far as costume between two cultural spheres and two diverse Neolithic worlds.

### **PERSONAL ORNAMENTS IN CENTRAL BALKAN NEOLITHIC**

Vitezović Selena, Archaeological Institute - Belgrade (Serbia)

This paper will focus on personal ornaments from the territory of central Balkan (modern Serbia) from Early/Middle Neolithic (Starčevo culture) and Late Neolithic/Aeneolithic (Vinča culture). Ornaments recovered so far will be presented, their morphology, technological aspects of their production and the choice of raw materials will be analyzed. Questions such as what was the relation in technological aspects and in raw materials between ornaments and objects for daily use, or what was the role of ornaments in the social life of the Neolithic community, will also be explored. An attempt will be made to reconstruct the mode of wearing the ornaments according to the presentations on clay figurines.

### **PERSONAL ORNAMENTS AS MATERIALIZATION OF SOCIAL INEQUALITY AND THEIR ROLES IN RITUAL LIFE**

Siklósi Zsuzsanna, Institute of Archaeological Sciences, Eötvös Loránd University – Budapest (Hungary)

Personal ornaments as prestige goods or social valuables played a significant role in social manipulation and expression of social inequality during the Late Neolithic of the Carpathian Basin.

Personal ornaments made of Spondylus, copper, red-deer canine or wild-boar tusk can be found in different archaeological contexts. On the one hand, they can be found in graves where they are firmly connected to a person and its social group. On the other hand, they can be found in other archaeological contexts which are usually interpreted as ritual deposits like hoards or sacrificial assemblages. Furthermore, their representations are often appeared on anthropomorphic sculptures.

How can we interpret this situation? What kind of connection could be between the ritual life and social inequality? How can we interpret hoards and anthropomorphic representations in this light? Is it possible that economic/political leadership was firmly intertwined with ritual leadership? Or economic/political leaders supported their positions with ideology?

### **EXOTIC RAW MATERIALS AND NEOLITHIC JEWELS OF WESTERN SWITZERLAND**

Borrello Maria A., Département de Géographie, Université de Genève (Switzerland)

Modern archaeological excavations as well as detailed radiometric and dendrochronological information provide a solid framework to the study of the personal ornament of Western Switzerland. Many assemblages have been revisited in the last 10 years allowing to approach the management of some raw materials and the spatial and chronological distribution of different groups of jewels between the second half of the 6th millennium / beginning of the 5th millennium and the half of the 4th millennium cal. BC.

The role of personal ornaments made of local materials (deer antler, teeth and bone of wild and domestic animals) or exotic materials (coral, marine shells) leads to approach the motivations for the import of prestige items and the identification of cultural influences to which the Neolithic populations were subjected. Jewels formalize patterns of social differentiation at least at a geographical scale.

### **THE JEWELLERY OF THE LAKESIDE SETTLEMENT HORNSTAAD-HÖRNLE IA (3917-3902 BC), LAKE CONSTANCE, SOUTHWEST GERMANY**

Heumüller Marion, Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart (Germany)

In the Neolithic pile dwelling settlement Hornstaad-Hörnle IA (Kr. Konstanz, southwest Germany, 3917–3902 BC) an exceptionally large number of ornamental objects (4,350) were found, including several sea molluscs and early copper artefacts. The settlement specialised in the production of limestone ornaments, in particular, in limestone beads. The distribution profile of these limestone beads, the production waste and the equipment necessary for production suggest that their production was very well organized. A certain kind of division of labour between the different households can be noticed. While several households produced limestone blanks, only a few specialized in finishing the beads by grinding and drilling. The finished beads were found in parts of the settlement that were not involved in production.

During a relatively long time span in the 5<sup>th</sup> and the early 4<sup>th</sup> millennium BC very similar kinds of beads and other ornament artefacts were found in large parts of Central Europe. In the western part of Central Europe the beads were made of white stone (normally limestone), while in the eastern part they were usually made of Spondylus. Their extensive and long-lasting distribution points to important symbolic relevancy.

## **THE EARLIEST STONE BEADS IN THE LEVANT: CHARACTERISTICS, TECHNIQUES AND CULTURAL IMPLICATIONS**

Mayer Daniella E. Bar-Yosef, Recanati Institute for Maritime Studies, Dept. of Maritime Civilizations, University of Haifa (Israel); Porat Naomi, Geological Survey of Israel - Jerusalem (Israel)

The use of beads and other personal ornaments is a trait of modern humans' behavior. During the Paleolithic beads were made in the Levant out of shell and bone, however, during the transition to agriculture in the Near East stone is used for the first time to make beads and pendants, and in particular green stones. We observed that a large variety of minerals of green colors were sought and there seems to be an increase with time of distance from which the green minerals were sought and we suggest that occurrence of green beads is directly related to the onset of agriculture. Green beads and bead blanks were used as amulets to ward off the evil eye and as fertility charms. Nine green stone pendants discovered in the initial excavations of el-Wad cave (Mt. Carmel) are among the earliest known stone pendants in the Levant. These pendants, like most other green pendants and beads from Late Natufian sites, are made of apatite. What distinguishes these pendants from other Natufian bead assemblages is their typology, in that they are similar to bone pendants unearthed at the same site. Based on this similarity and on notion that green beads had amuletic value, we suggest that the beads' shape was also meaningful to their owners. Investigation of various technological aspects will shed light on the way the beads were used.



**E003**

**Session title:**

## **NEW APPROACHES ON STUDYING WEAPONRY OF THE EUROPEAN BRONZE AGE**

**Organiser:** Uckelmann Marion, Goethe University (Germany)

**Co-organiser:** Mödlinger Marianne, Landesmuseum Kärnten - Klagenfurt (Austria)

**Session abstract:**

The session aims at sharing information on the manufacture and use of European Bronze Age weaponry, covering aspects relating to archaeometallurgy, functional analyses, experimental work and archaeology. We will discuss different methods of analysing Bronze Age weaponry and how to answer specific questions concerning manufacture and usage. In many cases, the weapons being produced are the result of the application of the most advanced technologies of a culture. Therefore they can be used as good examples of the scientific, technical and ethical advance of a culture or society. By means of exploring use and functionality, we hope to provide a better view on the way combat might have taken place at that time, on the kinds of weapons used as well as on the kind of combat in Bronze Age society in general.

The session will give an insight into the importance and necessity of using new methods as of 3D-computer tomography, scanning electron microscope, energy dispersive X-ray, etc. presented by archaeologists and material scientists who have been working with Bronze Age weaponry. But far more important than simply to present the methods, we hope to explain the

kinds of answers that we can expect from them or rather which questions we can apply to different methods. There will be discussions on the advantages and disadvantages of specific methods used in the investigation of ancient bronzes and the results provided. The session will promote a dialogue between archaeometallurgists and archaeologists and aims at developing contacts for further research on Bronze Age weaponry.



**Paper abstracts:**

### **EXPERIMENTAL COMPARISON OF SPEARHEADS USE-WEAR ANALYSIS**

Anderson Kate, University of Edinburgh (UK)

A practical understanding of how weapons were used in the past can provide illumination on the types and scale of conflict taking place, in addition to the quantity and consistency of training required of participants. However, the majority of research into the functionality and modes of use of spearheads is dominated by binary thinking, forcing considerations of use to fall into discussions on throwing or thrusting. Examination of the Late Bronze Age spearheads of northern Britain show that 40% are edge hardened, 32% exhibit diagnostic combat damage patterns on their edges (identical to those seen on contemporary swords) and less than 19% show any form of point damage, as might be expected if primary usage involved throwing or thrusting. Therefore, this paper argues that traditional approaches attempting to divide spears into these two groups on the basis of morphology is misleading. Research into functionality focusing on edge wear analyses, rather than morphology, may produce more nuanced, realistic results.

The aim of this paper is to present the results gained through testing of the hypothesis that the spearheads were hafted with a very short shaft and wielded in a similar manner to the swords. A number of spearheads, cast in 1% leaded bronze, were commissioned, in addition to swords and shields, and were used in a range of experiments designed to determine diagnostic spear point damage as a result of combat, and the relationship between damage types and strikes.

### **HALBERDS AND RED HERRINGS. WEAPONRY AND WARFARE IN THE EARLIER BRONZE AGE OF SOUTHEAST SPAIN**

Brandherm Dirk, Queen's University Belfast (UK); Montón Sandra, Pompeu Fabra University - Barcelona (Spain); Sánchez Margarita, Aranda Gonzalo, University of Granada (Spain)

The introduction during the Earlier Bronze Age of halberds and swords as the first specialised combat weapons in southeast Spain, as well as the interpretation of other implements, such as daggers and axes from El Argar

burials also as combat weapons has given rise to the notion that warfare was endemic to the structure of Argaric society. Concepts such as “armed conflict”, “war”, “violence”, “warrior”, and “militarism” are commonly encountered in studies on the El Argar culture. Only on rare occasions, however, is the use of these concepts critically examined, and very little attention so far has been paid to what empirical evidence there actually is for a widespread use of such weapons in interpersonal combat.

In this paper we follow two different lines of enquiry to address these questions. On the one hand we are examining halberds, swords and daggers from El Argar contexts for traces of combat-induced use-wear, on the other hand we are presenting the results of a survey carried out on skeletal material from Argaric burials to identify combat-induced injuries. With regard to the first line of enquiry, only some of the halberds display use-wear patterns indicative of their probably use in interpersonal combat. The very limited number of halberds in the archaeological record, though, would not necessarily seem to support the notion of endemic warfare. These results are consistent with those from our second line of enquiry, where our survey of skeletal material shows a lack of injuries from edged weapons.

### **SINTASHTA COMPOSITE BOW (BRONZE AGE OF SOUTH-URALS)**

Epimakhov Andrey, Institute of History and Archaeology, Russian Academy of Sciences, Ural Division - Chelyabinsk (Russia)

In the Sintashta sites of the South Urals (21–18 cal BC) there are many evidences of advanced war technologies (closed system of the settlement fortifications, chariotry, full set of armament). The long-distance weaponry is chiefly discovered in mortuary sites. Archery equipment consisting of stone, bronze and bone arrowheads and bone (or horn) parts of bow is numerous. Although that the preservation the wood details of bow is pure, context of finds new approaches on studying weaponry of the European bronze age and traceological (use-wear analysis) allow us to reconstruct an appearance of bow and it's certain characteristics.

The composite bow is represented by two pair bone/horn figured end-details with inner socket and the holes for the holding of bow-string (four articles, including half-finished ones). We have two original bone devices for stretching of bow-string and two plates which were used as a “bed” for the arrow. It is no doubt that the Sintashta people wielded the practical skills of the making and use of composite bow. Traces of long-term exploitation of horn details proved this suggestion. Evidently, a bow was about 1.2 m in length. End-details of Sintashta bow are equipped with strengthening parts from bone or horn. Its central part was supplemented with strengthening plate. The length of arrow, judging from a single observation, did not exceed 0.6 m. This unique long-distance weaponry has not got analogies among other Ural archaeological cultures.

### **WEAPONS OR TOOLS? INSIGHTS INTO THE USAGE OF METALWORK IN COPPER AGE ITALY**

Dolfini Andrea, University of Newcastle (UK)

Interpretation concerning the function of prehistoric metal artefacts has been neglected until recently. The reason seems to lie in a plurality of factors ranging from the frequent lack of contextual data to a scholarly interest centred on either production or deposition, at the expense of the middle phase of the life-cycle of objects. This problem has been further aggravated by the lack of a specific analytical technique to investigate whether, what for and to what extent metal artefacts were used in antiquity. Over the last decade, however, the principles and methods of use-wear analysis have been applied to prehistoric copper and bronze objects from around Europe with encouraging results. It emerged that, although still pioneering, this technique can give valuable insights into the ancient usage of metalwork. This paper discusses the results of use-wear analysis carried out on a sample of copper and arsenical-copper axes, daggers and halberds from pre-Bronze Age sites in central Italy. It explores in particular whether wear marks can be interpreted as resulting from craft activities or combat.

### **COMPARISON AND COMMUNICATION: A TECHNOPHOBE'S APPROACH TO BRONZE AGE USE WEAR STUDIES**

Matthews Steven, Groningen Institute of Archaeology - Rijksuniversiteit Groningen (The Netherlands)

Whilst the application of mechanical and highly technical processes can significantly contribute to our understanding of the manufacture and use of bronze metalwork, by their nature such studies often produce only limited and regionally specific information. Such specialised processes are also problematic and impractical when addressing the issue of the wide dispersal of artefacts across multiple collections and institutes both nationally and internationally. Such an approach is essentially at odds with the interpretation of European Bronze Age society, and the international nature

of bronze metalwork, which demands large scale comparative study.

A further important issue is the presentation and dissemination of data pertaining to use wear on bronzes. A number of important use wear studies continue to remain unpublished and inaccessible. Moreover, the means by which we convey use wear in published form remains undeveloped, with often ineffective and ambiguous schemes being utilised to communicate degrees of use wear that do not lend themselves to further application or comparison with other materials.

These issues will be addressed in terms of a macro-scale use wear study currently being undertaken on the Atlantic rapier and sword series of northwest Europe, and how large scale comparative studies of use wear can be achieved.

### **FROM STABBING TO CUT- AND THRUST ARMS: ANALYSES ON AUSTRIAN BRONZE AGE SWORDS**

Mödlinger Marianne, Landesmuseum Kärnten – Klagenfurt (Austria)

The focus of this paper are 80 Middle- and Late Bronze Age swords, mostly from eastern Austria, Italy, Slovenia and western Hungary. We can reconstruct the mode of manufacture and use of full hilted and Griffzungen-type swords with metallographic and X-Ray analyses, XRF, 3D-CT as well as visual examinations of the sword's surface. The latter shows traces of combat use and traces of manufacture. Indications of the actual combat use of the swords are in the form of marks caused by blade-on-blade impacts, notches, re-sharpening, traces of an organic hilt wrapping, broken or bent tips, worn out and torn out rivet holes, etc. further new approaches on studying weaponry of the European bronze age evidence for actual use of the swords are injuries on bones dating to the bronze age all across Europe.

The most important indicators to interpret these swords as either cut and thrust or stabbing weapons are the point of balance as well as the general shape of the blade. The change from a stabbing to a cut- and thrust weapon does not only have an impact in the combination of weaponry and the way people fought, but is accompanied by changes in the whole of Bronze Age society. Current research dates this change to the beginning of Hallstatt A, but according to the results of the research on Bronze Age swords done so far it is more likely to date this change already to Bronze Age D.

### **THE SPIRIT OF THE SWORD AND SPEAR**

Pearce Mark, Dept. of Archaeology, University of Nottingham (UK)

From its appearance in the Norse sagas or the Arthurian cycles, we are used to the concept that the warrior's weapon has an identity, a name. In this paper I shall pick up an idea put forward by J.D. Cowen (1966: 294) who argued that in the twin spiral motif on Boiu type swords '...its makers intended ... a pair of eyes and maybe a brow over them as well. These would then be the eyes of the sword itself, or rather of the spirit within it ...'. I shall argue that the same explanation can be put forward for the decoration on a number of early Iron Age Italian spearheads (Bietti Sestieri & Macnamara 2007: n.s 387, 388 & 458) and that it might even explain the loops in the basal-looped spearheads of the British Isles, which date to the local middle Bronze Age (1300-1000 BC) (Davis 2006).

If a later Bronze Age / early Iron Age belief in the spirit or identity of a weapon as documented by Boiu swords or Italian spearheads is accepted this has implications for their biographies. I will argue that this suggests that they may have been conserved as heirlooms or exchanged as prestige gifts for much longer than is generally assumed and that it has implications for our understanding of the deposition of weapons in tombs, where they may have a 'guardian spirit' function.

*Bietti Sestieri, A.M. & E. Macnamara 2007. Prehistoric metal artefacts from Italy (3500-720BC) in the British Museum. Research Publication 159. London: British Museum.*

*Cowen, J.D. 1966. The origins of the flange-hilted sword of bronze in continental Europe. Proceedings of the Prehistoric Society 32: 262-312.*

*Davis, R. 2006. Basal-looped Spearheads. typology, chronology, context and use. BAR International Series 1497. Archaeopress, Oxford*

### **THE FUNCTIONALITY OF BRONZE AGE SHIELDS**

Uckelmann Marion, PBF/ Inst. f. Arch. Wissenschaften, Goethe University - Frankfurt/Main (Germany)

Shields are an important part of the warrior panoply in the Bronze Age, although very few have survived, primarily because they were made of organic material. With the end of the Middle Bronze Age and the beginning of the Late Bronze Age shields made of one piece of bronze sheet come into use. All over Europe about 85 of these metal

shields are recorded, as well as two wooden and one leather shield and two wooden shield formers from Irish bogs. The main focus of distribution is on the British Isles, followed by a larger group in southern Scandinavia and more scattered finds from Germany, Poland, Czech Republic and the Carpathian Basin.

This paper will take a closer look at the possible functionality of the shields due to their technical features, for example metal thickness, weight, strengthened rim and riveted on parts. New research on these features, together with metallographic and material analysis will be considered and compared with the visible signs of use wear on the shields, to evaluate a possible function as protective armour in combat. Old and newer experiments on the use of shields will be taken into account as well.



**E004**

**Session title:**

## **PLAYTIME: THE FUNDAMENTAL ROLE OF BOARD GAMES IN ANCIENT AND MEDIEVAL EUROPE**

**Organiser:** Hall Mark A., Perth Museum & Art Gallery – Perth (UK)

**Co-organiser:** Schädler Ulrich, Musée Suisse du Jeu - La Tour de Peilz (Switzerland)

**Session abstract:**

In a session of eight papers the aim is to cover a broad range (in time, space and play) of board games from a material culture perspective and so to communicate the richness and diversity of the evidence for gaming, its wider relevances and to give a flavour of on-going projects. The scope is wide, encompassing all kinds of gaming material including boards and other equipment such as counters and dice etc., specific games and sites as well as more general topics about games in the ancient world (social context, symbolic meanings, ritual functions...). The aim is also to demonstrate an interdisciplinary approach to material culture.



**Paper abstracts:**

### **WHAT DO WE REALLY KNOW ABOUT THE LEWIS CHESSMEN?**

Caldwell David H., National Museums Scotland (UK); Hall Mark A., Perth Museum & Art Gallery – Perth (UK)

The walrus ivory chessmen from Lewis, split between the British Museum and the National Museums Scotland, are amongst the most iconic gaming pieces ever discovered, rightly regarded as works of arts, 'top of the range' luxury items. This status, however, seems to have been responsible for a lack of critical examination since they were first published soon after their discovery in 1831. This paper takes a fresh look at what we know about the circumstances of their manufacture, use and loss. Do we even know that they are chessmen?

### **TRADITIONAL COSMOLOGICAL SYMBOLISM IN ANCIENT BOARD GAMES**

Pujol Gaspar, University of Barcelona (Spain)

All board games can be said to be "representative", not directly of a concrete human behaviour or activity but of the underlying order and pattern in nature. Human beings reproduce those patterns, which have fascinated them from the very beginning, through art, religion, music and many other cultural manifestations. Of course, games and board games have not been kept aside by this phenomenon, but have not been studied through this scope until now. Therefore, it would be interesting to analyze the most ancient board games to find in them deep links to traditional cosmological symbolism through its primal geometrical patterns.

### **GAME PIECES AND AMULETS: HOW AND WHEN TO TELL THE DIFFERENCE**

Kornbluth Geneva, independent researcher (USA)

Early medieval amulets have frequently been mistaken for Roman game pieces. Varied abrasion patterns can indicate which of those uses is more likely to have been primary. The difference is easily demonstrated on gemstone objects, which retain most of their original surface polish and are abraded only where they most often came into contact with game boards or clothing. Game pieces could also, however, be reused as amulets in both Roman and Merovingian contexts, and some dice were made too small for actual use in games. Ludic and apotropaic objects are closely related in both conceptual and practical terms.

### **PLAYTIME FOR THE HOLY, PLAYTIME FOR THE DAMMED: A MATERIAL CULTURE APPROACH TO THE FUZZINESS OF CHURCH AUTHORITY**

Hall Mark A., Perth Museum & Art Gallery – Perth (UK)



Developing on previous excursions into the social significance of medieval board games this outing explores the somewhat paradoxical link between games play and church authority. It encompasses the incorporation of games play within the cult of saints and assesses the seeming-paradox of Church approval and Church condemnation of playing board games. The material culture evidence underpinning it includes surviving boards and playing pieces (including examples from church treasuries and archaeological excavations) and depictions of the same from medieval illuminations and texts, metal badges and sculptures.

### **GAMES IN ANCIENT EPHEBUS**

Schädler Ulrich, Musée Suisse du Jeu - La Tour de Peilz (Switzerland)

An account of the recent, first-time survey and consequent database of the board-games in and around the ancient Graeco-Roman metropolis of Ephesus. Apart from a number of gaming tables, some of which professionally carved, most of the more than 300 patterns documented are found carved into the pavements of streets, colonnades and other public places. One of the questions to be addressed is which of these geometric patterns have really been used to play games. Indeed, doubts about their function as game-boards have been raised especially concerning the so-called wheel patterns.

It can also be observed that the game boards found on the site of the Roman town are different from those on the Ayasoluk hill, the site of the Byzantine-Turkish settlement. Therefore the games can provide useful information about the use of public space and the history of settlement especially in late antique and byzantine times.

### **JOURNEY TO THE OTHER WORLD? TERRACOTTA MODELS OF GAME BOARDS FROM ARCHAIC GREEK FUNERARY CONTEXTS?**

Helène Whittaker, University of Tromsø (Norway)

This paper will discuss the function and meaning of two terracotta models of game boards which have been found in Attica, in the Kerameikos cemetery in Athens and in Vari. The game boards could not have been used for actual playing and must therefore have had some symbolic meaning associated with funerary ritual or beliefs about the afterlife. The playing of board games is a pastime which requires leisure and often skill; in the Republic (374c) Plato remarks that skill at board games can only be acquired by those who have plenty of leisure time. Literary evidence also indicates that there was a clear connection between military values and the playing of board games. It is therefore possible that the terracotta models were associated with the expression of status in a funerary context. Perhaps they indicate a belief in the continuation of an upper class lifestyle in the afterlife. However, their meaning may also have been more closely associated with specifically funerary beliefs. The possibility that the movements of gaming pieces across a board could have functioned as a metaphor for the transition from life to death will also be explored.

### **NUCES (NON) RELINQUERE – LIGHT INTO THE DARK. SOME REMARKS TO SECURE GAMING-RULES**

Behling Claudia-Maria, University of Vienna (Austria)

Toys and games played an important role in daily life of ancient adults and children. A lot of games seem to be interpreted and gaming-instructions were published. But some details are lost and a lot of authors are ignoring these fundamental gaming-details. So mistakes are growing up and unproved theories were transported until the truth is obscured or even lost forever. Especially games involving nuts and astragals are suited for this aim because the gaming-rules seem to be so secured. Games involving nuts must have been very popular, because they could often be found on children's sarcophagi as a symbol for childhood itself. With some examples I want to present, that we do not know as much about these games as we think, that we do. By uncovering unknown gaming-details the discussion and the work to new interpretations should be opened.

### **WHAT WERE THE GAMES WHICH VIKINGS PLAYED IN ANCIENT RUSSIA?**

Avdusina Svetlana, State Historical Museum - Moscow (Russia)

Games take the important role in the life of the medieval persons. All games can be divided on mobile and board. Some archaeological material can be interpreted as game equipment for board games. In such Russian cities as Novgorod and Old Ladoga were found some details from playing boards for game in "mill" - one of the most ancient

games extended in Europe. Besides, in a cultural layer of settlements were found some draughts made from bone and glass. This draughts has various forms and frequent sizes. Some of them can be also connected with "mill" game. Appointment of glass draughts is less certain. It is possible to connect this draughts with some game in which two persons could play. A full set of draughts or separate draughts were found not only on settlements but also in burials. The draughts finds are known in burial ground in Gnezdovo (near Smolensk) and Timerevo (near Yaroslavl), at Rurikovo Gorodische (ancient settlement near Novgorod). All these places in X-XI centuries were centers of residence of the Scandinavian warriors.

E005

Session title:

**POTTERY AND SOCIAL DYNAMICS IN THE MEDITERRANEAN AND BEYOND IN MEDIEVAL AND POST-MEDIEVAL TIMES****Organiser:** Caroscio Marta, Museo Nacional de Cerámica “González Martí” - Valencia (Spain)**Co-organiser:** Bintliff John, Archaeology Faculty, Leiden University (The Netherlands)**Session abstract:**

Ceramic studies for the post-Roman Mediterranean and Europe have been developing rapidly, both in terms of published studies and comparative analyses, but more significantly in relation to archaeological theory. Issues relating to social and economic change, power, gender, mentalities, the body and self-representation have been stimuli to rethinking the role of pottery in everyday life. This session will range widely in time and geography, and display current thinking on the interpenetration of material culture and society during the Medieval and Post-Medieval periods in the Mediterranean and North-West Europe.

**Paper abstracts:****RURAL SOCIETY IN AL-ANDALUS DURING THE LATE MIDDLE AGES. CERAMIC ASSEMBLAGES AND SOCIAL DYNAMICS IN EASTERN ANDALUSIA**

García Porras Alberto, Dept. de Historia Medieval y Ciencias y Técnicas Historiográficas Universidad de Granada (Spain)

Thanks to the archaeological excavations carried out during the last decade in the south-east of the Iberian Peninsula and by studying the ceramic sherds recovered so far, it was possible to draw light on the rural society in al-Andalus during the late Middle Ages. This paper will analyse several ceramic assemblages that reflect the patterns of the *andalusí* rural society between the 14<sup>th</sup> and the 15<sup>th</sup> centuries. The focus will be on the medieval fortified settlement of El Castillejo (Los Guajares, Granada), a site whose features make possible this kind of approach. A variety of case studies within the same regional area will be taken into account as well.

**THE POT OF THE MONK. MATERIAL CULTURE OF AN EARLY MEDIEVAL MONASTERY AT RAVENNA**

Cirelli Enrico, Dept. of Archaeology, University of Bologna (Italy)

This paper will analyze the pottery assemblage of the Monastery of St. Severo. In the 10<sup>th</sup> century (967 AD) Emperor Otto visited the Archbishop of Ravenna for his ideological and political program for the restoration of the Carolingian power. In this important journey he was hosted by the Monastery of St Severo in Classe.

A European project directed by A. Augenti (University of Bologna), N. Christie (University of Leicester), J. Laszlovszky (Central European University of Budapest) and G. Ripoll (Universitat de Barcelona), started new excavations at the site of the Late Antique church and in its monastery. Through this project we are able now to describe the material culture of this early medieval monastic community. The pottery found in the excavations indicates new patterns for the economic dynamics of the city of Ravenna and testifies connections with Eastern Mediterranean territories also during the Early Medieval period.

The vessels found inside the contexts of the basilica are in fact related to daily life, as domestic amphorae and glazed pitchers, cooking pots and *pietra ollare*. The monks of this important community used also imported vessels, such as Middle Byzantine glazed pottery and Early Medieval transport amphorae, the same which are found in Constantinople and in other eastern Mediterranean contexts, between the 8<sup>th</sup> and the 10<sup>th</sup> century AD.

**TOWN CENTRE AND MINOR SETTLEMENTS. CULTURAL AND SOCIAL IMPLICATION OF TABLEWARE USE DURING THE LATE MIDDLE AGES IN FLORENCE AND ITS ENVIRONS**

Caroscio Marta, Museo Nacional de Cerámica “González Martí” – Valencia (Spain)

Is there any difference between tableware used in major town centres such as late Medieval Florence and vessels

used and displayed in minor settlements? To which extent are the demand and circulation of certain models influenced by “fashion”? How does political control of a certain area influence trade and the circulation of models? What can pottery use tells us about cultural and social differences within the sub-regional areas taken into account? This paper aim to discuss the social implications of tableware use in central Florence and in settlements that can be regarded as minor ones, either under its political control or not. Circulation of local products will be discussed in comparison with the impact and social meaning of long-distance trade vessels, which on the wide circulation of goods are normally regarded as “luxury” ones. Concerning the town of Florence, the use of other materials rather than pottery will be discussed. As pottery represents the majority of archaeological finds, written sources dating between the late 14th and the beginning of the 17th centuries will be taken, as well, into account to reconstruct daily use of tableware in different contexts, discussing in details selected examples of monastic and hospital inventories.

### **CONSIDERING A RURAL AND HOUSEHOLD ARCHAEOLOGY OF THE MEDIEVAL AEGEAN**

Vionis Athanasios K., Archaeological Research Unit, University of Cyprus (Cyprus)

Although primary attention was given to the prehistoric period and Greco-Roman antiquity by archaeological field expeditions in the 1970s, with the development of regional intensive surface survey projects in the Aegean in the 1990s, remains of the medieval and post-medieval periods started to gain the importance they deserve. This paper attempts to quantify, evaluate and interpret new surface ceramic evidence about rural settlement (continuity and discontinuity, location and relocation of villages) and domestic-life (trade and consumption patterns, storage and transport strategies) throughout the Greek Middle Ages in the Aegean, i.e. during the so-called ‘Dark Ages’ or Early Byzantine times (late 7th – middle 9th), the Middle Byzantine (middle 9th – 12th) and Late Byzantine or Frankish (early 13th – middle 15th) periods. More specifically, it demonstrates an exercise for the processing, detailed study and interpretation of complete collections of medieval surface ceramic finds that comprise the largest part of the material culture from medieval deserted villages in Mainland Greece and the Aegean islands. Rich surface ceramic finds collected during the course of archaeological intensive survey carried out by the ‘Ancient Cities of Boeotia Project’ in the region of Tanagra by Rijksuniversiteit Leiden (Netherlands), form the basis of this case study. Comparative references are made to archaeological evidence from the ‘Naxos Extensive Survey Project’ of the 2nd Ephorate of Byzantine Antiquities (Greece) on the island of Naxos in the Cyclades, and the ‘Sagalassos Archaeological Research Project’ in SW Turkey by Katholieke Universiteit Leuven (Belgium).

### **POVERTY AND RESISTANCE IN THE MATERIAL CULTURE OF EARLY MODERN RURAL HOUSEHOLDS IN GREECE**

Bintliff John, Archaeology Faculty, Leiden University (The Netherlands)

Contemporary descriptions in texts and images created by bourgeois urban visitors to the countryside, portray the peasantry of Early Modern Southern Europe as ‘primitive’ peoples. Their houses are frequently very unsophisticated single-storey dwellings, their material culture limited. They are often associated in the same sources with indolence, crime and an absence of any desire to ‘improvement’ or ‘progress’. Exceptions to these generalisations are met with in three areas: dress and body ornaments, and the display of highly-decorated tablewares. This paper will investigate these conflicting areas of material culture.

### **SPECIFIC TO MENTALITY IN NORTHERN LOWER DANUBE. CERAMICS FROM THE VIII-X CENTURIES**

Alaiba Ruxandra, Institute of Archaeology Vasile Parvan- Bucharest (Romania)

The analysis of early medieval pottery, from the VIII-Xth centuries, found in old rural settlements in northern Lower Danube, allowed a specific reflection of economic life, of practices or customs of communities that used it. Quantitative data obtained from ceramics found in early medieval villages in Southern Moldavia from Banca Gară, Gura Idrici, Drăgești, Roșiești and others, for each dwelling - household, depending on the number of each, has led to the ordering by diverse functionality vessels, in determining the propose for which they were made by the potter, from small vessels, cups or bowls, to the average household used to prepare food, to vessels necessary to maintain large reserves of food.

Knowledge of the functionality and number of vessels used in a household allowed for an estimate of the number of members of each family, and finally of the settlement’s inhabitants. The new data led to the shaping of a wider image on the village communities, to the comparison with other settlements in northern Lower Danube, Dodești, Țuțcani, Epureni, Radovanu, Mărăcinele, Verbița, and more.

The analysis again emphasized the wide availability of some shapes, used up to where the spirit, mentalities, in general where period specificity was stretched and regions with differing religious or cultural life. The study of ceramics - from dwelling specifics early medieval, to the medieval village and to the archaeological cultures, permissive approach to deployment, cultural connections, but also to differences in mentality, to the formation of a new current of thought.

### **COOKING WARES AND CHOICES IN THE EARLY ISLAMIC MIDDLE EAST**

Gascoigne Alison L., University of Southampton (UK)

The starting point for this paper is recent research into form and functionality of ceramics in conditions of socio-cultural change, e.g. Joanita Vroom's ceramic study of the Boeotia survey. This tradition of research has considered ceramic transition as reflecting changes in cultural practice, in particular cooking/dining habits, raising questions of the choices/motivations behind the acquisition and use of new types of ceramic and associated technologies, which are bound up with issues of identity, lifestyle, acceptance or resistance to change, etc.

These issues will be considered in relation to ceramic assemblages from the early Islamic Middle East. Although no significant changes can be discerned contemporary with the Arab conquests, significant innovation and transition comes about through the ninth century, leading to the development of a largely new ceramic corpus. Other changes to the material culture associated with food production also occur, in particular the widespread trade of steatite cooking vessels, and the introduction of new foodstuffs.

Certain forms of steatite vessel from 'Aqaba have been described as imitations of bronze cauldrons; additionally, ceramic wares from Pella are described as imitations of steatite vessels. Such descriptions set up a hierarchy of perceived value and quality, with ceramic firmly at the bottom. This paper will therefore address the relationships between different materials in terms of choices relating to food preparation, perceived value and efficiency, in the light of archaeological and historical evidence for use and distribution.

### **A GAZETTEER AND SUMMARY OF FRENCH POTTERY IN SCOTLAND C 1150 - C 1650**

Haggarty George R., National Museums of Scotland (UK)

Over a 12 month period an attempt was made to catalogue all the imported French medieval and post medieval pottery in Scotland. The results of this work showed that shards in a range of fabrics and forms had been recovered from 158 sites across the country. In the main these shards were recovered as a result of the recent upsurge of developer funded archaeological excavations carried out in the Coastal Burghs and older excavations on high status sites like castles and abbeys. Surprisingly the two largest shards groups came from friaries.

All this information has been published on a CD Rom, in the form of distribution maps and a catalogue of find spots with grid references; contexts etc, and where appropriate archaeological summaries and reattribution of the ceramic material. Also included were illustrations where possible complete examples and a bibliography and essay. The essay endeavours to use the results of the ceramic distributions, to identify trade links, examine wider commercial networks, and how this impacted on Scotland politically, socially and economically.

### **GONE FISHING! NEW EVIDENCE FOR THE FISH TRADE IN THE NORTH SEA**

Hall Derek, SUAT Ltd - Perth (UK)

The presence and suggested dating of sherds of London Sandy Shelly Ware pottery from Perth and Bergen has been the subject of intense debate for many years. To try and break the stalemate, carbonized rim sherds of cooking pots of London Sandy Shelly Ware pottery from Perth were submitted for <sup>14</sup>C dating and produced ages between 910 ± 35 and 1085 ± 40 BP. Application of a Bayesian approach to the data demonstrated that this pottery type first appeared in Perth, Scotland around cal AD 910-1020 and had disappeared by cal AD 1020-1140. This, together with supporting <sup>14</sup>C measurements from associated materials such as leather artefacts from the same secure contexts, demonstrated that this type of pottery was in use at Perth at least 100 years earlier than the accepted chronology for this fabric type. Subsequent dating has been carried out on similar residues from the same fabric obtained from the Billingsgate excavations in London (where the chronology of this fabric type was first defined) and the Bryggen excavations in Bergen, Norway. The London and Bergen measurements gave age ranges of 905 ± 35 to 1115 ± 35 BP and 920 ± 35 to 1055 ± 35 BP, respectively, which are almost identical to the range for the Perth samples. This provides important new information for the trading of fish around the North Sea and the nature and origin of the inhabitants of early settlements in both Perth and Bergen.

## **RUBBISH AND THE CREATION OF URBAN LANDSCAPE**

Jervis Ben, University of Southampton (UK)

I argue that our understanding and definition of 'rubbish' is far too limited. Analysis of several ceramic assemblages from sites in medieval Southampton of varying social status, demonstrates that the way waste was treated and perceived is contextual. It is influenced by socio-economic factors and changed in response to developments in the social and economic landscape of the town. I propose that as waste, pottery occupies a transient position and an umbrella classification of 'rubbish' is too generalised. My analysis shows that some pottery was open to reinterpretation, for example as a component of compost, and thus was perceived to have utility. Other pottery was permanently buried and this action can be interpreted as socially meaningful. My quantitative analysis of pottery assemblages demonstrates that the way pottery (and other waste) was disposed of led to the creation of managed space, both within the home and in the wider urban landscape. The spaces created are intimately linked to the practices carried out within them. Deposition is one such practice, which is both structured by and has a role in structuring and domesticating this space. The way pottery was classified in use influences its deposition, however this is more nuanced than a direct spatial link between use and depositional areas. Quantitative analysis of pottery highlights the challenges facing us in understanding rubbish deposits. For too long most material was perceived as rubbish. This research argues that pure rubbish deposits are comparatively rare and that deposition is more complex than previously understood.



E006

Session title:

**THE BIOGRAPHICAL APPROACH: WHERE DO WE GO FROM HERE? SESSION 2****Organiser:** Joy Jody, The British Museum (UK)**Co-organiser:** Armstrong Oma Kristin, University of Oslo (Norway)**Session abstract:**

Our aim is to develop themes and ideas highlighted in a session we organised last year at the EAA annual meeting in Malta titled 'the biographical approach where do we go from here?' The biographical approach, which is based on the observation of Kopytoff (1986) that like people objects can be seen to have biographies, has been referred to regularly by archaeologists in recent years but it has very often proved difficult to say something about the lives of objects using archaeological evidence. We therefore asked for contributions which attempted to do this.

A number of themes and ideas came out of the papers and the subsequent discussion in this session which we believe warrant further discussion. For example, do some objects lend themselves more to biographical study than others? Does thinking about objects biographically reveal potential tensions between the 'unique' and the 'everyday'? Some objects through their manufacture were marked out for a 'privileged' life, whereas other objects 'born' mundane were 'privileged' in deposition. Objects were also modified, fragmented, and re-used, these actions potentially profoundly altered life trajectories and biographies. Finally, the tension between scales of analysis was identified. As archaeological evidence is often limited, it is not always possible to construct the biography of an individual artefact. Should this even be attempted, or should archaeological biographies be restricted to biographies of artefact types?

Contributions are invited which examine these themes or develop the biographical approach to artefacts in different and novel ways.

**Paper abstracts:****THE HOARDED DEAD. HOARDS AS LIFE BIOGRAPHIES FROM THE SCANDINAVIAN LATE IRON AGE.**

Myrberg Nanouschka, Stockholm University (Sweden)

Studies of hoards of precious metals from the Late Iron Age tend to fall into either strongly functionalistic or exclusively ritualistic interpretations. This paper aims to forward new interpretations, out of an understanding of the hoards as life biographies and as the material result of different aspects of a person, of phases and events during a person's or a family's life. Of particular interest are hoards with chronological clusters (or lacunae) of coins, and/or including both coins and other objects. Such hoards reflect a conscious selection from a certain sphere of objects which appear to allude on certain themes such as 'the grave', 'the priest' or 'the maiden'.

Iron-Age coins are often modified, fragmented and reused in various stages and contexts, and the hoards equally seem to have been revisited and added to over the years. Their contents do not only passively reflect the world around them, but also create the history of the depositor through the selection of objects and the process of deposition. The objects included embody social relations and the actions and attitudes of the past. Through a study of the individual objects and of the hoards as a whole on different levels, a new understanding of the hoards and the lives they were part of may be reached, opening up for both 'large' and 'small' histories.

**EGOCENTRIC COLLECTIVES: THE NATURE OF SCALE IN ARTEFACT BIOGRAPHIES**

MacGregor Gavin, GUARD, University of Glasgow (UK)

It has been increasingly recognised that artefact categories are more than shared material forms (or physical manifestations of cosmological or symbolic systems) and that the biographies of individual artefacts (variously situated as entangled or enmeshed) are constituted through historical praxis. Bearing such perspectives in mind, I wish to explore apparent tensions between the constitution of the social and the individual and the ramifications these have for scale in the study of artefact biography. Through examples, I will consider the inter-relationships between the individual components of biography and the social constitution of agents as mediated through different value systems.

## **INVESTIGATING MOMENTS OF TRANSITION; ANIMAL BIOGRAPHIES**

Morris James, Museum of London (UK)

This paper develops the session's themes by discussing the application of a biographical approach to zooarchaeological data. This paper will show how a biographical approach has been used to aid in the interpretation of a specific type of faunal deposit, Associated Bone Groups (ABGs), often called 'animal burials'.

At present, the majority of ABGs are viewed in a single time frame, i.e. their final resting place prior to archaeological recovery. However, in interpreting the meaning of ABGs, archaeologists often discuss activities which occur in a multitude of time frames. By using a biographical approach we can examine the activities that took place to create the ABG and their possible associated meanings on an individual basis.

The paper will show that animal remains lend themselves to a biographical approach. The study of zooarchaeology may be seen as atheoretical, a science drawing on aspects of zoology, but the biological data upon which zooarchaeology is built can offer an advantage when constructing biographies. Humans do not physically create animals and the biological nature of animals, compared to other forms of material culture, offers a baseline upon which we can view the humanly created transformations.

## **"OUT, DAMNED POT, OUT!" CLOSURE AND NEGATIVE ASSOCIATIONS, AND ARTEFACT BIOGRAPHIES AS TRAGEDIES**

Jensen Bo (Denmark)

A close reading of John Chapman's work on artefact biographies, informed by narrative analysis, suggests that artefact biographies may tend towards the comic genre: they emphasise continuity, connection and memory. These are important aspects of life, but not the only important aspects of life. I suggest that a different emphasis is possible, one that focuses on alienation, forgetting and strategic elision of associations. Artefact biographies, like all other stories, make sense of the world by selectively leaving details out, and burial contexts, especially, highlight how people edited biographies by selectively ending them or eliding particular associations.

More broadly, I argue that the archaeology of artefact biographies is too unreflectively informed by the tradition of Emile Durkheim and Marcel Mauss, and may benefit from reflective comparison with those of Karl Marx and Max Weber.

## **BRINGING GROUND STONE ARTEFACTS BACK TO LIFE**

Hydén Susan, Lund University (Sweden)

This paper examines how a biographical approach can be utilized as a method of categorizing and interpreting ground stone artefacts. In Scandinavian Neolithic archaeology ground stone artefacts, such as handstones and netherstones, are generally considered a "low status" field of research. As a consequence, such artefacts are either neglected as a source of knowledge or routinely categorized according to a preconceived idea of their function. Moreover, since they are seldom formed prior to use ground stone artefacts are ill-suited for research based on typology or chronology. Studies made in southern Sweden suggest that a biographical approach offers a more fruitful way of analyzing such artefacts. By categorizing ground stone artefacts in terms of their "life history", we shift the attention from their supposed function to e.g. how the raw material was selected, used, reused and deposited – in effect adding a social theory of human agency to the *chaîne opératoire*. Such an approach would contribute considerably to our understanding of e.g. raw material procurement, exchange and the ritual breakage of artefacts, aspects that are highly relevant to our knowledge of Neolithic culture in general. Simultaneously, by applying an alternative categorization based on a biographical perspective we make the conflict between our own views and values and the past's visible. Such a move renders "the well-known unfamiliar" and make us more susceptible to the fact that every interpretation is dependent on the interpreter and the questions we pose. Ultimately, it forces us to consider why ground stone artefacts are not given as prominent a role in Neolithic archaeology as they were in Neolithic society.

## **BIOGRAPHIES OF DEATH: BUILDING CAIRNS IN THE KILMARTIN GLEN**

Richardson Philip, University of Newcastle (UK)

The Kilmartin Glen has been described as 'Scotland's richest prehistoric landscape', a tract of land set aside for ceremonial use. This characterisation is due to the dense concentration of prehistoric monuments within the area.



But why would one particular place become the foci for so much activity? Is it possible for us to discern the residual contexts of meaning through which such continued action manifested itself?

Through the use of the concept of biography, I will attempt to build a 'biography of death' and trace the life-histories of both the cairn building traditions and the various objects (including bodies) deposited with the dead during the Neolithic and Early Bronze Age in Kilmartin. Through the exploration of multiple object biographies it will be possible to identify the material traditions or genealogies of practice which both created and were created by significant places.

By focusing on the biographies of objects and places associated with the dead it will be possible to begin to understand how the relationship between the existing material and social conditions, which guided the development of Kilmartin as a place for monuments. Building on the Andy Jones' work on rock-art (2007), the principal focus will be on how memory and material traditions created a landscape where cairns; particularly Bronze Age cairns relate to and reference those constructed during the earliest Neolithic.

*Jones, A. 2007 Memory and Material Culture Cambridge, Cambridge University Press*

## **MYSTERIOUS BIOGRAPHIES: THE CASE OF THE LOOTED ARTEFACT**

Oldham Mark (UK)

The construction of biographies for individual archaeological artefacts is often a difficult process, but this is multiplied greatly when the object under consideration is looted. In this paper I explore the problems of creating biographies for such objects, both from an informational and ethical perspective, with a specific focus on Andean artefacts.

As with people, one cannot create a particularly vivid biography of an object without relating it to others. So, looted artefacts, stripped from their archaeological contexts and disassociated from their companion pieces, have stories which are almost impossible to tell. The label "From the collection of a Belgian gentleman" may be collectors' code for an unprovenanced artefact, but in some cases we cannot go much further than that. As artefacts are illicitly excavated and distributed throughout the world, our chances of creating viable and intricate biographies decrease – how should archaeology and archaeologists respond to this challenge?

Furthermore, one must consider the possible ramifications of creating biographies for such objects. Is our interaction with remains lacking provenance helping to fuel the international antiquities market and indirectly increasing episodes of looting? Does the 'ethical' cost of such work outweigh the possible 'informational' benefits – or vice versa? Do archaeologists unwittingly stumble into complex criminal webs due to their (naïve?) desire for knowledge?



E007

Round Table title:

## THE CHAÎNE OPÉRATOIRE APPROACH TO CERAMICS STUDIES

**Organiser:** Scarcella Simona, École des Hautes Etudes en Sciences Sociales – Toulouse (France)

**Round Table abstract:**

The characteristics of ceramics materials have always been essential elements to analyze in order to understand the societies from the Neolithic period onwards. In recent decades, the increasing specialization in ceramics studies has enhanced the tendency to explore the production processes, i.e. chaînes opératoires, rather than to use the systems of classification based on decorations and shapes of the ceramics. This session focuses on the concept of the chaîne opératoire and is interested in experimental and archaeometrical studies that allow to better understand the technological aspects of a culture; topics of interest will explore the opportunities to relate these two methods. Within the session, theoretical contributions will explore the opportunities offered by the chaîne opératoire approach, as well the limits of analysis encountered by researchers, while practical contributions will finalize the debate in order to show the oncoming perspectives of research in the studies of ceramic material. This session is a moment of meeting between researchers, and papers, referring to studies of ceramic production from any period of the European later Prehistory (i.e. from the Neolithic onwards) are invited.



**Paper abstracts:**

### CLAYEY MATERIALS AND EXAMPLES OF CERAMIC ETHNOARCHAEOLOGY IN ANCIENT SICILY

Montana Giuseppe, Polito Anna Maria, University of Palermo (Italy)

The classification of a “ceramic paste” and its assignment to a specific production centre can be faced properly if local raw materials are deeply studied in terms of textural aspects, mineralogy and chemistry. An “integrated approach” where, ethnography, geology, mineralogy, petrography and chemistry are uniformly involved can be used to identify the source of the clayey raw materials used in a given area of ceramic production.

Since the last decades several archaeological excavations in Sicily have brought to light kilns and facilities designed for ceramic manufacture in an increasing number of sites, thus attesting the relevant impact of this craftsman activity on the ancient economic history of this island. The geological predisposition of the territory, being characterized by several clayey formations, certainly made straightforward the development of such a millenary productive tradition of ceramic ware. Nevertheless testimonies about the antique ceramic production in this part of Sicily are still relatively disjointed. Moreover, the attempts to reconstruct a representative outline of the most important centres of ceramic manufacture during the antiquity seem to be complicated by the multifaceted succession of historic and social-economic events.

This paper illustrates significant examples where “ethnoarchaeometry” was successfully employed for attesting ceramic productions and circulation of some specific ceramic typologies in Archaic Sicily. The scientific approach is based on a detailed study of textural, compositional and technological properties of the clayey formations cropping out in the territory of Western and Central Sicily, which were already recognized to have been employed as raw materials for ceramic manufacture in antiquity. Compositional and textural markers for distinguishing local ceramic products were successfully pointed out.

### CRUCIBLES AND DOMESTIC POTTERY: TECHNOLOGICAL CHOICES AND SOCIAL IMPLICATIONS IN A METALLURGICAL CONTEXT OF THE THIRD MILLENNIUM BCE IN SW IBERIAN PENINSULA

Inácio Nuno, Nocete Francisco, Dept. de Historia I, University of Huelva (Spain); Nieto José Miguel, Bayona Moisés R., Abril Daniel, Sáez Reinaldo, Dept. de Geología, University of Huelva (Spain)

The archaeological site of Valencia, with C14 dates attributed to the third millennium BCE, has been a reference in Iberian prehistory due to the magnitude of its tombs and its dimension, which covers an archaeological area over 400 hectares. Recently, archaeological excavations identified a sector delimited by long ditches, in front of burial area, related to metallurgical activity of Cu. In its interior, the presence of archaeological evidence related to metallurgical activity (raw materials, slags, crucibles, tuyeres, furnaces, etc.) suggests the presence of a smelting quarter.

The crucibles and tuyeres, unknown until now in this settlement, were one of the most recurrent elements associated to metallurgical activity.

This communication will present the preliminary results obtained with the methodological model chosen, apply in the study of this materials, in order to evaluate the characteristics of raw materials (clay and temper), its origin and mineralogical and chemical characterization. However, when we compare the archaeometric information of crucibles and tuyeres with domestic pottery found in consumption units associated to metallurgical activity, its explanation appears to be more complex and indeed, more suggestive. We will try to explain the social implications of this technological model in the settlement's internal organization context.

### **ARCHAEOLOGICAL AND EXPERIMENTAL RECOGNITION OF FORMING TECHNIQUES: METHODOLOGICAL ASPECTS AND EMBEDDED APPROACH FROM NEOLITHIC CONTEXT**

Martineau Rémi, CNRS, UMR 5594 ArTeHis (CNRS/Université de Bourgogne/SRA/INRAP), Université de Bourgogne, UFR Sciences de la Terre & INRAP (France)

A lot of technical observations on pottery have been realised on French and Swiss Neolithic sites (dwelling-lake and dwelling sites, graves). These observations have been associated with experiments, allowing the recognition of the techniques and the reconstruction of several processes of pottery production («chaînes opératoires»).

A large place is made to methodological aspects. Firstly, traces of different forming and finishing techniques have been observed and described on the archaeological pottery. Secondly, forming and finishing experiments have been carried out. This reference material constitute the base of interpretation of the archaeological traces observed. Quantitative study of each technical parameters gives a good picture of the different pottery and production groups. This approach allows to reconstruct how the potter worked, what tools he used, how the pot was formed and finished.

With some Neolithic case studies, we will insist on the necessity to associate typology studies with raw materials, forming techniques, surface treatments, finishing and firing techniques studies. Only an embedded approach could allow to reconstruct the «chaînes opératoires» as complete as possible. Few case studies will be the base to demonstrate that technical aspects and «chaînes opératoires» must be crossed with morphology and ornaments typology by a quantitative approach. We think that this is the only way to reconstruct the complexity of socio-economic aspects through ancient ceramic studies.

### **DETERMINATION OF FIRING STRATEGY BY EXPERIMENT: LBA POTTERY FROM NE BOHEMIA**

Thér Richard, University of Hradec Králové (Czech Republic); Gregor Miloš, Komenius University - Bratislava (Slovak Republic)

The aim of the paper is to demonstrate potential of a combination of field experiments and archaeometric analysis in the determination of pottery firing strategies. The experiments were designed to determine a range of possible firing strategies in the case of the LBA pottery in NE Bohemia. 40 experimental firings were executed in different types of firing structures. The experimental samples were compared to the original LBA pottery using mineralogical and petrographical analysis. The research significantly reduced the range of possible firing strategies and allowed a detail description of particular stages of the firings. The experiments have showed that a significant difference can be found at least between one-space and two-space firings. The main criterion for firing description is a firing strategy rather than a type of firing structure itself. Some types of firing structures are flexible in terms of the firing strategy; others, on the contrary, imply only a narrow range of firing procedures. We can characterize each type of firing structures by a specific range of thermal profiles based on firing procedures applicable in these structures and also by atmospheric conditions of the firings. It is possible to discriminate the attributes of particular thermal profiles and the atmosphere development by the mineralogical and petrographical analysis of pottery. On the basis of these attributes we can exclude the firing structures and strategies which do not conform to the identified thermal profiles.

### **RETHINKING POTTERY PRODUCTION AT THE LATE NEOLITHIC/EARLY CHALCOLITHIC WEST MOUND IN ÇATALHÖYÜK/TURKEY**

Franz Ingmar, Freiburg University (Germany)

The paper will scrutinize the process of pottery production at the Late Neolithic/Early Chalcolithic West Mound in Çatalhöyük in Central Anatolia (ca. 6,200-5,800 cal BC). Recent excavations provide the exceptional opportunity

to research the production process of pottery from the selection of raw materials to the deposition and recycling of sherds. The paper will apply the “chaîne opératoire” approach to overcome the still dominating stylistic and typochronological analysis and will contextualize it with the cultural, social, economic and symbolic transition between the Neolithic and the Chalcolithic in Central Anatolia as revealed at the Çatalhöyük East and Çatalhöyük West Mounds. It will also re-evaluate the pottery production within a framework of agency and materiality theories and will use a contextual attribute analysis of ceramics, stone tools and architecture in order to fully understand and reconstruct the production process of pottery. In particular, the paper presents and discusses two new discoveries - unbaked pottery and two red pigment stones (haematite) – which will together with archaeometric analysis shed new light to the production and use of pottery at the turn of the 7th-6th millennium cal BC in Central Anatolia.

### **METHODOLOGY FOR THE FORMAL ANALYSIS OF GEOMETRIC IMAGE IN IRON AGE MATERIAL CULTURE**

Cobas Fernández Isabel, Xunta de Galicia and The Heritage Laboratory (LaPa), Spanish National Research Council – CSIC (Spain)

Our work maintains that formal patterns, in particular decorative patterns of material culture, are related to the codes of use and conception of space and, consequently, the socio-cultural practices of the society to which the maker of such objects belongs. As a result, formal patterns can be usually found in object decoration, which put it in relation to other objects and even to other elements of material culture belonging to the same ideological referent, such as architecture or landscape.

Following this premise, we have put together a methodology that allows for a systematic description of geometric images present in any kind of material media, making it possible to compare and search image data to finally extract any formal patterns that might arise.

This methodology has been carried into practice for the study of NW Iberian Iron Age material culture, taking into account not only periods of stability but also courses of change such as the relationship between Iron Age and Bronze Age, the transition from Iron Age I into Iron Age II, and the transformations introduced by romanization.

### **CERAMIC SPINDLE WHORLS AND LOOM WEIGHTS FROM THE BRONZE AGE PILE DWELLING OF MOLINA DI LEDRO (TRENTINO, ITALY)**

Bazzanella Marta, Museo degli Usi e Costumi della Gente Trentina, San Michele all'Adige (Trento) & University of Siena (Italy); Mayr Anna, Archaeological Heritage Office of the Autonomous Province of Trento (Italy)

Located in western Trentino (North-East Italy) at 654 m above sea level, on the shores of the homonymous dam lake, the settlement of Molina di Ledro was discovered due to a drastic lowering of the lake water level for the irrigation of the lake basin and was investigated from 1929 to 1980. Approximately 5000 m<sup>2</sup> were uncovered. The discovery of the first textile remains goes back to 1937 and included balls of yarn, woven fabric, tufts of raw fibre, rope and cord fragments (Battaglia 1943). Yarns and textiles come from the earliest occupation levels dated to the Early Bronze Age. In addition, the archaeological investigations yielded numerous materials connected to textile production, such as spindle whorls, spools and loom weights for a warp-weighted loom, which permit a partial reconstruction of textile craft during this period.

The textile corpus from Molina di Ledro consists of 297 finds. Among these are textile fragments, twining fragment, balls of yarn, yarn fragments, cordage remains and finds of raw or prepared fibre

The total number of tools related to textile activities at Ledro consists of 172 loom weights and 319 spindle whorls. Aim of this article is to analyse of the manufacturing technique of this kind of archaeological material.

### **THE CHAÎNE OPÉRATOIRE AND CYPRIOT CERAMIC TYPOLOGY: AN EXAMINATION OF EMIC POSSIBILITIES**

Jeffra Caroline, Dept. of Archaeology, University of Exeter (UK)

Ceramic typologies may be based upon any number of features seen as patterns within the repertoire as a whole. Therefore, it is a difficult task to select the attributes which are relevant to internally-established systems of categorisation. In the case of Bronze Age Cypriot ceramics, where fabric groups are used to define “wares”, which are subdivided primarily by form/function and secondarily by features such as handle number/placement, base shape, etc., typological definitions are largely *etic*. Crucially, this work focuses upon the earliest use of the pottery wheel in Cyprus, and relates to the portion of the chaîne opératoire which produces a preform, prior to surface treatments and finishing operations. Will a techno-centric approach call into question the existing divisions

imposed upon the Cypriot ceramic repertoire? Examining the process of shaping vessels to the preform stage enables a careful consideration of the potters' intentions, which in turn may alter our perception of the grouping of vessels. This foray into the potter's perspective, based as it is upon technologically-derived data, may draw our interpretations closer to the internally-established systems of categorisation of Bronze Age Cypriot potting groups and in so doing, enable a greater understanding of the dynamics of craft production as products changed during this technological watershed.

### **CLASSIFICATION OF CERAMIC ASSEMBLAGES ACCORDING TO THE CONCEPT OF THE CHAÎNE OPÉRATOIRE: AN ANTHROPOLOGICAL APPROACH TO SYNCHRONIC AND DIACHRONIC VARIABILITY**

Roux Valentine, CNRS, Maison de l'Archéologie et de l'Ethnologie - Nanterre (France)

Over the last 20 years ethnoarchaeology has provided us with results that have strong implications for ceramic studies. In particular, it appears that interpretation of ceramic assemblages according to anthropological or evolutionary perspectives imply a technological classification based successively on technical, petrographic and typological criteria. Contrarily to the classic typological classification, this hierarchical classification allows us to obtain a controlled picture of the social entities at the origin of the ceramic assemblages. On the synchronic axis, complexity of assemblage can be assessed in terms producers (modalities of production) and consumers (mode of distribution). Function of sites can be then highlighted. On the diachronic axis, techno-stylistic variability can be assessed in terms of historical dynamics and evolutionary forces, here understood as the context of production and transmission. A case study, from the 2<sup>nd</sup> millennium BC Southern Levant illustrates this approach.

### **THE LIFE-HISTORY OF THE POTTER'S WHEEL IN THE ANCIENT NEAR EAST**

Laneri Nicola, ISAO, Istituto Italiano per l'Africa e l'Oriente – Roma (Italy)

One of the most fascinating subjects in ancient Near Eastern archaeological research is the question of when the potter's wheel made its first appearance in the *chaîne opératoire* of pottery manufacture. Some scholars consider the appearance of a turning wheel as linked to facilitating the potter's work in secondary processes (i.e., thinning of coils and applying painted decoration) starting from the end of the fifth millennium BC. Instead others have thought that it is only from the early second millennium BC that vessels can be considered as first having been thrown on a wheel using a lump of clay.

Based on a series of visual and X-ray analyses on a large sample of pottery from archaeological contexts chronologically ranging from the fifth to the second millennia BC, the following paper will revise these interpretative explanations and will focus on understanding the importance that the appearance of the potter's wheel, and the further development occurring through its use, had on the socioeconomic organization of the pottery production of ancient Near Eastern societies during this fundamental chronological period.

### **EXPLORING THE CHAÎNE OPÉRATOIRE OF CERAMICS THROUGH X-RADIOGRAPHY**

Berg Ina, University of Manchester (UK)

The concept of the *chaîne opératoire* can be broken down into three interacting components: a) the technological "operational sequence" in the making of an object, encompassing the acquisition of the necessary raw materials through to the final discard of the object; b) the social processes, cultural choices and belief systems that find themselves embedded within each step and the overall sequence; and c) the sensual aspects interwoven in the interaction between material, objects, maker and user. As the social and sensual dimensions are relying on an in-depth understanding of the technologies and techniques involved, it is understandable that this angle has received most scholarly attention.

My work on ceramics from Bronze Age Greece has drawn on X-radiography, combined with experiments on modern control groups, to gain a detailed understanding of the manufacturing processes of storage, processing, serving and cooking vessels at a time when the potter's wheel makes its first appearance. X-radiography can confidently distinguish between most primary forming techniques (wheel-throwing, coiling, moulding, drawing, pinching, etc.) which are often obscured by subsequent secondary techniques (such as shaving, knife-trimming, scraping). This paper will thus offer an introduction to the technique as well as its potential in illuminating *chaîne opératoires*. Following on from the more technical background, my own case study from Greece will then explore the socio-cultural dimensions of the choices made.

**THE MODELLING OF THE EVOLUTION OF TECHNICAL BEHAVIOUR: THE PHYLOTECHNIC TREE AND THE CLADISTIC APPROACH TO THE STUDY OF CHAÎNES OPÉRATOIRES. THE EXAMPLES OF THE DUFFAITS CULTURE (MIDDLE BRONZE AGE, FRANCE)**

Manem Sébastien, Dept. of Archaeology, University of Exeter & Fyssen Foundation (UK)

Experimental and ethnoarchaeological studies provide solid reference points which allow archaeologists to reconstruct the *chaînes opératoires* in the fashioning and finishing of prehistoric pottery. To understand the technical behaviour inside a culture, its evolution and the origin of its intra- and inter-cultural diversity, we need to investigate the source of the mechanisms implied: the processes of transmission which take place from generation to generation.

The construction of phylotechnic trees created on the basis of *chaînes opératoires* following the stratigraphy of the archaeological sites of the Duffaits culture (French Middle Bronze Age), allows one to model the original traditions handed down over time and the technical inventions and innovations which may appear. The phylotechnic tree constitutes a historical reading of the line of descent of the technical behaviour. The study of homologies allows one to recognize the antiquity of certain operational sequences, which then take on a more primitive character compared to others that are more recent and can be dated. This cladistic approach thus allows us to understand the know-how from which these mutations – or inventions – took place, by establishing family connections between the various *chaînes opératoires*.

Applying this concept of 'descent with modification' to several contemporary and peripheral prehistoric cultures allows one to look at them differently and to understand the real nature of their interactions by identifying what derives from endogenous evolution or from extra-cultural technical transfer.



E008

Session title:

**THE CONTEXTS OF PAINTED POTTERY IN THE ANCIENT MEDITERRANEAN WORLD (7<sup>TH</sup> -4<sup>TH</sup> C. BCE)****Organiser:** Paleothodoros Dimitris, University of Thessaly (Greece)**Session abstract:**

Painted pottery has been a field of interest for art-historians and archaeologists of the ancient Mediterranean world for more than two centuries. A remarkable aspect in the history of the studies on this field has been the unwillingness of classical scholars to look beyond the art-historical or sociological approaches in order to study the contexts of painted pottery. On the other hand, Italian archaeologists and European prehistorians are interested in imported painted pottery from the Greek world as long as it bears evidence on international contacts and core- or –periphery relations between the Eastern Mediterranean and the European world. Time has now come to look beyond these narrow approaches of the extraordinary phenomenon of wide diffusion of painted pottery in the Mediterranean, and focus on the specific contexts of its “consumption” in the home market and abroad alike.

The proposed session points to this direction: it aims in examining painted pottery in funerary and domestic contexts in Southern Italy, Etruria and Greece, as well as addressing questions on the role of iconography in a ceramic assemblage of funerary origin, relations of indigenous populations and colonists, the use of painted pottery in the Etruscan household, the role of trade in the diffusion of shapes and iconographic motifs. In addition, chronologies provided by art-historical comparisons between classes of painted pottery, are subject to revision, by using alternative dating systems based on the study of contexts.

**Paper abstracts:****CONSTRUCTING AN ALTERNATIVE SEXUALITY FOR THE ATHENIANS: A CONTEXTUAL ANALYSIS OF EROTIC IMAGES ON POTS FOUND IN ATHENIAN GRAVES OF THE 5<sup>TH</sup> CENTURY**

Paleothodoros Dimitris, University of Thessaly (Greece)

For classical archaeologists, gender historians and classicists alike, Athenian erotic images largely fall in two major categories: scenes of courtship between adult males and adolescent males, and scenes of love-making and courtship between adult males and adult females, the latter being usually considered prostitutes or courtesans. This rigid scheme has profound roots in classical scholarship, since it is allegedly confirmed by a rich amount of literary data. In this paper, I propose a radically different approach of erotic images, one based on the study of the archaeological context of tombs containing pots decorated with erotic images. The results of the inquiry are spectacularly diverging from current orthodoxy in the field, where it is sustained that erotic desire is located only in the free citizen's dominance upon the bodies of women, boys and slaves. Erotic images of heterosexual courtship and mating are found in tombs of unmarried girls, adult females and 8-years old boys. One cannot escape drawing the obvious conclusion that the “consumers” of erotic images, who were identifying themselves with the persons viewed on the pots, were neither courtesans nor boys evolved in homosexual relationships, but free Athenian women and men of citizen status.

**TELAMONIAN AJAX BETWEEN ATHENS AND ETRURIA**

Brunori Sara, University of Urbino (Italy)

This paper offers an examination of Athenian painted vases showing the exploits of Telamonian Ajax, the famous Homeric hero, during the late archaic and the early classical periods (530-450 BC). Particular attention is paid to the iconography of the late phase of the career of Ajax (from his rescuing the body of dead Achilles to his own suicide). The iconography in question appears to be very popular not only among Athenian vase-painters, but also among Etruscan clients, who imported vast amounts of pots decorating with these subjects (first and foremost in the city of Vulci, but also to other Southern Etruscan sites).

The analysis is therefore focused on: 1. Statistical data (e.g. concerning the percentage of vases imported in every site). 2. The ways in which the vase shapes may offer clues for the interpretation and understanding of the “consumption” of painted pots in the Etruscan market. 3. The way Athenian images contribute in shaping and

reshaping Etruscan iconography of Ajax (beginning with black-figured vases by the so-called Micali Painter up to tomb-paintings, gems etc.). Divergent readings are also of importance in revealing a special Etruscan mentality.

The study aims at reconstructing Ajax's characteristic traits in Etruria, based on the premise that the hero is not completely delineated by Greek models (the Salaminian, the Pindaric or the Sophoclean), but appears to respond to tastes and local socio-cultural requirements, thus suggesting the development of an Etruscan tradition independent from the various Greek narratives.

Furthermore, both the Athenian and the Etruscan Ajax are better understood when compared to Achilles-Achle, an indispensable comparative reference since the Homeric age. This comparison also shows that the Etruscan heroization of the Telamonian Ajax is rooted in the necessity of glorifying the aristocratic ideology on behalf of a dominant and Hellenized class that was experiencing its first moments of decline.

## **ADRIA AND FORCELLO: CONSIDERATIONS ABOUT THE PAINTED POTTERY FOUND IN THE SETTLEMENTS**

Wiel-Marin Federica, independent researcher (Italy)

A huge amount of painted pottery was found in both settlements, in Adria during the last three centuries and in Forcello since 1980. As usual in domestic contexts, the pottery from both sites is quite fragmentary and this makes it very hard to recognize a specific iconography. If a reconstruction is possible, this is concerning a really small percentage of the whole amount, so that we cannot actually talk of a special iconography in the two cities.

What we can do, by studying "only" the sherds, is to recognize shapes and painters. In the first case it is not possible to identify exact shapes, for example of *kylix* (whether A, B, or C), or *skyphos* (A or B), but it is important already to know that we have a predominance of drinking cups, *kylikes* and *skyphoi*. In the second case, since it is possible to attribute also very small fragments to individual painters or stylistic groups, we can get an overview of the vase-painters present in the imports of a city. Refining our analysis, and combining data from the study of shape- distribution and stylistic groupings, we arrive at observing some similarities in the facies of imports of attic painted pottery between Forcello and Adria. The fact that both cities are located on the northern side of the Po river in Northern Italy point to their being included to the same trade current. On the contrary, when we compare Adria and Forcello from the one side with Spina (a major settlement south of the Po river) from the other side, we get a somewhat different picture. It is interesting to explore whether those difference should be attributed to the preferences of the local clients, or are simply the result of distinct trade currents being active in either side of the Po river.

## **SHAPES, IMAGES AND RITUALS: SOME REFLECTIONS ON ATTIC POTTERY FROM FUNERARY CONTEXTS IN MARZABOTTO**

Baldoni Vincenzo, University of Bologna (Italy)

In the frame of the study of Attic pottery from 19<sup>th</sup> century excavations in Marzabotto, it was possible to link many Attic figured and black-glazed bases (late 6<sup>th</sup>-4<sup>th</sup> c. B.C.) to the necropoleis, fully excavated during the 19<sup>th</sup> century, but unpublished since. A few of these vases can be associated to their specific grave contexts, occasionally with very rich funerary sets. This paper offers an analysis of a selection of these vases. The study of shapes, subjects, and – when available - of specific context data (i.e. tomb-structure, sex of the deceased, funerary set and ritual used) allows to take into full account the phenomenon of the reception of attic pottery in the funerary contexts of Marzabotto. Additionally, the same type of analysis may be pursued in comparison with Attic pottery from Marzabotto that has been impossible to assign to specific contexts, but also with pottery from other important centers in the Etruscan Po valley.

## **THE LOCRI GROUP: CONTEXTS ANF CHRONOLOGY OF A WESTERN RED-FIGURE PRODUCTION BETWEEN SICILY AND SOUTHERN CALABRIA**

Elia Diego, University of Turin (Italy); Barresi Sebastiano, University of Catania (Italy)

The history of the Locri Group begins in 1953 when Arthr Dale Trendall put together two kraters found at Locri by Paolo Orsi in the tomb 1119 of the Lucifero necropolis. The two vases, considered similar in shape, style and clay, were attributed to a painter near in style to the "lucanian" Choephoroi Painter. In 1967, the very same kraters, along with other eleven vases and fragments, were assigned by Trendqll to the Locri Group, an aggregate of vases, sometimes classified as "lucano-apulian", and, in regard to style, placed between later work of the workshop of the



Amykos Painter and early work by that of the Creusa Painter. Considering the Locrian provenance of the majority of the vases, proposed to identify the Locri Group as a possible “local workshop” influenced by the Lucanian painters mentioned above; besides, according to Trendall, the style suggested a chronology around 380-360 B.C.

This construction, with little revisions, hold until the discovery of some vases of the Group in the Southwestern part of Sicily (Selinus and Vassallaggi). The new evidence induced Trendall to consider probable that the Locri Painter “was is origin a Sicilian” who “subsequently have moved to Locri and established a workshop there”. Nothing new was proposed about the chronology of the Group, fixed now by Trendall around 370 BC. On the contrary, Sicilian contexts suggest a very interesting variant dating - the last decade of the 5<sup>th</sup> century – and some vases found in the island show stylistic and morphological peculiarities that distinguish them from the products of the Group found at Locri. At the same time, the systematic analysis of Locrian grave contexts confirms the chronology around 380-360 for the mature production attributed to the Locri Group. Moreover, recent studies speak in favor of a rich and flourishing output of painted pottery at Locri itself, where it is possible to recognize a strict link between local production and home-market demands. In funerary contexts, for example, the shapes of the vases attributed to the Locri Group – and to other local workshops – seem to respond to peculiar aspects of ritual, and the iconographic schemes constitute an important part of local imagerie.





# RITUAL AND SYMBOLISM



**F001**

**Session title:**

## **ANIMAL RITUAL KILLING AND BURIAL: EUROPEAN PERSPECTIVES**

**Organiser:** Pluskowski Aleks, University of Reading (UK)

**Session abstract:**

The killing and burial of animals in ritualistic contexts is encountered across Europe from Prehistory through to the historical period. The term 'ritualistic' is an ambiguous and controversial one, but in this context refers to the slaughter of animals as part of religious practice.

Archaeologically, such animals are most frequently encountered in funerary contexts, often in association with human remains, where they are typically interpreted as sacrifices. Written sources from historical periods indicate incredible diversity in the form and function of animal sacrifice, from basic slaughter through to burning and living burial. Deeper in the Past, where we rely almost exclusively on interpreting deposited animal remains and (where available) zoomorphic iconography, the range of treatments of the ritually slaughtered and deposited animals is equally diverse.

The aim of this session is to assess the state of research across Europe, to ascertain whether comparable interpretative frameworks are used, especially between archaeologists working with prehistoric and historical societies. How easy is it to identify ritually killed animals in the archaeological record? Can we tell if an animal has been killed specifically for such a purpose? Is it possible to reconstruct the rites associated with their deposition? Is it possible to reconstruct or re-contextualise the value of ritually killed animals? What insights can be gained about the religious paradigms and ritual systems of the societies engaged in animal sacrifice? How specifically can we understand the cultic praxis behind the sacrificial killing of animals? Why are some species used in sacrificial contexts and not others? What can this tell us about human-animal relations in the past? How much similarity is there across European societies in the treatment of animals 'made sacred'? How long were specific rites in use and why? Although animal sacrifices are typically interpreted as substitutes for humans, how does the ritualistic treatment of animal bodies compare to similar treatments of humans? This is a topic which is widely encountered in the study of past European societies, and one which would benefit from a comparison of techniques, interpretations, theoretical frameworks and critiques.

We welcome papers on any aspect of the ritual killing and deposition of animals, from any part of Europe and from any time period. We ask that papers move beyond individual case studies to consider broader questions (as suggested in, but not restricted to, the above list) aimed at furthering our understanding of the topic. We aim to publish the papers from this session as a book.



**Paper abstracts:**

### **FROM REMAINS TO MEANINGS**

Morris James, Museum of London (UK)

This paper builds on the results of a recent study into Associated Bone Groups (ABGs), also known as 'animal burials' or 'special animal deposits' (Morris, 2008).

The paper starts by examining how these deposits have been interpreted by archaeologists by asking 'what are ABGs?' It shows that many interpretations of these deposits are stuck in a ritual-functional dichotomy because archaeologists have not recognised that ABGs are archaeological constructs; a category applied to archaeological material. They have been 'created' by a scientific approach to archaeology and zooarchaeology in particular, which generates knowledge by engagement with the world through categories. Such an approach is not problematic, as long as we are aware of it. People in past societies did not go out and deposit an ABG. They carried out a number of acts with associated agency that resulted in the deposition of animal remains in variable states of association.

Therefore ABGs, as we find them in the archaeological record, represent only the final process in a series of actions. To fully understand ABGs we need to try to investigate the 'above ground' events behind their creation. This can be achieved by adopting a biographical approach. Using and integrating all the available archaeological data, a full 'life-history' of a particular deposit can be constructed, which in turn develops explanations for ABG creation beyond simple dichotomic approaches.

The use of categories such as ABG is unavoidable in archaeology, and the language we use is built upon such concepts. However, this paper will show we must not see such concepts as static or concrete entities. ABGs are created via cultural practice which is a constantly changing process. They are the result of many different processes; every individual ABG is the result of a separate action, each with its own associations and meanings.

### **RITUALISATION (OR THE FOUR FULLY-ARTICULATED UNGULATES OF THE APOCALYPSE)**

Broderick Lee, University of Sheffield (UK)

It is now common practice amongst archaeologists to interpret burials of fully articulated animal skeletons on sites in Britain and Europe as evidence of ritual activity, particularly on those sites from the prehistoric or Roman periods. This interpretation has become an accepted analysis for many archaeologists, despite the full meaning behind such an interpretation remaining obscure, and so it is sometimes applied as a short-hand for these deposits without full consideration of other potential explanations.

Whilst conducting ethnographic fieldwork in Ethiopia during 2008, many fully and partially articulated bovid skeletons were observed on the ground, and were reported within the ground. The reasons and methods behind such methods of disposal were discussed with the local people and are here presented with reference to archaeological examples, in the hope that they may aid future interpretation of archaeological sites and zooarchaeological assemblages as an analogue of use in a variety of temporal and climatic situations.

### **NOURISHMENT FOR THE SOUL – NOURISHMENT FOR THE BODY. ANIMAL REMAINS IN EARLY MEDIEVAL POMERANIAN BURIALS**

Kuczkowski Andrzej, Muzeum Oręża Polskiego - Kołobrzeg (Poland); Kajkowski Kamil, Muzeum Zachodnio, Kaszubskie - Bytów (Poland)

Pomerania, a region situated today in north Poland, was occupied in the early medieval period by Slavic tribes. The geographical situation of this region facilitated connections between multiple cultures; significant numbers of Scandinavian and Rus came here. All of this resulted in a diverse regional culture. This is evident in the material culture, as well as – albeit less clearly visible – in the spiritual sphere.

In this paper the authors examine one aspect of this spiritual culture, as reflected by finds of animal bones in graves. Such finds are found in every type of grave from this period: cremation and inhumation, flat and mound burials. In comparison to pre-Christian Scandinavia or Anglo-Saxon England, the remains of animals in Pomerania are relatively rare. Their presence is attested in around 10% of all graves. In individual cemeteries, these remains are only found in single graves. Only in Wolin and Świelubie (around Kołobrzeg) do we find higher numbers of such graves. In these sites it is conceivable that we are dealing with graves of Scandinavian origin.

The small number of animal remains in Pomeranian graves can be linked to conceptualisations of the otherworld, where in comparison with Scandinavian beliefs animals may have played a relatively minor role. Perhaps the Arabian chronicler Al-Masudi was correct in stating that horses are only cremated with chieftains.

### **HORSE BURIALS IN THE PUBLIC RITUAL: LITHUANIAN PERSPECTIVES**

Bertašius Mindaugas, Kaunas University of Technology (Lithuania)

The abundance of horse graves dated to the 8<sup>th</sup> – 12<sup>th</sup> centuries (ca. 1400 buried individuals) and expressive horse-offering rituals are well known in the central region of Lithuania. Horse graves are usually found separate from human graves, composing special parts of “horse graveyards” in the cemeteries. The arrangement of these parts with horse graves are related to the local micro-landscape. The locations of horse burials suggest public ceremonies – open and exposed horse burial places were public displays rather than private offerings. It seems the grave pit actually was associated with the funeral process. By means of reins and bridle bits it was possible to place a live horse in a pit. Such a manner of burial testifies to the presence of a long, complicated ritual by the grave. The western orientation of the horse skeleton confirms the belief that the world of the dead is in the West, where the Sun sets and a horse escorts the dead to Eternity, hence a horse was one of the substantial sacred animals and was coherent more with mythological world than with every day life. The other burial group is distinguished by the ritual offering of separate horse parts (usually containing a skull, neck, leg bones and fragments, sometimes with signs of butchery). Ritual killing could be related to another aspect of this public event, as a ritual of temporal dying which happens during the shifting between two states, for example during the initiation. Contemporary accounts and burial items in the graves testify to horse graves as deposits of special value. The horse becomes a contributor which helps to cross the border between mythological spaces. The natural and cultural elements with memory signs near the graves helped to create a sacral space for the ritual killing of animals.



### **LATE ANTIQUE AND HIGH MEDIEVAL HORSE BURIALS IN ITALY**

Salvadori Frank, University of Siena (Italy)

Between the fifth and the seventh century Italy was hit by repeated immigration waves of the so-called 'barbarian' peoples. The archaeological investigation of cemeteries dated to this period has revealed the emergence of a phenomenon unknown until then: the contemporary deposition of men and horses.

The last decade has been characterized by the appearance of contributions that have repeatedly undermined the ethnic character of migration, and sometimes refusing it and justifying this position with the certainty that these groups arrived in Italy already Romanised.

This contribution will try to analyze the zoological and archaeological evidence of burial contexts, focusing on the ethnic character of this phenomenon.

### **ANIMAL SACRIFICE IN PREHISTORIC ARMENIA**

Manaseryan Ninna, Institute of Zoology, National Academy of Sciences of Armenia (Armenia); Petrosyan L., Gasparyan B., Institute of Archaeology and Ethnology, National Academy of Sciences of Armenia (Armenia)

The scientific collections of the Institute of Zoology NAS RA contain vertebrate bone remains collected from over 80 archaeological monuments and embracing a wide chronological spectrum. The material from burials is of special interest and differs from the "kitchen waste" by its preservation and assignment.

At the excavation of a mound near Nor Bayazet (Sevan region), a bull cult burial was discovered. The bull spine was in a large burial together with three vessels of unique form. One of them was a censer; a small clay box decorated with ornaments. Further examples of cultic bull burials can be dated to the Bronze and Iron Age (e.g. Lchashen, Aghavnatun, Shamiram). The bull – as an integral part of production and a necessary tool for human society – was the main agricultural animal, hence an object for worship.

As an important object for ancient animal breeding – horse-breeding, together with the domestication of bull – also occupied a special place in agriculture and cattle breeding of the ancient population. As reported by Xenophanes (5th century B.C.), the horse in ancient Armenia was considered an animal devoted to the sun and was sacrificed to it. The Middle Bronze Age (Lori-Berd) is characterized by burials with horses rarely occurring in them. It should be noted that the ceremony of burial remained unchanged: on both sides of the pole decapitated horse heads and limbs were placed instead of whole ones. The most interesting example is burial 72 at Aghavnatun, devoted specifically to a horse.

### **SACRED COWS OR OLD BEASTS? A TAPHONOMIC APPROACH TO STUDYING RITUAL KILLING WITH AN EXAMPLE FROM IRON AGE UPPÅKRA, SWEDEN**

Magnell Ola, Lund University (Sweden)

A taphonomic perspective is a useful approach to studying and interpreting animal bones from ritual contexts. Many studies of animal sacrifice focus on confirming different aspects of historical sources or preconceived interpretations. By reconstructing the taphonomic history of bones from ritual contexts, it is possible to trace important aspects of ritual killing. Furthermore, it serves to structure studies towards the understanding of animal sacrifices as a chain of events from the selection of animals from the life assemblage (thanatic factors) to slaughter, from the processing and treatment of carcasses to the deposition of the bones.

Animal bones from ritual contexts, votive offerings of weapons and layers surrounding a ceremonial house, dating to the Migration Period, from Uppåkra in Southern Sweden, serve as an example. Through osteological analysis and reconstruction of the taphonomic history, efforts have been made to determine what characterized animals selected for slaughter, how the carcasses were butchered and utilized and finally how the bones were deposited.

### **SHEEP FOUNDATION BURIALS IN ROMAN WINCHESTER, ENGLAND**

Maltby Mark, Bournemouth University (UK)

Considerable attention has been paid recently to the interpretation of complete and partial animals skeletons in Romano-British deposits. Most investigations have been concerned with depositions found in association with shrines and/or in disused wells and other deep shafts. However, associated bone groups from other types of deposit have largely been overlooked. This paper will describe discoveries of several sheep skeletons associated with buildings and boundaries in the suburbs of Roman Winchester. There is evidence that many of these are

from carcasses that have been roasted and butchered prior to the remains being collected and placed within the buildings as foundation deposits. The finds will be compared with similar discoveries from other Romano-British settlements and Iron Age sites and their possible significance discussed.

### **FAUNAL PYRE GOOD TRADITIONS IN BRITAIN: AN OVERVIEW AND CRITICAL EVALUATION OF THE DATASET AND ITS POTENTIAL FOR INTERPRETATION**

Worley Fay, English Heritage (UK)

Animals have been burnt as part of crematory rituals in all pre-modern periods of cremation burial in Britain, as evidenced in the archaeological record. Of all archaeological deposits, funerary contexts are some of the most likely to have been influenced by ritual behaviour. They therefore pose an interesting challenge for archaeozoology; a discipline more familiar with questions of palaeoeconomy and ecology. The complex taphonomic histories of crematory deposits pose additional challenges to analysis and interpretation.

This paper is based on a study of the use of faunal pyre goods over a millennium starting from the reintroduction of cremation as a funerary tradition in the last centuries BC through to the latest medieval cremation burials of the late ninth century AD. It will summarise our current knowledge of faunal pyre goods during this period and the characteristics of assemblages from different cultural traditions, before critically evaluating the limitations and potential of the dataset, including a consideration of how we can begin to address their meaning.

### **DEATH RIDES A PALE HORSE: HORSE SACRIFICE AND MORTUARY RITUALS IN 1ST MILLENNIUM AD BRITAIN**

Cross Pam, University of Bradford (UK)

Partial and complete horse burials have been found in a number of first millennium AD European cemeteries. In northwest Europe, these burials are linked to non-Christian burial and sacrificial practices, and are traditionally associated with high status individuals and 'warrior graves.' Horse material also occurs as discrete ritual deposits not obviously linked to individual human burials, often in the same sites. Sites are found in various areas, particularly in Scandinavian and the Baltic, and also in Britain. In Britain, horse sacrifice and burial appears to occur primarily in eastern Britain during the Anglo-Saxon period. The practice appears strongly linked to cultural interaction between eastern Britain and societies edging the Baltic. This paper examines the nature of these depositions, focusing on a Norfolk site, and comparative sites in Britain and northwest Europe, with the aim of identifying and physically defining ritual horse burial, and understanding the tradition in Britain.

### **ANIMAL SACRIFICE AND BURIAL CUSTOMS IN VIKING AGE ICELAND**

Leifsson Runar, University of Iceland (Iceland)

The people who settled Iceland during the Viking Age brought with them traditions of animal sacrifice. This custom is best observed in pre-Christian burials where it is very common to find horses and/or dogs buried with people or even in separate graves. Previously animal remains in Icelandic graves have simply been interpreted as the interred persons' favourite animal, perhaps following its master to the other world. But there is more to animal sacrifice in Iceland than meets the eye. The custom is significantly more common there than elsewhere in Northern Europe and must be considered in the context of the specific social and cultural conditions developing on the island. In the first decades of settlement social and political institutions were weak and underdeveloped and it has been argued that groups reinforced their claims to land by burying their ancestors with elaborate ritual on single-farm grave fields and sometimes even on boundaries. Animal sacrifice in this context is a symbolic process through which settlers of varying origins chose to express and negotiate their social position in a commonly comprehensible way. The animal remains can thus be seen as material representations of the formation of social structure in this new society. Further, the high incidence of sacrificial ceremonies may have functioned as *catharsis*, a controlled release of violence before an audience, whose tensions might otherwise have developed into direct violence and feuding.

### **LIVING ON THE DEAD; HUMAN AND ANIMAL BODIES BENEATH ATLANTIC ROUNDHOUSES**

Mulville Jacqui, Madgwick Richard, Cardiff University (UK)

The Atlantic island practice of burying people below floors in the late Bronze/Iron Age has attracted much interest – not least in the discovery of composite bodies, possibly mummified at Cladh Hallan (Parker Pearson *et al* 2005,

2007). The rites associated with the accompanying animal burials have received less attention with the most recent review (Mulville *et al* 2003) having been published before the human burial practices were fully explored. In light of findings relating to the human remains, It is now time to construct a new interpretative framework that will allow us to examine the role of these animals in life, death and deposition and to re-consider their role in relation to the human burials that preceded or accompanied them.

This paper will consider the biographies of these animals, why and how they were killed and in what manner they became incorporated within homes. Were these animals buried complete as individuals? Were they processed and consumed as food with only a representative portion placed in the house? A particular focus will be on comparing the manner of death and the ritualistic post-mortem treatment of bodies. Initial work on bone microstructure has suggested some animals are unusually well preserved, thereby providing indications of methods of slaughter and burial. Some of the animals were cremated before deposition; a rite absent from the treatment of human remains. Why were these animals subject to transformations by fire? Finally the relationship between those animals exploited as food and those sacrificed and deposited will be explored.





F002

Session title:

## ARCHAEOLOGICAL APPROACHES TO DANCE PERFORMANCE

**Organiser:** Soar Kathryn, University of Nottingham (UK)

**Co-organiser:** Aamont Christina, independent researcher (Greece)

### Session abstract:

Dance has existed for as long as man has existed - dance was arguably already practiced in the Palaeolithic, the earliest known examples coming from Palaeolithic European art such as the Addaura Cave on Sicily. The importance of dance to historical and pre-historical societies can be seen in its widespread iconographic visibility, both temporally and spatially. Beyond the aesthetic value of dance, it is also an important medium through which cultural principles are forged and communicated, via the visual, kinaesthetic, and aesthetic aspects of human movement. Dance can be a more effective medium than verbal language in revealing needs and desire and masking true intentions. These movements are structured systems of knowledge, and form visual manifestations of social relations, which in turn may assist in understanding the cultural values and structure of the society.

Through the study of dance, it is possible to see and understand how identities are marked, shaped and introduced. Styles of dance constitute social relations - changes in this transmission can help us ascertain the underlying ideologies which are attached to bodily movement and discourse. In this session we invite papers which explore archaeological manifestations of dance from any period or geographical area.



### Paper abstracts:

#### WHO IS A DANCER AND WHAT IS DANCE IN ANCIENT EGYPT?

Schachter Batyah, Hebrew University in Jerusalem (Israel)

Any attempt to define the notion of 'dance' and 'dancer' is fraught with difficulties; this is the case even today, when we come to examine dance that we can witness or execute. This renders the study of dance in ancient Egypt all the more problematic, since the only documentation we have about dance in ancient Egypt is only that of plastic representations; as such, defining the notions 'dance' and 'dancer' is largely a matter of speculation and interpretation. This is further complicated by the fact that the ancient Egyptian documentation of dance and dancers was not intended to record realistic information. Rather, it had to submit to clear rules of representation, presenting sufficient information for viewers to identify and recognize events known to them. The present paper will attempt to formulate a definition of dance, while describing the principles of ancient Egyptian representation of the body and movement; using these tools, I will try to provide an analysis of dance scenes in ancient Egyptian art.

#### THE IDENTIFICATION OF ROMAN TERRACOTTA FIGURINES FROM EGYPT AS DANCERS

Satama Manna, Dept. of Classical Philology, University of Helsinki (Finland)

When dancing and terracotta figurines are mentioned together, the famous Tanagara figurines usually come to mind. Among these, there are numerous examples of beautifully represented female figures whose dancing is indicated by the artful rendering of the folds of their garmens showing vivid movement. Thus, their identification as dancers is certain albeit the context of their dancing is under dispute.

Turning to Greco-Roman Egypt one encounters a different set of problems. Although Tanagra figurines – including dancers – were imported and produced in Egypt, mainly in Alexandria, the local, the so called Fayum-terracottas, are the topic of this paper.

The Fayum-terracottas show clear, distinctive traits that identify them as Egyptian manufacture, most notably the relatively coarse treatment of the surface (thick encope, broad brush of paint, back of the figurine usually unworked, etc.) and the "stiff" body postures, not to speak about the numerous examples of the native deities.

As the style is much more coarse than the Hellenistic Tanagaras show, the identification of some of the Fayum terracottas as representations of dancers is not unproblematic. The figurines titled as dancers show hardly any movement immediately recognizable by a modern eye. In this paper, I shall discuss the features that occur in the Egyptian dancer terracottas and the possible identification of the contexts of the dancers.

## **DANCE DATING IN THE OLD KINGDOM; FORMAL RULES, STEP 1: KNOW THY DANCES**

Kinney Lesley J., Macquarie University – Sydney (Australia)

Egypt's dance record is rich, indicating a diverse and sophisticated dance culture. In this paper I would like to present my working Typology for dance styles in Old Kingdom Egypt. Once genre classification is established, it is then possible to examine the chronological and geographic distribution of genres as an aid, amongst many, to establishing the dating of tombs in the Old Kingdom.

There are a number of fundamentals to consider when establishing a typology of dance genres for a culture existing in the remote past. First of all, the relevant primary evidence at hand comprises visual pictures of dance, or what we perceive to be dance, and some accompanying captions used to describe the scene contents. As much as we may be compiling a typology of dance genres we must also consider the possibility that we are merely classifying the various motifs employed by artists in representing dance, whether or not it reflected the actual nature of dance performed at the time.

Further, we must consider whether the images depict dance genres or different dance steps which could be employed in a number of different dance genres and contexts. Then there is the issue of which criteria should have priority in determining a classification. Should it be context, form, grouping of figures, or accompanying captions. The same dance forms appear in more than one context, some dances are made up of a number of different body forms and or groupings of dancers, terms used in captions may appear for different dance forms and the same form may appear in different contexts with the same term or a different term used to describe it.

Finally, how do we label genres? Some styles have terms applied to them traditionally by previous scholars, which may be labels according to the form of the dance, or the context in which it is performed, while other genres have labels which have been attributed to assumed origins or associations which may be misleading.

## **LET THE WARRIORS DANCE: A FIGURED CRATER FROM THRONOS/KEPHALA (ANCIENT SYBRITA) AND THE REPRESENTATION OF MALE DANCING GROUPS ON CRETE DURING THE DARK AGES**

D'Agata Anna Lucia, CNR/ICEVO – Roma (Italy)

Greek-Italian excavations, carried out in collaboration between CNR/Rome and KE' Ephoria, Chania, have confirmed the existence of a Dark Ages settlement on the hill of Thronos Kephala – usually identified with ancient Sybrita – on the south-west slopes of Mount Ida in west-central Crete. In 2002 excavation soundings in Building 3 on the northern plateau, where the settlement is located, have recovered a clay bell-krazer which displays what appears to be one of the earliest figured scenes of Greek vase painting.

During the Dark Ages, figured vases are known on Crete, as on the Mainland, in the course of the twelfth century BC. Later on, they appear at Knossos in the ninth century BC. The bell-krazer from Thronos/Kephala represents a novelty: it is earlier than the Knossian products, being assignable to the tenth century BC, and the scene depicted on it appears to be entirely new. It is the aim of this paper to present this outstanding document of Dark Ages Crete, whose analysis may help reconstructing some aspects of the mental attitude and social behaviour of a Cretan elite in the very centuries of formation of the early Greek society.

## **DIGGING AND DANCING: THE ARCHAEOLOGY OF PERFORMANCE. A CASE-STUDY FROM THE AMERICAN SOUTHWEST**

Halley Claire, Dept. of Archaeology, University of Cambridge (UK)

Using multiple lines of archaeological evidence from the pre-Chacoan (AD 500-850) and Chacoan (AD 850-1150) period in the American southwest this paper demonstrates the key role community dance activities had in forming and transforming Chacoan culture.

The material culture of Chacoan dance activities include the spaces created for performances and dance such as underground kivas, plaza areas, processional ways and 'great houses' together with the materials used to create auditory and visual impact e.g. costume, musical instruments, wands, pipes etc. In addition, representations of the conduct of dance are found in media such as rock art panels and ceramic design. These sources, together with modern ethnographic and indigenous knowledge from Pueblo groups including descriptions of dancing, photographs and drawings, are used to elucidate the experience and meaning of dance as a mechanism for enacting community relations.

This paper demonstrates how dance had a central and defining role in Chacoan culture influencing the construction of a unique architectural repertoire and providing dancers and audience alike with a shared sense of identity and a sensory experience of community.

## **CHALLENGING THE SILENT SOLITUDE OF THE NEOLITHIC**

May Sarah, English Heritage (UK)

Visitors to henge monuments are often encouraged to arrive early so that they can appreciate the monument without the crowds. Yet most interpretations describe them as ritual spaces, used for communal gathering. While many phenomenological approaches to these sites have emphasised the importance of movement, this is often framed in terms of procession. If we are to consider dance in these spaces we need to have a more lively sense of the past. We also need to consider sound propagation, and acoustic experience of being/dancing. In this paper I will consider how we came to see the Neolithic in such silent and still perspective and how a consideration of the acoustic environment clears space for dancing.

## **DANCING AT DEATH: DANCE AND FUNERARY RITES IN THE PREHISTORIC AEGEAN**

Aamont Christina, independent researcher (Greece)

Dance, as simply the movement of the body through time and space, is part of human movement and therefore of human biology and can be found in all cultures. Thus, dance can be a manifestation of the interaction between human beings and the external world. Dance is not only a way of expressing feelings but can also be used as a means of social control, to establish/reestablish order, as a way of relieving excess energy which otherwise may turn on the society itself, as a way of unifying society and encouraging solidarity, and as a vehicle through which identity is stated and maintained.

The association of dancing with funerary and post-funerary rites, suggested by the presence of dancing figurines in tombs in Minoan Crete and iconography, such as the Tanagra larnakes in Mycenaean Greece, indicate that dancing was part of these rites. This notion is further strengthened by the fact that in Minoan Crete places where dancing could have taken place were identified in connection with tombs.

The aim of this paper is to examine the association of dancing with funerary and post-funerary rites in Minoan Crete and Mycenaean Greece.

## **DANCERS' REPRESENTATIONS AND FUNCTION OF DANCE IN PRE-TANG CHINESE SOCIETY**

Zuchowska Marta, Institute of Archeology, Warsaw University (Poland)

In pre-Tang Chinese funeral art we can find multiple dancers' representations: jade plaques, clay and wood figurines, etc. These objects were frequently put into the nobles' graves with other figurines, representing different types of servants. Dancing activities' representations are also to be found among different scenes on the stone reliefs decorating some of the graves. In addition, this period's abundant literature supplies various possibilities of interpretation for these figurines and reliefs.

Were these just an answer for the necessity of court plays and entertainment in afterlife or they rather reflect a part of the complex rituals important during the life of tomb's occupant and, by consequence, indispensable for his existence after the death? If so, is it possible to go further and recognize particular rituals in represented scenes and/or figurines' intended functions in particular activities? These questions will find some possible answers in the present paper, which bases its conclusions on selected examples of iconographical sources and on literary evidence.



**F003**

**Session title:**

## **BURIAL IN PREHISTORY: OLD ISSUES AND NEW TECHNIQUES**

**Organiser:** Bacvarov Krum, Bulgarian Academy of Sciences (Bulgaria)

**Co-organiser:** Artin Gassia, Archéorient (France)

### **Session abstract:**

Burial has been considered in prehistoric archaeology as often as the everyday contexts and this is logical since death has always been a critical element of human life. Throughout the history of archaeology as a discipline, scientists have regularly explored various aspects of this field, from descriptions of excavated remains to assessments of archaeological bones to reconstructions of complicated mortuary practices and ritual behaviour. Research on burial archaeology gradually intensified and set off in separate directions, especially in the last few decades, forming well defined subfields and schools, depending on national scientific traditions as well as on local/regional and chronological variations. Human biology and chemistry contributed greatly to the Archaeology of Death yielding the new discipline of bioarchaeology and brand new and promising techniques of assessing human bones, ranging from stable isotopic studies to ancient DNA analysis.

This session's goal is to bring together mainstream archaeologists as well as bioarchaeologists and geneticists, from different research centres/schools who are currently working on aspects of prehistoric mortuary practices, to discuss their respective fields of expertise and to find similarities and distinctions both in their subjects and their approaches, to share their respective views on how these different approaches and techniques are to be combined and used together to construct new interpretative frameworks. The space and time framework of the session covers Europe and the Near East, from the Palaeolithic to the Iron Age.



### **Paper abstracts:**

#### **THE NEW CHRONOLOGY OF THE CEMETERY OF TLIA (TLI)**

Apakidze Joni, Sokhumi State University (Georgia)

The cemetery of Tlia is situated in the mountains of Shida Kartli (Georgia) in the valley of the Tliadon River near the watershed of the Black and Caspian Seas. The village of Tlia is at an elevation of 1500 meters and is surrounded by mountains. The burial ground has been laid out on the right slope of the gorge; at least 476 graves have been excavated thus far, occupying an area of ca. 1000 m<sup>2</sup>.

Five burial periods and seven sub-periods are differentiated. On this basis, the general development of material culture is considered as well as the different artefact types. For the absolute dating of the cemetery, the complete time of occupancy has been explored. Based on this new analysis, the author suggests that the cemetery of Tlia dates between the second half of the 14th and the first half of the 6th century BC.

Between burial periods I and II, a gap of two centuries have been detected, which has already been mentioned by A. Pruß. The smaller amount of graves during Tlia 1 (21 graves) does not allow to fix the exact duration of this period, but from the mid-13th century BC onwards, the burial activity at Tlia stopped. The necropolis came in use again as late as the mid-11th century. During this time the Colchian culture completely covered the northern part of Shida Kartli.

#### **THE CHALCOLITHIC NECROPOLIS OF BYBLOS: A NEW METHODOLOGICAL APPROACH AND INTERPRETATION**

Artin Gassia, Archéorient (France)

Excavated by Maurice Dunand between 1925 and 1973, Byblos represents a key site for the study of the Chalcolithic in the central and northern Levant. Besides being the largest and most thoroughly excavated site (almost 70 per cent of the site has been excavated), the settlement of Byblos features a variety of architecture monuments – such as dwellings, silos and paved roads – and an exceptionally rich and varied series of burials and grave artefacts (2097 tombs in total including 2059 jar burials with 3652 objects).

Despite the remarkable quality of the funerary assemblage and of the abundance of data collected during the

excavations, the necropolis remains relatively unknown. Only 24% of the burials have been described in publications.

In this presentation, we focus on the analyses and the hypotheses of the unpublished documentary sources. Our work involves a detailed geospatial analysis of the evolution of the necropolis in relation to the associated settlement. This involves a systematic and comprehensive study of the funerary context, human remains, and grave goods. These results suggest multiple phases of inhumation and show the development of both the necropolis and the settlement of Byblos throughout the Chalcolithic period.

## **THE EILAT BURIAL GROUND AND THE DESERT PERCEPTION OF LIFE AND DEATH**

Avner Uzi, BGU & the Arava Institute (Israel)

The burial site on the western fringe of Eilat, by the of the Gulf of Aqaba, was excavated before the construction of a new neighborhood. It contained several simple graves for individual primary interments, 22 well-built *tumuli* tombs for permanent secondary burials for families, two open-air sanctuaries and several additional installations. Despite the fact that all tombs were either robbed in antiquity or damaged in recent times, the tombs were still rich with artifacts, some of which were imported from Mesopotamia and Anatolia, while others indicated connections with southern Jordan and Arabia. The finds and ten 14C dates determined the site was Late Neolithic and Early Chalcolithic (ca. 5450-4250 BC). The site also provided several intriguing features such as pairs of standing stones or *masseboth*, set on the eastern side of the tombs and facing east; standing stones within the tombs facing north; a stone installation containing the remains of a Juniper tree trunk which served as a sacred tree (the biblical *Asherah*); tens of hearths around the tombs used for sacred meals shared by the families and the dead, and other intriguing installations. One open sanctuary was anthropomorphic in design and contained a group of 99 small standing stones.

Following the excavation and before construction of the new neighborhood, nine *tumuli* tombs, the two open air sanctuaries and other installations were moved and restored at the western end of the site and protected by fence.

## **COMPLETE OR INCOMPLETE: A BIOARCHAEOLOGICAL STUDY OF EBA JAR BURIALS FROM BULGARIAN THRACE**

Bacvarov Krum, Bulgarian Academy of Sciences (Bulgaria); McSweeney Kathleen, University of Edinburgh (UK)

Based on the analysis of completeness/incompleteness of a baby skeletons' sample coming from Early Bronze Age jar burials from Bulgarian Thrace as well as of the selectiveness in burying only certain bones or body parts – which is suggestive of a secondary or delayed burial – or the opposite, of adding bones from other individual to otherwise complete baby's body, it seems that some of the dead babies have been deemed somewhat 'not finished' and therefore needed more time to become 'complete'. This is why they had to be buried beneath the house floor or near the house, in pottery containers that 'transformed the raw into something cooked', and thus the babies could be born again, in the same place and maybe of the same mother. However, this 'incompleteness' is only one of the possibly inconsistent symbolic layers that could be 'recovered' from the jar burial tradition, in which the ritual itself and its practicing maybe occupied the central place, whereas its interpretive framework had developed secondarily.

## **MORTUARY PRACTICES IN ISRAEL'S COASTAL PLAIN DURING EARLY BRONZE AGE 1B AND THEIR SOCIAL IMPLICATIONS**

Ben Ari Nathan, Tel Aviv University (Israel)

The transition from the EB 1A to EB 1B was characterized by drastic changes, such as the growth in the number of proto-urban settlements and burial sites in the southern Levant, contrary to the following EB 2 period that was characterized by fewer urban settlements and scarcity of burial sites. Albeit the numerous studies done over the years that shed light on many aspects of the EB 1 culture, the social organization of this proto-urban period is still quite enigmatic. Furthermore, though mortuary practices importance in understanding the social organization of this period, no such research thoroughly dealing with the subject has been conducted, leaving a major gap in the southern Levant archaeological research.

Focusing on Israel's coastal plain from Ras Nakura in the North to the Gaza Strip in the South, the paper aims to

primarily fill in this gap and to characterize EB 1 mortuary practices by building a mortuary database which will be the basis for the reassessment of EB 1 social organization as it is reflected in these practices.

### **THE LBK LIFEWAYS PROJECT: STABLE ISOTOPES AND NEOLITHIC BURIAL**

Bickle Penny, Whittle Alasdair, Cardiff University (UK); Hedges Robert, Hofmann Daniela, Reynard Linda, Oxford University (UK); Bentley Alexander, Graham Pearson, Durham University (UK)

The study of prehistoric burials is classically concerned with themes surrounding how a past population is defined, whether this is in terms of demographic or social organisation. However, in practice this encompasses a wide range of different scientific and archaeological studies that can prove difficult to integrate successfully. In September 2008 a three year project was started by the Universities of Cardiff, Durham and Oxford, which will combine detailed stable isotope studies of human remains from the *Linearbandkeramik* (LBK, 5600–4900 cal BC, Central and Western Europe) with their mortuary context. With the support of the *Art and Humanities Research Council* UK, it will be the first time such a large sample has been investigated for a range of different stable isotopes (strontium, carbon, nitrogen, calcium and oxygen). Despite its significant temporal and geographic spread, mortuary studies of the LBK have produced a rather uniform view of the communities of which this culture is comprised. The main aims of this project are to use the isotopic results to explore patterns of diet, health and movement to facilitate the investigation of diverse lifeways. By also seeking to integrate these results with more traditional burial studies, we aim to fully situate the isotopic results within the archaeological context. Thus we not only hope to develop our understanding of the various different LBK lifeways through considering both settlement and cemetery burials, but also to demonstrate that scientific analysis can be successfully used to expand our knowledge of the past.

### **HOLOCENE FUNERARY PRACTICES IN THE ACACUS MTS. (CENTRAL SAHARA, LIBYA). A LANDSCAPE APPROACH**

Di Lernia Savino, Tafuri Mary Anne, University “La Sapienza” - Roma (Italy)

Recent excavations carried out at Takarkori, a rockshelter in the Libyan Acacus Mts. near the southern border with Algeria, provided fresh information on Holocene funerary practices in the central Sahara. During the 2003-2006 excavations, fifteen burials belonging to women, juveniles and children (no adult males were found) with different features were unearthed, radiocarbon dated between approximately 8000 and 4500 uncalibrated years before present. Further research in the vicinity of the site, revealed the presence of stone tumuli belonging to the Late Pastoral (5000-3500 bp) and added new data on the use of this landscape. The integration of archaeological data, palaeoanthropological studies and isotope data gave us a vivid picture of the social changes occurred in the region across the millennia. The transition(s) from Late Acacus hunter-gatherers to Pastoral Neolithic herders could be related to major changes in food security, mobility, social organization, and kinship. This contribution will discuss this new set of information (palaeoanthropology, C14 determinations, stable isotopes analyses). The comparison between old and new data will reveal the important shifts in the use of landscape and locations across the Holocene, with a particular emphasis on the role of rockshelters within mobile societies.

### **GIS AND THE ARCHAEOLOGY OF DEATH: AN APPLICATION ANALYSIS TO ITALIAN UPPER PALAEOOLITHIC AND MESOLITHIC MORTUARY PRACTICE**

Gazzoni Valentina, Scoz Luca, Fontana Federica, University of Ferrara (Italy)

Starting from the principle according to which funerary practice is the product of the interaction of several factors (symbolic, social, environmental), this research aims at developing a platform for the description of ritual variability and the tracing of possible inferences on the social organisation of hunter-gatherers groups. The application of this method implies the adoption of a classification system for the analysis of the variables of funerary practise in order to facilitate the comprehension and interpretation of this dynamic phenomenon, undergoing to transformations both on a diachronic and a geographic scale; at the same time this system should facilitate keeping the dimension of uniqueness of the funerary ritual as a product of the symbolic sphere of human groups.

Through the development of a multi-relational *database* within a GIS we therefore propose an application case to a sample of burials of the Upper Palaeolithic and the Mesolithic of the Italian peninsula (for a total of 20 sites and 77 inhumations). The classification basis of the *database* develops within a related table system according to two different levels of analysis, one represented by the single inhumation which is described by its chrono-stratigraphic context, the results of anthropological analyses and the specificity of the burial ritual (structure, deposition, use of pigments, *parure*, grave goods and food offerings), the other one by the descriptive features of the site which contains it.

## **INFANT BURIAL PRACTICES ON THE GREAT HUNGARIAN PLAIN: EVIDENCE FROM TWO EARLY COPPER AGE SETTLEMENTS**

Giblin Julia Irene, Ohio State University (USA)

The transition to the Early Copper Age on the Great Hungarian Plain is marked by both breaks and continuity with earlier Neolithic traditions. Mortuary practices in this region indicate that while new patterns emerged at this time (such as the use of large, isolated cemeteries), traditional practices were retained as well (such as the burial of the dead in and around abandoned areas of settlements). Much of our information about this Late Neolithic-Early Copper Age transition has come from the excavation of Neolithic tell sites and Copper Age cemeteries due to a lack of excavated Early Copper Age settlements. New mortuary data from two early Copper Age settlements, Vésztő-Bikeri and Körösladány-Bikeri, support growing evidence throughout Central and southeastern Europe for the symbolic use of infant burials in early farming societies. From these two sites, one adult male and four infants from the Early Copper Age were excavated. Two of these infants were found side by side and placed underneath Early Copper Age (Tiszapolgár culture) ceramic vessels. This mortuary custom had not been previously identified in Late Neolithic or Early Copper Age cultures from the Tisza region; however, evidence for infant jar burials throughout the Balkans and the Levant may indicate that this practice is a carry over from earlier Neolithic traditions.

## **CYCLES OF LIFE AND DEATH AT NEOLITHIC TELL HALULA, SYRIA**

Guerrero Emma, Ian Kuijt, University of Notre Dame - Indiana (USA); Schurr Mark, Molist Miquel, Universitat Autònoma de Barcelona (Spain)

The study of Near Eastern Neolithic villages provides a unique means of tracing the emergence of social inequality. Drawing upon mortuary data from Tell Halula, Syria, we develop new understandings of mortuary practices, looking at these as means by which individual and household social memory and identity were constantly reaffirmed and transformed. All the 114 burials identified from 16 Pre-Pottery Neolithic houses, reflecting residential continuity over several hundred years, were recovered from sub-floor pits inside of the houses. Each of these burials is a primary individual interment. Differences in the amount and variability of the goods associated with burials, especially between adult and children, and the placement of those burials illustrate the gradual emergence of households and new forms of household leadership. Unravelling these patterns, however, requires a detailed understanding of the chronological placement of individual burials and houses. In this study we employ fluoride analysis to determine the phasing of individual households at Halula, and then integrate these with household and community scale models. Our preliminary analysis focuses on 40 dental samples from 28 human burials. The fluoride dating method, applied here for the first time on a Neolithic Near East case study, complements radiocarbon dating and helps us to separate our samples in two main chronological periods. Our results corroborate the hypothesis that the occupation at Halula extends from the Middle to the Late PPNB periods, and that with the onset of the LPPNB there was a significant increase in the use of burial goods among adults.

## **A SHIFT IN BURIAL CUSTOMS. A THEORETICAL PERSPECTIVE ON THE SOCIOECONOMIC SIGNIFICANCE OF ANCIENT INTRAMURAL FUNERARY DEPOSITIONS**

Laneri Nicola, Istituto Italiano per l'Africa e l'Oriente (Italy)

Funerary rituals in ancient societies have been widely analysed by archaeologists using different epistemological trajectories that have embraced both cultural-historical and socioeconomic perspectives. In so doing, the focus of funerary studies has been mostly concerned with specific burial customs and less with the dynamic process encountered in the changes of burial practices of given societies (e.g., from extramural to intramural depositions). Within this perspective, synchronic analyses of burial customs have overcome those oriented to define a diachronic approach in the relationship between changes in burial customs and transformation in the community's social organization. This lack of theoretical approach is particularly evident when archaeologists face a change in the disposal of buried corpses from extramural to intramural depositions. More specifically, recent studies have demonstrated that this type of transformation in burial customs often occurs when the role of emerging families is evident in the archaeological record of complex societies.

Thus, in this paper I will focus my attention on defining a general theoretical framework to be used in the analysis of the appearance of intramural funerary depositions in ancient complex societies. In so doing, I will compare two case-studies using a diachronic perspective (i.e., the Bronze Age Argaric societies in southeastern Spain and the Bronze Age societies in Mesopotamia) in order to further elucidate that the passage from extramural to intramural funerary depositions supports a higher socio-economic role played by emerging families in the community's social organization.

### **DIETARY PRACTICES OF NEOLITHIC COASTAL POPULATIONS IN LIGURIA (ITALY): NEW STABLE ISOTOPE DATA**

Le Bras-Goude Gwenaëlle, CNRS, Université Bordeaux 1, (France); Mannino Marcello A., Max Planck Institute for Human Evolution (Germany); De Pascale Andrea, Museo Archeologico del Finale - IISL (Italy); Starnini Elisabetta, Soprintendenza per i Beni Archeologici della Liguria (Italy); Biagi Paolo, University "Cà Foscari" - Venezia (Italy); Tafuri Mary Anne, University "La Sapienza" - Roma (Italy); Richards Michael P., Planck Max Institute for Human Evolution (Germany)

This paper presents the results of a palaeodietary study based on the stable isotope analysis of bone collagen of coastal Middle Neolithic humans from Liguria (Italy). The osteological material comes from burials and habitation deposits at four sites located in the area of Finale Ligure (Savona). The bones belong to individuals of the Square Mouthed Pottery culture, a well-documented Neolithic culture in Ligurian cave deposits dating to the first half of the 5th millennium B.C. In order to reconstruct the dietary practices of these agro-pastoralists, stable isotope ( $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ ) analyses have been carried out on bulk collagen samples from 31 human and 42 associated animal bones. This method provides data on the consumption of dietary protein at the individual level, on the environments exploited by humans (e.g. marine vs. terrestrial) and on the position of a human or animal within the trophic web, allowing carnivores to be distinguished from herbivores. New data on the diet and social behaviour of Neolithic humans from Liguria, as well as on their exploitation of the local environment, will be presented. The isotope results will be interpreted in relation to other archaeological and anthropological data (e.g. data on subsistence strategies and funerary practices, and on the sex and age of the analysed individuals), and compared to results from previous isotope studies on human and animal bones from contiguous areas of Liguria and Provence (France).

### **IDENTIFICATION OF TWINS IN PREHISTORIC POPULATIONS: AN EXAMPLE FROM KHIROKITIA (CYPRUS, VIII TH MILL. BC)**

Le Mort Françoise, CNRS Maison de l'Orient et de la Méditerranée (France); Tillier Anne-Marie, CNRS, Université Bordeaux 1 (France)

Identification of twins in skeletal populations is a challenge. Recently developed tools such as ancient DNA analysis might be of great help. Nevertheless, when ancient DNA is not preserved, which is a frequent condition in prehistoric populations, especially in the Near East, identification of twins depends on data regarding biological features of the deceased and funerary gestures.

At the Pre-Pottery Neolithic site of Khirokitia (Cyprus, VIII th mill. BC), many burials, among which more than 100 infant burials, were discovered. The burials pits were dug into the floors of houses while those houses were occupied. The infant burials, as well as the child and adult ones, are single. There is one exception, represented by a pit in which the remains of two perinates were buried together. According to the uniqueness of this double burial and to the biological features of the two individuals, the hypothesis of twins can be put forward.

### **THE POWER OF DIFFERENCE. MORTUARY PRACTICES AND IDEOLOGY IN NEOLITHIC SARDINIA**

Losi Simona, University College London (UK)

Despite its rich mortuary record, Neolithic Sardinia is conspicuously absent from current discussions on the role of ritual in prehistoric island societies. The study of *domus de janas*, the local late Neolithic rock cut tombs, has exclusively focused on the typological, technological and chronological definition of their architecture and material symbolism. Drawing from theories of social action, this paper proposes a practice-oriented interpretation of the monuments' social significance. The material remains of ritual participation and performance are considered as crucial elements in the understanding of the *domus*' role in the promotion of dominant ideologies and in the negotiation of power relations. The presence of over two thousand Neolithic rock cut tombs also offers an opportunity to reflect on the island's intense and long-term investment in ritualisation, and on the interplay between domestic and ritual domains overtly played out in its burial complexes. Sardinia's cultural distinctiveness is thus perceived as a deliberate and conscious expression of local identities in the context of historically contextualized island-based social dynamics.

### **PERSONIFYING HOUSES: NEOLITHIC INTRAMURAL BURIALS AND THEIR VISUAL MANIFESTATION ON ANTHROPOMORPHIC HOUSE MODELS**

Naumov Goce, University of Skopje (Republic of Macedonia)



The inhumations and cremations performed within settlements provide majority of data related to Neolithic burials found in southeast Europe and Anatolia. Precisely this ritual pattern induces many discussions about the causes for choosing this space as preferred place for burials. At numerous sites, the deceased, mostly infants and females, were laid inside or around dwellings. Despite the burying of population majority in necropolises, the practice of intramural inhumations in the Neolithic suggests that, due to certain motives, there was a selection of 'privileged' deceased individuals to be buried within the dwellings. The disposition of their bodies or their remains within the dwellings, especially beside or inside walls, ovens and vessels, was also reflected in the understanding and production of several types of objects developed also as visual manifestation of this ritual concept. Namely, within Neolithic settlements in the Republic of Macedonia, anthropomorphic models of houses were very often found; they could be considered as objects incorporated in symbolic relation with the cognitive processes defining the death among the Neolithic communities in the Balkans. In this context, even anthropomorphic models of ovens and vessels from Greece, Bulgaria, Serbia, and Romania might be included; beside their involvement in the complex principles of visual culture, they were also related to the Neolithic notion of death.

### **CHALCOLITHIC SECONDARY DEPOSITION FESTIVITIES: THE CASE OF HORVAT QARQAR SOUTH, ISRAEL**

Scheffelowitz Naama, Gilead Isaac, Ben Gurion University (Israel); Fabian Peter, Israel Antiquities Authority (Israel)

A dense cluster of over 60 Ghassulian burial caves was exposed in Horvat Qarqar South, ca. 3 km south of Qiryat Gat, in southern Israel. The site was excavated by Peter Fabian and Isaac Gilead. The results of the dig contribute significantly towards a better understanding of the practice of secondary disposal of the dead that characterize the Ghassulian culture of the Chalcolithic (ca. 4,500-4,000 BC cal). The Horvat Qarqar South cemetery is made up of natural caves in the chalky bedrock that were adapted to human needs. Although partially destroyed by heavy machinery, the site is still the largest of its kind. It is rich in burial containers, and exhibits the most pronounced intra-site variability known among such cemeteries. Our pilot study confirms that the caves differ significantly in terms of the burial containers and offerings.

A detailed study of all artifacts from several caves is already being carried out with special reference to offerings, burial containers and human remains. Since the contents of individual caves differ significantly, patterns of intra- and inter-cave variability can be discerned and interpreted in terms of burial festivities.

The data obtained is used to reconstruct the ritualistic sequences of secondary burial in different caves. Broader issues of burial customs and secondary disposal festivities will be addressed in the synthesis. The significance of the research is in its potential to demonstrate that the social and ritual facets of fifth millennium societies are more variable and flexible than previously suggested.

### **BURIALS OF BRONZE AGE EURASIAN STEPPE NOMADS: NEW VERSION OF OLD FUNERAL TRADITION**

Shishlina Natalia, State Historical Museum (Russia)

The Eurasian Steppes is the area where many cultural traditions formed and developed. Studies of burials of multicultural groups are still relevant. New data combined with results of number of new methods and approaches may enable us to discover new knowledge about life style and life ways of pastoral nomads.

The examples of reconstruction of invisible archaeological details of funeral rites will be discussed (pillows under the skulls of the skeletons; mats on the bottom and walls of the graves obtained through the phytolith and pollen analysis); the identification of role of plants in the funeral rituals (obtained through phytolith and pollen analysis); reconstruction of last food, funeral food and main components of diet (obtained through phytolith and pollen analysis as well as from stable isotopic studies) and seasonality of the graves (analyses of dentum and cementum of animal and human teeth as well as pollen analysis of a specific archaeological context) will be provided.

We even can make 'stories' about some individuals whose burials have been investigated through new techniques. Results of application of different approaches to several graves of kurgans from Rostov area, Russia, will be provided.

### **POST-FUNERAL MANIPULATION WITH THE DEAD IN THE EARLY BRONZE AGE**

Sosna Daniel, Sládek Vladimír, Galeta Patrik, University of West Bohemia (Czech Republic)

Early Bronze Age cemeteries in Central Europe often contain substantial number of graves that were disturbed. Evidence of shafts and disturbed burial contents show that people were intentionally re-opening these graves for

reasons that still remain unclear. Various interpretations such as secondary mortuary practices, burial of additional individuals, ancestral worship, protection from evil, robbing focused on valuable metal artifacts, and ritual devastation were suggested in literature.

Our study takes advantage of the data from Early Bronze Age cemeteries in the Czech Republic to tackle this issue. First, we establish a conceptual framework for understanding the post-funeral disturbances. Second, we specify archaeologically traceable expectations for different activities that might have been responsible for burial disturbances. These expectations build upon standard archaeological and bioarchaeological data. Third, we test these expectations against the archaeological record and interpret the results of our analyses.

### **STABLE ISOTOPE ANALYSIS AND DIETARY PRACTICES IN BRONZE AGE ITALY**

Tafuri Mary Anne, University "La Sapienza" - Roma (Italy); Craig Oliver E., University of York (UK); Canci Alessandro, University of Udine (Italy)

Through this study we explored the contribution of plant foods to the diet of human groups in prehistoric Italy and examined any dietary differences between and within sites investigated. Stable carbon and nitrogen isotope analysis was carried out on human and animal bones from four inland Early and Middle Bronze Age sites in northern and southern Italy. At two of the sites in northern Italy, human and animal bones were significantly enriched in  $^{13}\text{C}$ . This finding was attributed to the consumption of domestic millets (*Panicum miliaceum* and/or *Setaria italica*), among the few C4 pathway plants documented in Europe. Conversely, individuals from the two Bronze Age sites in southern Italy were significantly depleted in  $^{13}\text{C}$  compared to those from the north, highlighting the importance of cereal cultivation, most likely of wheat and barley, in the south of Italy during the Bronze Age. Overall, our results support the idea that the widespread cultivation of millet first occurred in northern Italy, following its introduction from across the Alps in Central Europe, at an early stage in the prehistory of the Peninsula. Intra-site analysis demonstrated no significant differences in the stable isotope values between individuals at each site, when grouped by their sex or presence of grave goods. This leads to the conclusion that any status difference that may have existed is not reflected in the long-term dietary record.

### **THE FUNERARY COMPLEXES OF THE CERNY CULTURE (MIDDLE NEOLITHIC): VARIABILITY OF THE BURIAL PRACTICES IN THE COHERENT CHRONO-CULTURAL CONTEXT OF THE FIRST NECROPOLIS IN THE PARISIAN BASIN (FRANCE)**

Thomas Aline, Murail Pascal, Université Bordeaux 1 (France); Chambon Philippe, CNRS, Maison de l'Archéologie et de l'Ethnologie (France)

Due to its geographical position on the south-eastern periphery of the Parisian basin, the Cerny culture (4600-4300 BC) presents a privileged point to study the economic and social transformations which occurred in Middle Neolithic society. In particular, the first funerary monuments are erected for a minor part of the society. Thus, it is well-known that the Cerny culture progressively evolved into a hierarchical social organization.

Nevertheless the biological component of the Cerny population has been overlooked until now. Here, we propose a new and complementary view of the Cerny culture *via* a systematic bioarchaeological approach (i.e.: biology *versus* archaeological data). We apply to the whole Cerny population a common protocol involving recent paleoanthropological methods. In this way, reliable comparison between the different funeral clusters is now possible.

These results provide crucial keys of knowledge to discuss the profile of these individuals who seem to have a specific status in the society. For instance, we show that particular grave goods are specifically associated to male adults. Furthermore, an *intra*- and *inter*-site population approach underlines variability in the mortuary practices. Depending on the sites, our paleodemographic data highlights different patterns of population selections related to either the age or the sex. Moreover, the spatial organization based on biological identity of the dead does not seem to follow the same rules in all the sites.

To sum up, this bioarchaeological approach emphasizes a complex pattern of the burial practices of the Cerny culture despite an apparent homogeneous chrono-cultural context.

### **REDISCOVERING THE URNFIELDS: THE INTEGRATION AND CONTRIBUTION OF CREMATION STUDIES TO ARCHAEOLOGICAL RESEARCH**

Thomas Jayne-Leigh, University of Edinburgh (UK)

While often discarded, ignored, or considered an invaluable archaeological resource, cremated remains have the potential to provide archaeologists with information regarding regional demography, pyre technology, burial rituals, and social rites that otherwise would not be obtainable. Despite present day cremation studies having been developed during the early 20th century, the osteological analyses of burned remains was not widely adopted until recently, and in many cases, is still not incorporated into archaeological site analyses. It was generally thought that little to no information could be obtained from cremated remains, and in many certain situations, funding was not made available for an osteological study. The development of recognized value and study of cremated remains has been stimulated by the establishment of proper methods of analysis and the increased awareness of the varying characteristics the bones exhibit after having been exposed to firing.

During the Late Bronze/Early Iron Age, cremation was the primary method of disposing of deceased individuals throughout central and southern Europe. Individuals would be placed on a pyre, cremated, and then the remains would be placed into an urn before being buried in a field. Within Slovenia, funerary urns containing burned remains have been discovered near settlement sites in the Drava River Basin. Remains from three LIA/EIA sites have been the focus of a recent osteological study which has revealed new mortuary information and will aid future research regarding the demography of prehistoric populations within Slovenia and Central Europe.

### **BANJO BABES**

Tracey Justine, University of Reading (UK)

During the 1970s the construction of a motorway revealed several prehistoric monuments which lay in its path, one of which was a Middle Iron Age (c. 450 BC) banjo enclosure at Micheldever in Hampshire (UK). Rescue excavations exposed a partial sub-circular enclosure (0.2 ha) with a 164m long ditch and external bank.

This was the final resting place of fifteen (15) inhumations, thirteen (13) of which were reported as child burials with other fragments of human remains. The original site report concentrated on the banjo's occupational evidence and possible function(s) rather than the burials, despite briefly noting the high percentage of child burials.

As part of a wider study of Iron Age burials, this paper concentrates on the banjo enclosure's human remains with a new osteological analysis, combining forensic taphonomy and anthropology, to better understand the burial practices on this site. This re-evaluation shows that the banjo was the deposition site of no less than thirteen 8 to 10 month old infants, which were interred in multiples of 2s and 3s, within the same depositional context and stratigraphic layer.

Based on ongoing research which re-evaluates old excavation reports and curated collections of human remains, this paper in particular examines issues related to prehistoric infant mortality, such as health and disease, infanticide, and sacrificial offerings. It presents a new analysis of this British prehistoric site, emphasising the burials rather than the previous concentration on the site's theoretical functional role.

### **FUNERARY PRACTICES IN THE EARLY BRONZE AGE CITY OF TELL BEYDAR-NABADA (SYRIA)**

Van der Stede Véronique, Université Libre de Bruxelles (Belgium)

The Syro-European Archaeological Joint Mission at Tell Beydar is organised by the European Centre for Upper Mesopotamian Studies and the General-Directory of Antiquities and Museums of Syria. Since the first excavation campaign in 1992, eighty-two graves were found in different parts of this urban site dating back to the 3rd millennium B.C and located in the Upper Syrian Jezirah. The aim of this paper is to present the results of the study of these graves.

### **BIOARCHAEOLOGY AND PERSONAL LIFE HISTORIES OF THE LBK COMMUNITY AT VEDROVICE, CZECH REPUBLIC AND IN CENTRAL EUROPE**

Zvelebil Marek, Pettitt Paul, University of Sheffield (UK)

The LBK settlement and associated cemetery at Vedrovice, Moravia, was occupied throughout the 53rd century BC. Falling just outside the core area of formation of the LBK, and slightly after the period of its initial expansion, it is particularly pertinent to the first main phase of spread of LBK into Central Europe. In order to reconstruct individual life biographies from this early agricultural hamlet, we undertook an international collaborative project employing several analytical techniques on the skeletons, namely physical anthropology & palaeopathology; AMS radiocarbon dating; DNA sequencing; stable isotope dietary analysis; strontium and lead analyses; and dental microwear studies. We were surprised at the extent to which the synergy of results allowed us to reconstruct life

biographies from people who lived in the early Neolithic. We present our final major results, including in- and out-migration, heritage, and differences in health, diet, and status. The results show that this Early Neolithic gateway community was socially complex in its derivation, organisation, and world view.



F004

Session title:

## DECODING RITUALS FROM VISUAL REPRESENTATIONS

**Organiser:** Lindström Torill Christine, Dept. of Psychosocial Science, Faculty of Psychology, University of Bergen (Norway)

### Session abstract:

Our knowledge of rituals, both from prehistoric and historical times, is largely based on various kinds of visual representations, or what we believe to be such representations. Actually, to identify a representation as referring to ritual is in itself an interpretative act, often based on analogies from other archaeological and anthropological research and from projections of our own personal or cultural associations, ideas, and traditions of rituals. Perhaps archaeologists have a general tendency to “see” traces of rituals in artefacts, sites, and visual representations that actually are quite ambiguous and render several, or multiple, interpretations possible.

Similar processes influence the further, deeper and detailed deconstructions and interpretations of the visual representations. Several questions are vital: How do we identify the relevant data? How do we label them? How do we deconstruct and decipher them: what theories and analytical tools do we use? Are semiotics/semiology useful tools in decoding symbols? What kinds of comparisons and analogies are relevant? Finally, how do we deal with theoretical issues?

This session invites contributions regarding visual culture from all periods: Prehistoric, Classical, and Medieval.



### Paper abstracts:

#### FASHION OR FUNCTION? POSSIBLE DRESS-CODES IN THE GREAT FRESCO OF THE VILLA DEI MISTERI, POMPEII

Lindström Torill Christine, Dept. of Psychosocial Science, Faculty of Psychology, University of Bergen (Norway)

The Great Fresco of the Villa dei Misteri in Pompeii has been given numerous interpretations. The interpretations have been mainly connected to the behaviour of the figures in the fresco, the total composition, and the fresco's visual references to Dionysiac mythology and rites. However, the fresco seems to contain data-sources that still are poorly explored, in particular possible semiotic elements. In the fresco, certain colours and colour-combinations can be found in the figures' clothes and other textiles. This may simply be due to aesthetic reasons. However, I suggest that it is possible that particular symbolic colours and dress-codes may be hinted at, or even spelled out. As fixed dress-codes and colour-symbolism have characteristic functions in religious societies and rites, these findings may have relevance for the interpretation of the fresco. In this paper I relate the dress-codes in the fresco to other information about Dionysiac congregations (*thiasoi*).

Key words: Villa dei Misteri, semiotics, symbolic colours, dress-codes, religious societies

#### RED OCHRE GRAVES IN FINLAND – RETHINKING THE BURIAL RITUALS

Mustonen Riikka, Dept. of Archaeology, National Board of Antiquities - Helsinki (Finland)

Until the 1950's no Stone Age graves were known from Finland. This changed in the following years when a red ochre burial ground was found in Honkilahti Kolmhaara. After this archaeologists found “red ochre graves” everywhere. When the worst hype was over a more critical approach was introduced.

The biggest problem in studying the Stone Age burials of Finland is that usually there are no remains of the body to be found. The analysis of the burial ritual has to be made on the basis of the red ochre, the grave goods and other relating phenomena such as signs of fire, other colorations on the soil etc.

The red ochre graves of the Stone Age Finland have been characterized as inhumations in grave pits that sometimes include grave goods. Some artefacts and the rock paintings of the same period have led to the belief that the religion of that time was shamanistic and therefore the knowledge of the shamanistic people from the historic times has been used to explain the burial rituals.

Lately there have been new findings that do not fit the previously drawn picture of burial practice. Some of the findings have been dismissed as exceptions to the rule but it has also been accepted that our current perception needs to be reconsidered properly. This is a good time to think what are our interpretations based on.



### **HELLENISTIC TOTENMAHL-SCENES. A REPRESENTATION IN THE REALM OF DEATH OR OF LIFE?**

Karlsson Sandra, Dept. of Historical Studies, University of Gothenburg (Sweden)

Images and inscriptions on Hellenistic tombstones from western Asia Minor are an abundant source to social studies. It is a mistake to believe that this kind of material culture only can be studied from a traditional art historical point of view. Pictorial evidence like these is to a big extent part of, and interacting with, its immediate physical surroundings and cannot be studied in isolation from its funerary context. Thus we need to “adopt” archaeological methods and perspectives to give full justice to a study on this kind of material. For instance, how were the family burials designed and what does this tell us about the potential viewer? We also need to consider the burial as a genealogical manifestation in the landscape and as a family memorial. Did the monuments contribute to the reshaping and maintenance of memories of family members that had been long time dead?

Just as important as the surrounding landscape, is the process behind the creation of these tombstones. It is very unsatisfying to look at the material in isolation from those that created it and the mechanisms (e.g. work shops, purchasers, etc.) behind its production. Who was the producer of the monument, that is to say, under what circumstances were the images on the tombstones manufactured? Were they commissioned works or mass production? If we do not deal with these questions we will never be able to fully understand the underlying civic ideology. In themselves, the pictures and inscriptions only give us utterly limited information on these concerns. By tracking the artifacts down, beginning with the moment they were cut out of the rock through their production, and the erecting of the monuments, and their time in use until their abandonment, we will be able to get a more vivid picture of the social and cultural factors that shaped their ideological expressions.

### **FUNERARY GLOBES AS BURIAL SYMBOLS IN SCANDINAVIA – BASED ON AN ETRUSCAN IDEA?**

Biwall Anders, Dep. of Archaeological Excavations, Swedish National Heritage Board, (Sweden)

Objects shaped out of stone are frequently found within or adjacent to graves, placed as a markers and monuments for the dead, such as for example in prehistoric times erected monoliths, picture - and rune stones or headstones placed on graves during historic times. These stones act as some kind of symbol or provide information about the buried person.

In this paper I will present and discuss a specific kind of stone objects which can be found in some Nordic countries, particularly in Sweden, and which have been dated to the period from the latter part of the Roman Iron Age until the end of the migration period. The stone objects are so called grave orbs or funerary globes which are placed in the tomb (stone setting, or grave mound) in connection to the dead and their burial gifts. These stone globes can vary in size from 0,2 meter in diameter and upwards and a few of them are decorated.

My main area of study includes the eastern part of Sweden with focus on the Mälardalen region and the island of Gotland. The research material includes information from 30 to 40 grave fields.

Up to now the reason for why the dead were presented with these orbs in the tomb has not yet been clearly understood. However, there exist a number of theories. The here presented study shows that it was mainly female graves which contained this type of stone.

### **GRAVES AND BURIAL RITUALS IN A DOMINICAN CONVENT**

Menander Hanna, Riksantikvarieämbetet - Linköping (Sweden)

In the 13<sup>th</sup> century the idea of the purifying purgatory was developed by the Catholic Church. People's requiems and prayers for the dead were thought to make the penance easier and hopefully shorten time in the purgatory. Wealthy people founded altars and could through their last will and testament ensure themselves that masses were to be read over their souls. In this aspect, monasteries and convents became important burial grounds.

Recently, more than 200 medieval graves have been excavated at the site of the Dominican convent St. Olof in the town of Skänninge in Östergötland, Sweden. Men, women and children were buried here, without grave goods and in most cases also without coffin. This presentation is based on analyzes carried out within my thesis, in which I discuss how new methods and studies of an, in many ways, homogenous burial custom can contribute to a wider understanding of the different events taking place at a burial. The presentation will focus on how and if close studies of the graves and some particular bones can be used to further shed light upon medieval burial rituals in a Dominican convent.

## **THE HUMAN REMAINS FROM THE LUSATIAN URNFIELD CULTURE SETTLEMENTS. NEW DISCOVERIES – NEW PERSPECTIVES**

Rembisz Anna, Institute of Archaeology, Nicolaus Copernicus University - Torun (Poland)

The remains of the human bodies are found in the Lusatian Urnfield culture's territory and its neighbour area. These remains present special sources mainly by virtue of the discovery context and their quantity. There are complete skeletons or their fragments (sometimes only skull) found not at the cemeteries, but on settlements' remains. Finds of not burnt human bones are discovered on the site of the Urnfield culture, Hallstatt civilization and its influences' zone, for a long period of time.

With time and the development of the archaeology, the interpretations of the human remains are changing. These finds are seen by the researchers as the traces of the local tribes' battles, the ritual acts, cannibalistic feasts or rest of the human meat's consumption. However, researchers always acknowledged these specific finds only as traces of the incidental events. Since quantity of not burnt human bones rises at the last time, the attempt of their re-interpretation was taken.

The interpretations of the ancient symbolism of burial of the human bodies outside the graves is not satisfying. On one hand, these theories not fulfil the criterions of the empiric procedures. On the other hand, they take out finds from the whole social and cultural context. One cannot help noticing that burying of these remains in the settlements or drowning human bodies in vicinity of the fortified settlements was more common than we thought. Numerous human bones discovered during the archaeozoological analyses constitute a proof of this statement. Many of these finds were not published or they were published together with the animal bones. As a result they have not been perceived.

## **INTERPRETING ANIMALS AS A MULTIFUNCTIONAL PHENOMENON. CASE STUDY OF A COPPER AGE SITE IN SW HUNGARY**

Csippán Petér, Field Service for Cultural Heritage - Budapest (Hungary)

The ritual animal burials or deposits are well known phenomena in the Baden Culture, Copper Age (3500-3000 BC). At almost all of the late Copper Age sites in Hungary this kind of funeral remains came to light.

How can we know that they are funerals and not just deposits? How can we interpret these carcasses? Which are significant signs to analyse the funerals or deposits? Which are the most important variables? The position? The age of the animal? Or the species of the animal? – We find a dozens of questions.

One of the possibly ways of the interpretation is the semiotic research. Whats are these phenomens meaning? In the archaeological literature these are sacral finds. But how much? What is the different between sacral and the sacraliest things? These are a product of the everyday sacralism or a huge feasts?

During the approach our aim is to give meaning for different archaeological phenomenons which characterize these animal deposits. First, we must determine features as being holy or profane. After Mircea Eliade this is possibly in three dimensions: according to nature, time and space. This method serves as the basic and the first groups of binary opposites. Thereafter the scholar must control these abductive groups finding links between the different features with statistical method like a deductive verification.

During 2002 archaeologists of the Museum of Kaposvar were excavating a late Copper Age site nearby the town. From the site a dozen of animal carcass deposits was found. This case study from the SW Hungarian site will present the method and the results of this approach.

## **LOOKING FOR RITUALS IN ESTONIAN MIDDLE IRON AGE WEALTH DEPOSITIONS**

Oras Ester, Institute of History and Archaeology, University of Tartu (Estonia)

Estonian Middle Iron Age (450–800 AD) wealth depositions have been in the spotlight of various researches due to their remarkable artefacts (items of organic, precious metal and iron) and often extraordinary finding situations (bogs, riverbanks, burial areas etc.). They have provoked researches to analyze the finds in one way or another, in more narrow or broader concepts many of which have concluded with ritual interpretations.

In my MA-thesis for the first time the whole material of wealth depositions from that period has been presented in a detailed database and analyzed on the bases of influences from contextual archaeology and hermeneutics. Through the aspects of deposition-forming artefacts, their placement, finding conditions and localization in cultural landscape I have tried to analyze all the 24 depositions from the same theoretical and methodical backgrounds. These universal and invariant bases help to point out the pros and cons of previous researches as well as of my own. I am hoping to show how the process of research and its final results (interpretations) do not only depend

on the available material objects and literary sources as well as the physical and cultural-historic background of the researcher. I would like to point out through different case studies the problems of identifying ritual in Estonian Middle Iron Age wealth depositions and perhaps even problematize the attempt (or a desire) to do so in the first place.

**INDIGENOUS DEFIANCE OF EUROPEAN DOMINATION. EXAMPLES OF PRE-COLUMBIAN RITUAL RESISTANCE AGAINST SPANISH COLONIALISM DURING THE 16<sup>TH</sup> AND 17<sup>TH</sup> C. IN COLOMBIA.**

Giedelmann R. Mónica J., Dept. de Formación Humanística, Universidad Pontificia Bolivariana - Bucaramanga (Colombia)

This interdisciplinary research contributes to our understanding of the practice of rituals and ceremonies to enhance communal integration and social identity among Pre-Columbian Andean communities. This particular focus is on the increasing use of ceremonial activity during periods of threat and/or crisis, as it was manifested in the moment of contact between Indigenous communities and the Conquistadors and the preceding phase of local resistance against the European domination.

The great cultural diversity among pre-Hispanic societies allows us to make interesting comparisons of ceremonial displays and how they were used in unstable conditions. I intend to compare two regions which dealt in contrasting ways with Spanish hegemony in Colombia: communities of the Eastern Highlands intensified their ritual activity towards the worship of their deities and ancestors, as represented in the increasing placement of offerings and the practice of mummification; in contrast Southern Highlands' communities increased their ritual activity towards the creation of a *culture of terror* (defined in M. Taussig's 1987: "Shamanism, colonialism, and the wild man: A study of terror and healing") represented in the display of human trophies and the practice of cannibalism.

Therefore, the comparison of these two cases provides a means to analyse different reactions to the process of conquest and colonialism. In the first case, the ritual resistance launched against the Spanish domination was designed to preserve the spiritual life of the native society and counteract the European control over other areas of the society; and in the second case, the ritual resistance was orchestrated to intimidate the Conquistadors by inducing their fear of supernatural power in boosting preconceived European ideas of the primitive savage.

The study of the two indigenous reactions to the Spanish conquest will focus on the moment of contact (1537-1539) and the further period of Spanish domination (sixteenth and seventeenth century AD) through analyses of archaeological evidence and ethnohistorical sources related to these two Colombian regions. Studies of archaeological material focus on visual material culture such as imagery and iconography of gold figurines and other gold artifacts, votive offerings and pottery; as well as analyses of mortuary rites including mummification and evidence of sacrifice and cannibalism.





F005

Session title:

## **EMBODIED MATERIALITY: CORPOREAL HYBRIDISM AND BODY SUBSTITUTIONS**

**Organiser:** Naumov Goce, University of Skopje (Republic of Macedonia)

**Co-organiser:** Ralph Sarah, State University of New York at Buffalo (USA)

### **Session abstract:**

The body has been recognized as one of the primary mediums in which the essential beliefs and principles of individuals, communities and societies are established and shared. Frequently, complete or parts of human bodies are found associated with objects, thus emphasizing the symbolic roles and functions that are linked to both the body and an object. There are a wide range of anthropomorphic or zoomorphic objects and images dating from prehistory through to the present day, which highlight the variety of contexts where the body was incorporated and combined with complex iconographic processes.

Such processes involve the concepts of corporeal hybridism (when human or animal body was joined with an object) or body substitutions (when an utilitarian object represents body itself). These visual and physical representations go beyond the simple portrayal of individuals or mythical characters. In addition, they highlight the variety and complexity of relationships between aspects of the represented body and a particular object or objects and the shared qualities that both these forms of material culture possess.

This session intends to bring together researchers whose work emphasizes the diverse nature of both human and animal body treatment and their associations with a multitude of objects for practical or ritual use. In addition to the iconographic analysis of such objects and/or archaeological deposits, presentations will seek to understand the actual contexts in which these artifacts were engaged, as well as their role in developing the social and political relations and symbolic communication among individuals, communities and societies using such images.



### **Paper abstracts:**

#### **A HISTORY OF MONSTERS: HUMAN-ANIMAL HYBRIDS FROM THE PALAEOLITHIC TO THE PRESENT**

Robb John, University of Cambridge (UK)

People have always played with the boundary between human and non-human bodies as a way of expressing hopes and fears about themselves. In each age, stories and representations about crossing this line reflect the preoccupations of the times. This paper charts out a broad general history of human-nonhuman transformations from the animistic world of the Palaeolithic through the machine-haunted world of the present.

From Starr Carr to classical centaurs and satyrs, from medieval demons and angels to modern Frankenstein and Cybermen, the human inhumans present a key to humanity's vision of itself and its struggles.

#### **MANIPULATION OF HUMAN AND ANIMAL BODIES IN MESOLITHIC MORTUARY PRACTICE**

Gray Jones Amy, University of Manchester (UK)

The study of Mesolithic burial practice in north-west Europe has revealed enormous variation in the treatment and manipulation of the body after death. As well as being inhumed in 'formal' cemeteries the human body was disarticulated, fragmented, and deposited in a variety of contexts. These include the deposition of bodies, or elements of them, in occupation debris and middens as well as co-mingled in 'collective' interments of multiple bodies in caves. The parallel treatment of animal remains has also been recognised, most clearly through instances of animal burial, particularly of dogs, in human cemeteries. However detailed examination of body treatment and depositional context reveals a more complex set of associations between animal and human bodies. As well as employing similar methods and materials in dismemberment, human and animal remains were treated and deposited in similar manners. Human bodies were scattered along with animals in 'refuse' deposits, occasionally making direct associations between them, for example, by the deliberate placement of hand and foot bones above seal flipper bones in the Cnoc Coig midden, Oronsay. As well as animal bones, isolated human bones were also included as grave goods in burials, and in one case this was decorated before its inclusion (e.g. Tévéc, France).



Human remains were also modified and transformed into objects; bone tools made from human bone have been identified in Ireland amongst those made from the remains of animals (Woodman pers. comm.). This paper explores these associations between animal and human bodies and their significance for the production, reproduction and transformation of Mesolithic identities.

### **BENEATH THE SKIN: INTERPRETING ANIMAL IMAGERY OF GÖBEKLI TEPE**

Borić Dušan, University of Cambridge (UK)

This paper discusses the imagery found at the Pre-Pottery Neolithic site of Göbekli Tepe in the Upper Mesopotamia (c. 9000-7800 BC). Firstly, the abundant evidence of animal imagery from the site is contextualised with other available archaeological data from this and other sites in the region, especially in examining dietary patterns of the community that occupied/used Göbekli Tepe. Secondly, a wider anthropological interpretive framework is employed by arguing for the significance of the notions of corporeal instability and metamorphosis. The paper sketches elements of a particular cosmogony that was shared across a large area of southwest Asia at this time. This interpretation of the Göbekli Tepe imagery is also compared to a number of ethnographic examples and the relevance of the notions of totemism, animism and perspectivism is examined, in particular in relation to recent interpretations of this imagery that argue for the shamanistic ritual context of their making. Finally, these considerations are tied to a particular historical and social context in which this site and its extraordinary features emerged.

### **PANDORA'S BOXES: DEBRIEFING EFFIGY-VESSELS OF NEOLITHIC MACEDONIA**

Commenge Catherine, CNRS (France)

Excavation of Neolithic sites in Macedonia has yielded nearly 20 “effigy vessels” (a term that most adequately describes artifacts with an anthropomorphic upper element--head, torso, arms-atop a fenestrated, cube-like base), which are radiocarbon dated from associated deposits to 5800-5500 BC. They represent an intriguing body of artifacts that has no contemporary parallel in southeastern Europe. In order to build up a framework of inference that may secure interpretation, a cognitive approach is proposed to explore the meaning and function of these effigy-vessels. Accordingly, this presentation considers the processes that intervene in the conception and construction of these artifacts as first steps in the elaboration of ‘meaning’ or ‘the *momentus* nature of embodiment’.

### **EMBODYING THE HOUSEHOLDS: ANTHROPOCENTRIC HYBRIDISM WITHIN NEOLITHIC COMMUNITIES FROM THE BALKANS**

Naumov Goce, University of Skopje (Republic of Macedonia)

Numerous studies on Neolithic communities authenticate that populations from this period very often included their bodies as a medium used for the transposition of crucial ideas. The apparent simple portraying, as well as the body engagement of living and deceased individuals induce the existence of several symbolic concepts manifested throughout corporeality. The multi-layered activation of corporeality furthermore engaged much complex visual processes where body beside its relation with certain characters, was also used for explanation of objects on which these characters were represented. These specific iconographic relations were embodying the principles of hybridism which provided more broader understanding of the domestic environment, but also of the means by which the body was perceived in the Neolithic. Although hybridity moreover employed animal body in defining the Neolithic reality, still due to the narratives, gestures and individual features of human body, the communities from Balkans significantly incorporated their own corporeality into the imagery and conceptual hybridism.

Recently there are several categories of objects known being involved in hybrid relations with human corporeality. Mostly those are consisted of vessels, stamps, ‘altars’, models of houses and ovens which were completely produced in form of human body, or only few parts of it were applied on the authentic appearance of these objects. Although the visual analogies between the exterior of some of the embodied objects and the actual body might influenced the construction of hybrid iconographic relations, still in this occasion the cognitive matrixes manifested throughout the concept of hybridity will be underlined.

### **HYBRID BODIES, HYBRID SOCIETIES: BODIES AND HUMAN-ANIMAL SOCIALITY IN THE EAST ADRIATIC NEOLITHIC**

Mlekuz Dimitrij, University of Ljubljana (Slovenia)

Animals were ubiquitous participants in past social life. One can argue that prehistoric societies were in fact hybrid societies, composed of different species, where animals and humans acted upon each other, creating new social relations. There was no strict conceptual boundary between people and animals, and there was no essential difference between properties which define humans and animals. Paper explores the archaeology of those hybrid societies, focusing on the case study of the Neolithic pastoralist from the East Adriatic coast and Dinarides. Through the discussion of depositional practices, paper tackles questions: What is hybridity and how did emerge in this particular historical context? How does materiality of bodies (but also places and material culture) in hybrid societies affect relations between persons? How does relations between participants shape aspects of their identity? If persons are defined through relations with others -- animals and humans, places and material culture, what are hybrid persons and how were they constituted in the East Adriatic Neolithic.

### **EXPLORING MULTIPLE HYBRIDITIES AT VINČA-BELO BRDO**

Matsunaga John M., University of California at Berkeley (USA)

Within the social sciences and the humanities, the concept of hybridity has become a popular vehicle for exploring the interweaving of seemingly disparate entities.

Archaeologists have used this concept in a number of ways, particularly in the study of group interactions and influence, human-object relations (materiality), and representation.

Its uncritical use, however, can lead to the perpetuation of modern modes of thought and categorization that may be inappropriate for the interpretation of the archaeological past.

In this paper, I will address some of the ways in which archaeologists have conceptualized hybridity and explore their usefulness in the interpretation of the material culture from the Neolithic/Eneolithic tell settlement of Vinča-Belo Brdo. By doing so, I will attempt to highlight the virtues of and problems with such approaches and propose ways for rethinking hybridity in archaeology.

### **POTS WITH FACES: PROSOPOMORPHIC LIDS IN VINČA CULTURE**

Vitezović Selena, University of Belgrade (Serbia)

Prosopomorphic lids are a distinct feature of Vinča culture, although lids with representations of faces are known in smaller number in some other Neolithic and Aeneolithic cultures in Europe. They have some similar traits to other types of ceramic objects, such as figurines or vessels with anthropo- or zoomorphic details, usually labeled as altars, but they also have some unique characteristics. Unlike altars or figurines, which may be both anthropo- and zoomorphic, lids are exclusively zoomorphic and they represent faces (or heads) exclusively. The face/head representation on them is not just an added detail, as in altars, but it is incorporated into the object itself. How and in which way is this sort of objects transformed into a head representation, how and which details are emphasized and which omitted, what is the relation between these and other objects with animal representations, are some of the questions explored. Also, although we may never learn the true function of these objects, it is possible to make some assumptions on their role in ritual life of the community.

### **THE ANIMAL WITHIN: CHANGES IN HUMAN/ANIMAL RELATIONS IN THE NEOLITHIC OF CENTRAL EUROPE**

Hofmann Daniela, Cardiff University (UK)

The opposition of humans and animals as conceptually different beings is often supposed to originate in the Neolithic, when people move from dwelling alongside animals in a shared world to mastery over domesticates. In contrast, this paper argues that animal and human identities remained strongly intertwined, and that the reinterpretation of human-animal relations over time cannot easily be cast in the framework of increasing dominance. In central Europe, routine interactions with animals were crucial for the creation of Neolithic identities from the Linearbandkeramik (LBK) onwards, yet in that context they rarely occur by themselves in what we would term 'ritual' deposits or as grave goods (e.g. food offerings). Instead, human and animal bodies are often represented as fused and composite, as shown for instance by human/animal hybrid figurines and by late LBK secondary burials. These unstable and transformative bodies form an interesting contrast to the whole bodies + objects interred on cemeteries at this time. In subsequent middle and late Neolithic phases, the relations between animals, people and figurines are reworked several times, eventually leading to the parallel treatment of clay, human and animal bodies in defining the boundaries of social space. Animals, alongside key items of material culture, thus remain implicated in the self-

definition of past communities, but these relationships are by no means static and do not easily fit into simplified narratives.

Rather, we need to understand the mechanisms which involved the bodies of people in the creation of identities and the drawing of boundaries at various social scales.

### **MASKING THE BODY: HYBRIDITY AND PERFORMANCE IN THE NEOLITHIC AND CHALCOLITHIC**

Biehl Peter F., State University of New York at Buffalo (USA)

This paper discusses how studying visual representations of the human body (from the Neolithic and Chalcolithic in Southeastern Europe, the Eastern Mediterranean and the Near East) can aid us in understanding hybridity and performance in the past. The paper looks at anthropomorphism, zoomorphism and miniaturization as well as at embodiment and entanglement. It will also scrutinize corporeal as well as ideational and symbolic attributes of the visual body in order to better understand identity and personhood in the 7th-5th millennium BC.

### **RECONSTITUTING THE DEAD: OSSUARIES IN THE CHALCOLITHIC OF THE SOUTHERN LEVANT**

Ilan David, Rowan Yorke, Hebrew Union College & University of Chicago (USA)

The Chalcolithic of the southern Levant (4500-3700 BCE) is a period of ideological and iconographic florescence. Figurative depictions and abstracted imagery is more common than almost any period before and after. One of the chief venues of this expression is the realm of mortuary practices. In the Chalcolithic it is possible to trace several stages in the extended process of primary to secondary burial, with interesting regional variations. In this paper we will examine the modeled and decorated containers for secondary burial characteristic of the coastal plain and piedmont. Various hypotheses have been suggested: houses for the dead, grain silos and cocoons. We suggest that ceramic ossuaries represent, in fact, the soon-to-be flesh and blood of the soon-to-be-reconstituted/reincarnated individual.

### **POWER OVER THE BODY IN A HYBRID REALITY: ANTHROPOMORPHIC FIGURINES OF BUBANJ-SALCUȚA-KRIVODOL COMPLEX ON THE CENTRAL BALKANS**

Matić Uroš, University of Belgrade (Serbia)

In this paper, I reconsider the problem of fragmentation of eneolithic figurines of Bubanj-Salčuța-Krivodol complex on the Central Balkans as fragmentation of the bodies.

Analysis of published material show that particular attention was payed to the head of the figurines. The results are a contribution to a theory that the figurines were fragmented intentionally, as they show a pattern in fragmentation and manipulation of the body parts, and that the head treatment depends on the visibility of sex. Fragmentation and manipulation are acts of intention coming outside the alternative world of figurines as representations of the body, as it is written in some earlier works. But, if these intentions come outside the alternative reality, if they come from some kind of original reality, why are they conducted in alternative reality instead? This means that there is no clear distinction between the figurines as re-presentations of the body, and the bodies themselves, between the alternative and the original, the original and the "copy". If there is no clear distinction between the bodies that perform actions, and the bodies on which these actions are performed, we can talk about dividuals rather than individuals. This allows us to interpret the realm of human bodies and figurine bodies as a hybrid reality which allows a powerful mechanism of body manipulation. The bodies have the power over the re-presentations, but these re-presentations also have the power over the bodies, like mirror images. Are we then talking about "magic mirrors"?

### **THE ANTHROPOMORPHISM OF "SCEPTER" IN THE CONTEXT OF MEGALITHIC STRUCTURES**

Žorž Matjašič Alja, Institute for the Protection of Cultural Heritage (Slovenia)

Through the study of megalithic idols of Iberian Peninsula we have found anthropomorphic characteristic in simple ornaments, portable objects, as well as in the shapes of megalithic structures, such as megalithic tombs and menhirs.

Scepter is frequently used as a symbol of power. The object itself has been used by priests, kings and other representatives of authority. On the other hand the shape of a scepter has sometimes been identified as a shepherds crook for instance, in context of Britain megalithic art, or as a symbol of heaven and light in Egyptian representations.

Objects, referred to as scepters, found in megalithic tombs in Iberian Peninsula, appear from 5th to second half of 3rd millennium BC. They represent a part of the burial pattern consistent of four groups: *lithic tools, ornamented and non-ornamented ceramics, idols and the rest.*

Scepters are represented in different sizes up to 30 cm. They are often carefully ornamented with frequent repeated ornaments that appear in megalithic art throughout the entire Iberian Peninsula, such as vertical lines, wolf-teeth, zig-zag bands, so called fish scales etc. From the other point of view these objects might as well be recognized as body parts, most probably ribs, or in wider context as a symbol of transformation, immortality and re-birth.

Scepters, engraved on menhirs would intensify the meaning of menhirs in social networks and represent their symbolism of individuality. Thus menhirs can also be seen as symbols of individual subjects in the circle of Neolithic society.

### **THE SUBJECT IS THE OBJECT: THE PARTIBLE PERSON AND THE STELAE OF NARAM-SIN**

Porter Anne, University of Southern California (USA)

The dualities of, and debates between, the individual/collective, subject/object, person/thing, gift/commodity that are the concern of contemporary archaeological theory, and the relationship of those dualities to issues of power and agency, become enmeshed as one in the partible person of Naram-Sin, the first Near Eastern ruler to become deified in his lifetime. He was also the self-proclaimed “king of the universe,” and argued to have ruled an empire extending from Northern Syria to the foothills of Iran and to the Persian Gulf. These two “facts” have long been understood to go together as evidence of his military success and great personal power. But archaeological, rather than only arthistorical, approaches to the statues and stelae which portray him bring the relationship between deification and rule together in a new way. That these objects do not just represent Naram-Sin, but *are* Naram-Sin, indistinguishable from the substance of his body, is implicit in the Mesopotamian belief that statues of the god are the god. The larger ramifications of this may be elucidated by Marilyn Strathern’s concept of the partible person. In this context, what we would call “objects” that “belong” to the “individual” are the extension of the subject in the creation of new social relationships that continue to obliterate the boundaries between the individual and collective in the existence of the person. Although Naram-Sin is credited as instigating new artistic convention in these stelae and statues, more significant is the fact that a new conception of social and political relationships emerges in them. They are the embodiment of prior social relations and the vessel of new ones that, rather than military might, are the essence of his rule.

### **VIOLENCE AND BODY SUBSTITUTION IN IRON AGE EUROPE**

Ralph Sarah, State University of New York at Buffalo (USA)

Both anthropological and archaeological research has highlighted the important role that human body parts play in ritual, politics and social complexity. Human body parts may be physically represented or be iconographic depictions or substituted by other forms of material culture. This paper discusses the importance and manipulation of particular parts of the human body in Iron Age Europe (800 BC to AD 100), both actual and symbolic (e.g. iconography and anthropomorphic objects) and explores their treatment during this period in order to understand the role of the body (and its constituent parts) in the sociocultural and political aspects of Iron Age society.

### **BETWEEN HYBRIDISM AND SUBSTITUTIONS: URNS AS BODIES IN PRE-ROMAN ITALY**

Perego Elisa, University College London (UK)

In this paper I explore the concepts of corporeal hybridism and body substitution by showing how human bodies were sublimated into objects and objects were enclosed into narratives of personhood to reconstruct the identity of the deceased in pre-Roman Italy.

By focusing on ritual practices occurring among the Veneti of Northern Italy and the Etruscans, I note that death, especially when followed by cremation, had a violent and destructive impact on the identity of the dead and the physical integrity of the body. Clear evidence, however, shows that attempts to overcome the disruptive consequences of death were carried out through the manipulation of urns, human remains and grave goods. Adorned with jewels, cloths, belts and weapons, urns were given humanlike qualities and employed to reshape the broken corpse of the dead. Similarly, grave goods such as ornaments and tools, placed both inside and near the funerary vessel, became an extension of the body and a means to reconstruct the lost identity of the deceased. In this process from destruction to “rebirth” after death, the boundaries between “object” and “body” were broken and renegotiated to

create a hybrid entity composed of both organic substances (the bones) and artefacts. The accurate process of interment at the end of the funeral clearly reveals how the hybrid unit was intended to take the place of the real body of the deceased.

### **HOUSE, TEMPLE AND CITY AS BODY: CORPOREAL SUBSTITUTION IN TRADITIONAL HINDU ARCHITECTURE (VASTU)**

Cremona Michael A., independent researcher (USA)

The materiality of the human body can be expressed directly in corporeal hybridism (explicit material representation of anthropomorphic form in or on objects or structures) or indirectly in conceptual corporeal substitution, by which an object or structure is metaphorically or symbolically conceived as a human form. An example of systematic corporeal substitution can be found in the traditional Hindu architectural practice called *vastu*. *Vastu* is a Sanskrit word that means “substance”. An essential part of *vastu* is the concept of the *vastu purusha*. At the beginning of creation, there was an *asura* (demon) who opposed the demigods. The demigods led by Brahma pushed the demon down onto the earth’s surface, and the demigods took their places on his form to hold him there.

Brahma named the demon *vastu purusha*. Offering the *vastu purusha* a kind of redemption, Brahma ordained that anyone building any kind of residence would have to pacify him with sacrifice and worship. As part of this practice, the form of the *vastu purusha* is incorporated into the design and structure of the home, temple, or even town.

In terms of architectural structures, the identification of a temple, for example, with the humanlike body of the *vastu purusha* is reflexive, so one that also perceives the humanlike body of the builder as temple. So temple becomes body, and body becomes temple. Knowledge of the hidden reflexive corporeal substitutions embedded in the *vastu* system of architecture can be a resource for interpretation of archaeological sites in the Indian subcontinent.

### **BYZANTINE “SHE DEVILS”: ICONOGRAPHY OF THE MONSTROUS “FEMININE” IN BYZANTINE SUPERSTITIONS**

Zorova Orhideja, University of Skopje (Republic of Macedonia)

From its beginning to the very prolonged end, the Byzantine culture not only inherited and manifested the antique traditions, but it even elaborated the Greco-Roman matrixes.

These practices are probably best represented in the decorative solutions of the secular material culture.

This paper intends to deal with the so called Byzantine “she-devils” – a group of female depictions which mostly occur on objects determined as amuletic. The repertoire of forms includes different types of jewellery - bracelets, rings, gems and cameos, earrings etc. The common feature of these objects is the representation of a “monstrous female” combining anthropomorphic and zoomorphic elements in her iconography. Although the sources give scatter information concerning the identity of these “she-devils”, the context of their appearance determines them as maleficent creatures which interfered with the health. Combining the iconographical analyses of these “she-devils” and the written remaining of Byzantine superstitions, we *grosso modo* hope to enlighten the enigmatic identity of these “Byzantine devilish beauties”.



F006

Session title:

**SOCIAL IDENTITY DURING THE ROMAN ANTIQUITY IN WESTERN MEDITERRANEAN SEA: MORTUARY PRACTICES AND ORGANIZATION OF THE FUNERARY SPACE****Organiser:** Gleize Yves, INRAP (France)**Co-organiser:** Castex Dominique, Université Bordeaux 1 - Talence (France)**Session abstract:**

For about twenty years, the study of past populations and funerary practices has made considerable progress linked essentially to the simultaneous consideration of the biological and cultural dimensions of the archaeological human remains. Whether it is on the scale of the grave or the cemetery, human remains occupy henceforth a specific place as witnesses of the History, particularly as regards the analysis of the mortuary behaviours.

In the Roman world, the funerary practices variability puts with a quite particular acuteness the questions of identity. Indeed, for this chronological period the funerary spaces are particularly diversified due to the context (rural or periurban), to the organization of graves (grouped together or scattered) and to gestures around the cadaver (e.g. incineration or inhumation, individual or plural deposit, position of the body, treatment of the human remains).

Recent excavations of antique funerary sites performed by several research teams (High and Late Empire) in France, in Spain, in North Africa and in Italy, bring exceptional quantitatively and qualitatively data. The researches led on these sites illustrate well the methodological development and the integration of transdisciplinary studies.

This session aims to provide new data and to discuss studies from Roman sites in the western Mediterranean Sea. Integrating an archaeological and biological approach, the presentations will concern two levels: the treatment of the body in the grave and, more widely, the integration of the graves in the funerary space.

**Paper abstracts:****TRADITION AND TRANSFORMATION : FUNERARY PRACTICES IN LATE IRON AGE AND EARLY ROMAN VENETO (ITALY)**

Perego Elisa, Institute of Archaeology, University College London (UK)

The aim of this paper is to investigate some of the major social rearrangements which must have taken place in Veneto (Italy) on the verge of Romanization through the analysis of the local funerary record. By taking into account different lines of evidence including epigraphy, human remains analysis and spatial analysis, I will shed some light on the elements of both change and continuity which can be recognised in the treatment of the dead body and the organization of the burial ground between the late Venetic Iron Age and the early Roman period (3<sup>rd</sup> century BC – 1<sup>st</sup> century AD). Apart from Latin written sources illustrating the increasing intervention of the Romans in local affairs, I will show how a clear process of social change is evident in the funerary sphere, with the appearance of new rituals and the adoption of new kinds of grave goods including strigils, coins and vessels extraneous to the local tradition. However, I will also emphasize how the persistence of traditional Venetic ritual practices such as bone mingling (i.e. the placing of the remains of more than one individual in the same urn) indicates that the local community was possibly able to maintain a partially independent cultural identity in respect to the newcomers and the increasing pressure towards the adoption of novel funerary rituals due to the renewed political and social setting.

**FUNERARY SPACE AND PRACTICES IN THE ROMAN WORLD: THE PORTA NOCERA NECROPOLIS AT POMPEII**

Duday Henri, CNRS UMR 5199 PACEA LAPP Université Bordeaux 1 (France); Joly Dominique, Maison de l'Archéologie Service Municipal – Chartres (France); Lepetz Sébastien, CNRS UMR 7209 Archéozoologie, Archéobotanique: sociétés, pratiques et environnements (France); Van Andringa William, Université de Lille III (France)

It has been possible to follow the evolution of funerary practices during a century after the excavation of a large enclosure within the Porta Nocera necropolis. The appropriation of this space by the affranchised Publius Vesonius Phileros and the correlative occultation of earlier burials can be documented. The graves, while quite stereotyped in appearance at ground level, show great diversity in their internal arrangement. In several cases the desire to (re)

unite two subjects inside the same structure (double or, even, triple burial) could be demonstrated. Inside the same family enclosure, suckling infants, only a few months old, may have been exposed to fire, while two- to three-year old children have been inhumed. The anthropological analysis of incinerated remains provides fresh information concerning the sequence of the cremation and the acts of collection from the fire, completed by the excavation of several zones of combustion. In some cases these zones have been scraped, at least partially, and the residue placed either in the grave, outside the cinerary urn, or in pits at some distance from the grave. Finally, the analysis of the levels sealed by the eruption of Vesuvius allows a precise analysis of the commemoration rites.

This operation, undertaken in partnership with 'L'Ecole Française de Rome' and the 'Archæological Superintendance of Pompeii' presents an original and very complete picture of funerary practices at the start of the Roman Empire.

### **RECENT EXCAVATIONS OF FUNERARY SITES OF THE IMPERIAL ROME: EVALUATION OF ANTHROPOLOGICAL FIELD AND STUDY DATA USING A NEW APPROACH**

Nava Alessia, Caldarini Carla, independent researchers (Italy); Catalano Paola, Soprintendenza Speciale per i Beni Archeologici di Roma (Italy); De Angelis Flavio, University "Tor Vergata" - Roma (Italy); Pantano Walter, independent researcher (Italy)

During the last years, the systematic excavation of funerary sites carried out by the *Soprintendenza Speciale per i Beni Archeologici di Roma* has allowed the collection of a considerable quantity of bio-archaeological data ascribed to the ancient inhabitants of the *Urbe* of the imperial age. The work was focused on research and interpretation of the variability among different cemeteries of roman suburbs chronologically framed in I-III century AD, and falls inside a larger project that aims to reconstruct the environmental conditions, the health and way of life of Rome's ancient people. The archaeological sites chosen for this purpose come from the latest investigations led in the areas surrounding the urban centre and the rural environment nearby the City, attesting a different fruition of the funerary spaces in different contexts. The recording of the bio-archaeological data was carried out with a systematic compilation on the field of a taphonomic card, followed, whenever possible, by a laboratory analysis to supplement the field data and obtain the individual bio-archaeological outline. The human skeleton is, in fact, a biological and cultural archive determined by environmental and genetic factors, that cooperate to mould the odonto-skeletal elements. The data analysis was faced through the multivariate analysis, to highlight the uniformity or variability among the selected necropolis. A different geographic location in the Suburbs means a different social structure and access to environmental resources, therefore, a peculiar feature of the skeletal population.

### **THE ROMAN CATACOMBS IN THE LIGHT OF ARCHÆO-ANTHROPOLOGICAL DATA**

Blanchard Philippe, INRAP Tours et UMR 6173 Laboratoire Archéologie et Territoires/CITERES (France); Castex Dominique, CNRS UMR 5199 PACEA LAPP, Université Bordeaux 1 - Talence (France); Kacki Sacha, CNRS UMR 5199 PACEA LAPP, Université Bordeaux 1 - Talence (France) & INRAP - Lille (France); Réveillas Hélène, CNRS UMR 5199 PACEA LAPP, Université Bordeaux 1 – Talence & UMR 5607 Ausonius, Université Bordeaux 3 - Pessac (France); Giuliani Raffaella, Pontificia Commissione di Archeologia Sacra (Vatican)

Investigations undertaken since 2004 in a central sector of the *San Pietro e Marcellino* catacomb (Rome, Italy) have brought to light several cavities containing the skeletal remains of several thousand individuals from antiquity. Within these cavities the method of inhumation is clearly distinct from that found traditionally in the rest of the catacomb (*loculi*, *arcosolia* and *cubicula*) and seems to indicate a different funerary organisation of this part of the underground funerary network. Preliminary studies effected suggest that these inhumations could be the consequence of several mortality crises, probably epidemic in origin, resulting in repeated simultaneous deposits of cadavers. Some indications (artefacts, radiocarbon dating) demonstrate that these complexes are not all contemporaneous and that they span quite a long chronological period (from late 1<sup>st</sup> century to end 3<sup>rd</sup> century). These dates are particularly early when compared with those given for the digging of the first galleries in the catacomb for funerary purposes, started in the last third of the 3<sup>rd</sup> century.

Similar burial structures were discovered in the *San Callisto* catacomb (Rome, Italy) by the archæologist Giuseppe Wilpert in 1910. As in *San Pietro e Marcellino* deposits of a great number of bodies associated to a similar chronological period were discovered in a central sector of the catacomb. The discovery of these structures reinforces the hypothesis of one or more important epidemic crises occurring in Rome between the 1<sup>st</sup> and 3<sup>rd</sup> centuries. The first dating elements may therefore infer that such complexes could perhaps represent the founding seeds of the two catacombs.



### **THE LATE ROMAN NECROPOLIS OF FALACRINAE : ANTHROPOLOGY AND RITUALS**

Alapont Llorenç, Museo de Antropología y Arqueología de Silla (Spain); Bouneau Chloé, CESAM, Université du Mans (France)

The excavation of the necropolis of Pallotini, Cittareale (Rieti) was a great opportunity to study the features and characteristics of this late Antiquity population. Located in the archaeological site of Falacrinae, *vicus* where the emperor Vespasianus was born 2000 years ago, this project was directed by the British School at Rome, in collaboration with the University of Perugia. The analysis of the skeletons and their context has provided a major knowledge about the structure, dynamism, physical aspect, living conditions and funeral practices of this society, who lived and died in this place of the Sabina. The anthropological and multidisciplinary study has allowed a better and wider interpretation of the customs and funeral traditions, as well as the identification of similar rituals observed in several late-roman necropolises of the West Mediterranean world.

### **STEPPED BURIALS, ADULTS AND LEG IRONS : ARCHAEO-ANTHROPOLOGICAL REFLECTIONS ON IDENTITY AND ORGANIZATION OF A SMALL GRAVES GROUP IN NARBONNESE GAUL**

Bel Valérie, INRAP Méditerranée & UMR 5140 - Lattes (France); Gleize Yves, INRAP Rhône-Alpes & UMR5199 LAPP, Bordeaux 1 (France)

During the preventive archaeological operations of the section Pézenas-Béziers of the future A75 motorway in 2007, the excavation of the site La Vigne de Bioaux (Valros, Hérault, France) delivered around thirty graves dated between the middle of the 1<sup>st</sup> and the end of the 2<sup>nd</sup> century AD.

The necropolis is composed mainly by inhumations and by rare cremations constituted by deposits of ashy residues. The graves are situated in a triangular area bounded by ways and field boundary which determined the orientations of pits. This graves group is characterized by a polynuclear organization, burials are grouped together in small sets, and by an extensive mode of use of the space, which came along with multiple steppings according to modalities which evolved in the time.

The study of bones from fills and of various steppings allowed to reconstitute at least about ten destroyed others graves and to bring elements on the organization of the funerary area. It is besides characterized by a variety in the position of the bodies. Several graves contain deposits of vases often broken deliberately. One of the buried finally carried iron legs on ankles. The consideration at the same time of archaeological (furniture), anthropological (patterns of deposit) and biological data (selection) allows to characterize better this group of graves and to bring elements of reflection on the identity of the deceaseds.

### **THE INTEGRATION OF THE CHILDREN GRAVE IN THE ADULT FUNERAL SPACE IN ROMAN AFRICA**

De Larminat Solenn, Centre Camille Jullian Archéologie méditerranéenne et africaine, Université de Provence (France)

The Roman African archaeology shows an important variety of funeral practices, specially about place of children graves (family burial enclosures; mausoleums; opened areas), their situation in funerary space (central or peripheral place; concentrated or dispersed) and their grave marker (perishable, built or carved ; epigraphic or not ; sculpted or painted). Moreover, the data would indicate that funerary spaces reflect, in a certain way, the elementary social customs organizing relationships between the members of a society. The choice of the localization of children burials depends probably on numerous criteria closely connected to the biological identity like, for example, age and sex, the cultural origins, the social status and others particular relationships.

Thus, it is important to cross all available informations coming from archeological data but also anthropological sources in order to enlighten criterions directly influencing the choice of the grave localization and eventually learn more about the degree of children integration in the Roman African society.

### **SANISERA: ROMAN FUNERARY LANDSCAPES ON THE ISLAND OF MENORCA, BALEARICS, SPAIN**

Fernando Contreras, Stewart Lawrence, Ecomuseo de Cavalleria, - Menorca (Spain)

The site of Sanisera is one of three major Roman settlements on the island of Menorca. The earliest Roman structures pertain to a military camp (known as "Sa Nitja") constructed under the aegis of General Metelo in 123-121 BC. This settlement saw about 70 years' of habitation before being abandoned in 45 BC. Habitation continued in the adjacent city, the inhabitants mainly being veteran soldiers, businessmen, and indigenous Talayotic people. It was this settlement to which Pliny gave the current name, Sanisera.

Despite signs of transient occupation by Visigothic and Islamic groups, the site has remained largely untouched. This is unusual in the Iberian Peninsula and indeed further afield as most Roman cities were often partially or completely destroyed by later construction. It is also notable in retaining a series of seven cemeteries that encircle the city and which are currently under excavation and analysis. The tombs are stone-lined pits around 2 metres in length, oriented E-W. Distribution ranges from linear groups to isolates. There is evidence for reuse, with up to eight individuals per tomb; anatomical analysis indicates a phased usage pattern rather than simultaneous multiple burials.

The project addresses the social and biological characteristics of the Sanisera population. Key points include the analysis of anthropogenic landscape design, socioeconomic, settlement patterns, environmental interactions, population origins and life history variables. Methods include topography, spatial analysis and a plethora of bioarchaeological methods including palaeodemography, population biology (ASUDAS and CRANID), palaeopathology and scoring of enthesopathies and indicators of childhood stress/development. The current paper will address the project's ongoing research.

**COMPARING THE DIET BETWEEN AN INLAND ROMAN CITY (SEGOBRIGA, CUENCA) AND A COASTAL ROMAN CITY (VALENTIA, VALENCIA) IN HISPANIA: CARBON AND NITROGEN STABLE ISOTOPE EVIDENCE.**

García Salazar Carlos Domingo, Dept. of Human Evolution, Max-Planck Institute for Evolutionary Anthropology - Leipzig (Germany) & Dept. de Prehistoria y Arqueología, Universitat de València (Spain)

We report here the results of carbon and nitrogen stable isotope analysis of human collagen extracted from a group of individuals buried in the Roman necropolis of the cities of *Segobriga* (Cuenca) and *Valentia* (Valencia). The possibility of comparing the type of protein consumption in the diet between two contemporary Roman cities of Hispania, sited at the South Meseta and at the Mediterranean coast respectively, is especially interesting when focusing on the amount of marine protein diet input of both geographically separated populations. So far there are very few studies made in Mediterranean Western Europe dating to the Late Roman period using this technique, therefore the importance of this new data.



**SCIENCE AND ARCHAEOLOGY**



**G001**

**Session title:**

## **ARCHEOLOGICAL SCIENCE IN THE 21ST CENTURY – CASE STUDIES FROM ITALY**

**Organiser:** Brown Keri, University of Manchester (UK)

**Session abstract:**

Archaeological science is making an increasingly important contribution to our understanding of the past. New data from such methods as ancient DNA, stable isotopes and strontium, oxygen and sulphur isotopes can shed light on social organisation, diet and migration. Alternative dating methods to radiocarbon dating can be used where organic material is scarce or non-existent. Aerial photography and remote sensing can reveal new sites and details of sites already located. Ground penetrating radar can be used to discover underground anomalies. Computer modelling is becoming increasingly used. Not forgetting, in the year marking the 200th anniversary of Darwin's birth and the 150th anniversary of the publication of 'On The Origin of Species', the application of evolutionary theory in archaeology. These are just a few examples out of a wide range of methods used in today's scientific archaeology.

The potential of archaeological science can only be met if the hypotheses that it is used to test are embedded within the mainstream of archaeological research. Archaeological science is not an end in itself: results must always be placed in an archaeological context and their implications for archaeological interpretations considered. In this session we will explore these challenges for archaeological science, using Italy as the model. Italian prehistory has a huge wealth of material evidence which could and is being analysed using the wide repertoire of scientific applications now available. The session will give examples of the use of scientific methodologies to address different areas of Italian prehistory, but this will not simply involve a dry description of data. Instead the session aims to emphasise the important, even revolutionary, impact that archaeological science and new methodologies has had on the discipline in recent years and to make non-scientific archaeologists aware of the repertoire of scientific applications available today.



**Paper abstracts:**

### **THE EMERGENCE OF METALLURGY IN CENTRAL ITALY: A NEW PICTURE FROM RADIOMETRIC EVIDENCE**

Dolfini Andrea, University of Newcastle (UK)

Archaeologists have long recognised the importance of pre-Bronze Age metallurgy in the central Italian peninsula. However, uncertainties have arisen since the 1970s concerning the chronology of this evidence. In particular, scholars debated whether the so-called 'Rinaldone metallurgy' emerged during an earlier or later phase of the local Copper Age (c. 3600-2200 cal. BC). Over time, an influential opinion prevailed which claimed that a local tradition of metalworking did not arise in this region before the 3rd millennium BC. Although completely unsupported by independent means of dating, this opinion was widely accepted and has remained unchallenged until now. A recent programme of radiocarbon dating, however, appears to question this chronology and suggests that copper metallurgy emerged in central Italy significantly earlier than it was previously supposed.

### **LATE GLACIAL HUNTER-GATHERER SUBSISTENCE STRATEGIES IN CENTRAL ITALY: EVALUATING SEASONAL MOBILITY OF UNGULATES**

Donahue Randolph E., Pellegrini Maura, Chenery Carolyn, Evans Jane, Lee-Thorp Julia, Montgomery Janet, Mussi Margherita, University of Bradford (UK)

There exist two competing models to explain the subsistence strategies of hunter-gatherers in Mediterranean Europe during the Lateglacial and early Holocene (~18,000 - ~8,000 BP). Research in western Italy and the Near East led Mary Stiner to hypothesise that the Broad Spectrum Revolution, characterised by the diversification of food resources prior to the origins of agriculture in the Middle East, began during the Upper Palaeolithic throughout the Mediterranean region. Alternatively, the Seasonal Mobility hypothesis, proposed by Eric Higgs, presents foragers during the Lateglacial in Mediterranean Europe as becoming highly specialised hunters of migratory herd species migrating seasonally between upland meadows in summer to coastal lowlands in winter. Here, we report on the results of a pilot study to test whether migratory patterns and seasonal variations recorded in six animal teeth of horse (*Equus hydruntinus*) and red deer (*Cervus elaphus*), from four archaeological sites in central Italy.

Sequential subsamples of enamel were analysed from each tooth for oxygen, carbon and strontium isotope ratios, to reconstruct mobility and yearly seasonal variations. Results show little evidence that these animals were moving over different geological terrains throughout the year. The results do, however, demonstrate that *Cervus elaphus* and *Equus hydruntinus* had different migratory behaviours, with the former moving over wider areas compared to the latter. This methodology produces results appropriate to assess animal migratory behaviour and, in turn, to test the consistency of the proposed models of hunter-gatherer subsistence strategies.

### **STABLE ISOTOPE ANALYSIS AND PREHISTORIC ITALIAN DIET: WHY WAS SEAFOOD NOT A STAPLE?**

Tykot Robert, University of Southern Florida (USA)

Food and dietary patterns are the most fundamental life practices for all ancient cultures, and has been regularly addressed archaeologically with studies of faunal and floral remains. Yet the preservation of these remains, the quantities excavated and studied, and the contexts in which they are recovered strongly limit our interpretations. The development of several scientific methods of analysis however has revolutionized our understanding of dietary practices, namely the analysis of soils, phytoliths, ceramic residues, and bone chemistry.

For prehistoric Italy, the stable isotope analysis of carbon and nitrogen in human bone tissues has now provided direct information on the importance of seafood in the diet of individual people, allowing quantitative assessments of diet and its potential variation based on sex, age, status, residential location, transport and trade. While historical information dating back to Roman times suggests that seafood was important, as it is today in the Mediterranean region, bone chemistry data indicates that seafood was never a dietary staple, in Roman or pre-Roman times. Presented here are results of isotope research on skeletal remains from coastal and inland peninsular Italy dating to the Neolithic thru Iron Age, and comparisons are made with Sardinia, Malta and elsewhere in the Mediterranean. The isotope data strongly indicate that seafood was at most a tiny part of the overall diet, despite the clear evidence for maritime transport and trade. Environmental, economic, sociopolitical, and religious factors that would have affected the acquisition, storage, and consumption of seafood in different time periods are discussed.

### **THE ROLE OF CHEMICAL AND ISOTOPIC TRACERS IN DECODING EARLY COPPER METALLURGY IN THE ALPS**

Artioli Gilberto, University of Padova (Italy)

Tracing the provenance of ore minerals used for prehistoric copper smelting is a very hot topic in modern archaeometallurgy. Presently used provenancing methods are mostly based on the chemical and isotopic correspondance between the metal and the minerals' signature, by using about a dozen of metals and Pb-isotopes.

An extensive project was launched a few years ago in order to develop a consistent database of Alpine copper deposits, and at the same time apply advanced analytical and statistical methods to the discrimination process of the single mineral deposits. The participating groups include: the University of Padova, the University of Insubria, the ARCA group, and the Museums of Nature and Archaeology, South Tyrol/Alto Adige. An account of the protocols and scopes guiding the database development is presented, together with the advanced strategies of multivariate chemometric techniques presently used.

The database includes for each deposit over 45 analysed tracer elements, besides the Cu stable isotope ratio, and the Pb radiogenic isotopes ratios. It is argued that the availability of such an extensive database offers a powerful tool for metal provenancing analysis, and case studies indicate that the developed models can (1) discriminate well the different type and location of the copper ore sources, and (2) they can be used to provenancing the mineral source both of smelted copper metal and of prehistoric fayalitic slags.

### **THE EVOLUTION OF GLASS MATERIALS IN BRONZE AGE ITALY AS SEEN THROUGH "CHEMICAL STRATIGRAPHIC SEQUENCES"**

Angelini Ivana, University of Padova (Italy)

The results of the recent systematic characterization of the Bronze Age Italian vitreous materials are reviewed in terms of compositional, mineralogical, and textural variations in time. It is argued that the established "chemical stratigraphy" of Northern Italian glass materials reflects the early development of glass technology in Europe, and greatly helps in the interpretation of the cultural and economic dynamics of the period. The precision of the developed stratigraphy within the Northern Italian context is such that materials reused at later times, or beads derived from troubled and disturbed layers may be spotted.



The preliminary data on Southern Italian and Sicilian glass materials seem to indicate a development along different chronological, typological, and chemical paths. Finally, Sardinian glass materials point to a totally different history, with little or no connection to the Italian mainland.

### **DNA ANALYSIS OF ITALIAN EMMER WHEATS: IMPLICATIONS FOR THE ORIGINS OF AGRICULTURE IN ITALY**

Isaac Andrew, Muldoon Mark, Brown Keri, Brown Terence A., University of Manchester (UK)

Genetics can be used to trace the spread of plants as well as humans, so human migrations during the early Neolithic can be studied by following the movement of crops. However the genetic features of modern crop plants must retain some of the genetic features of their Neolithic ancestors. We tested this possibility by studying Italian emmer wheat landraces. We assume that agriculture spread by a stepwise process, at each step farmers taking with them seeds to establish the crop at a new location. This 'bag of seeds' model suggests that agriculture spread by a series of genetic founder effects. A pattern of genetic variation should therefore become set up in the crop. If this pattern is present in modern landraces, then it should be possible to identify the starting point for the migrations. We typed five microsatellites in 52 Italian emmer landraces, then determined the correlation between the actual and predicted genetic data for 131 points of origin around the Italian coast. The highest correlation was with northern Puglia. We repeated the analysis with 1040 points located throughout Italy, and again found the highest correlations in northern Puglia. These results are consistent with the archaeological evidence, as radiocarbon dating shows that the earliest agricultural sites are in the Tavoliere, SE Italy. This suggests that the bag of seeds model is a realistic interpretation of agricultural spread in Italy, and probably elsewhere in Europe.

### **DNA AND ETRUSCAN ETHNICITY**

Perkins Phil, The Open University (UK)

Studies of genetic diversity in Tuscany, Italy, have recently been used to suggest that ancient accounts of the Etruscan people as migrants to Italy from Lydia, now in south-western Turkey, may be correct. This hypothetical-deductive interpretation of the data runs against the current archaeological consensus that sees the Etruscans as a people indigenous to Italy. This paper employs a broad interdisciplinary approach to the genetic, anthropological and archaeological issues to explore alternative explanations for the presence in Tuscany of genetic material more commonly found in Near Eastern populations. The genetic evidence points towards a maternal genetic flow in the post-Neolithic period between the Near East and Italy. Rather than interpreting this in terms of the movements of peoples, this paper investigates genetic exchange in the context of anthropological theory, social contact and cultural interaction across the Mediterranean, between c.1500-500 BCE. In this period there is archaeological evidence for intensive cultural contact and economic exchange between the south-eastern shores of the Mediterranean and Italy leading to a widespread cultural hybridity. The DNA studies may, in this context, be seen as providing evidence for a genetically hybrid population in the central Mediterranean. This interpretation challenges basic assumptions about genetic identity, ethnicity and cultural identity.

### **OSL DATING OF PRE-HISTORIC INFILL SEDIMENTS: THE USE OF PORTABLE OSL EQUIPMENT AND LABORATORY ANALYSIS TO IDENTIFY RE-DEPOSITED LAYERS AT CAVA PETRILLI TAVOLIERE**

Sanderson David C.W., Murphy Simon R., Scottish Universities Environmental Research Centre - East Kilbride (UK); Lee M., School of Geographical and Earth Sciences, University of Glasgow (UK); Whitehouse Ruth, Institute of Archaeology, University College London (UK); Brown Keri, Dept. of Archaeology, University of Manchester (UK)

Optically stimulated luminescence (OSL) dating has emerged over recent years as one of the principle tools for determining sediment chronologies. However many applications to geo-archaeological and environmental systems face complex depositional sequences with heterogeneous and incompletely bleached samples, giving rise to residual signals and ambiguous ages. Laboratory procedures can help to identify such samples, and rapid profiling developed over recent years can assist in forming a detailed appreciation of the luminescence stratigraphy of complex sites. However such information is needed during fieldwork as well. This has been facilitated by the recent development of simple portable luminescence readers at SUERC designed to assist with field sampling for luminescence dating. Here case studies of work to date prehistoric infill pits and ditches are presented, highlighting a study at the site of Cava Petrilli in the Tavoliere. In this case field measurements provided immediate indication of upper ditch-fill sediments with luminescence signals an order of magnitude greater than found in the primary



archaeological fills beneath them, and similar to levels in the regional sedimentary substrate. Laboratory analyses these initial observations and affirm the attribution to material likely to be derived from banks formed during the original excavation of the ditches in the Neolithic period. The re-deposition of such material into the upper ditch fill without complete resetting of the OSL dating system provides the evidence for the existence of such banks, which no longer survive as physical features. OSL dating confirm the excess age of material sampled from the upper layers. However samples from the primary fill produce OSL dates which are broadly concordant with other evidence including radiocarbon dates, placing the Cava Petrilli ditch into the 6th millennium BC. Other European examples of prehistoric infill sediments are discussed for comparison



**G002**

**Session title:**

## **“GO YOUR OWN LEAST COST PATH” – SPATIAL TECHNOLOGY AND ARCHAEOLOGICAL INTERPRETATION**

**Organiser:** Posluschny Axel, German Archaeological Institute (Germany)

**Session abstract:**

Geographical Information Systems (GIS) have gradually become an indispensable tool for archaeologists. A number of powerful software tools, some developed by archaeologists themselves, are now used for spatial research questions like settlement history, territorial analyses, land use development, landscape perception and many more. The main focus so far in various GIS sessions at archaeological conferences and in GIS based research and presentations in general has been on the methods and theories of GIS, on technical issues, and the development and use of new techniques and algorithms. Furthermore, many published GIS-applications do not move very far beyond the descriptive stage.

The aim of this session is to take a look at what results GIS delivers for archaeological interpretation and how the use of spatial technologies influences research design. We therefore encourage participants to present papers that focus on the role and perception of GIS in their research. Case studies are welcomed that show examples of GIS-based landscape or intra-site research. Questions that could be addressed are:

- What is the added value of GIS to archaeological interpretation, and what are the limitations?
- Can GIS be used successfully as a central research framework, that allows researchers to combine their data in one environment and achieve a better interaction and dialogue between disciplines?
- How do we find the right methods and tools to deal with our data?
- How do we deal with the debate between the scientific and interpretative schools of archaeology?
- How do we deal with the GIS based interpretations within our own scientific environments (academic debate, our countries etc.)
- Do the GIS based interpretations change the embedded perceptions of the past?



**Paper abstracts:**

### **A QUIET REVOLUTION: TRANSFORMING THE ANALYSIS OF COMPLEX ANCIENT CITYSCAPES THROUGH THE APPLICATION OF INTEGRATED GIS TECHNOLOGIES**

Bintliff John, Noodervliet Bart, Van Zwienen Janneke, Faculty of Archaeology, Leiden University (The Netherlands)

At the Boeotia Ancient Cities Project, the use of GIS technology has quietly but surely grown from an assisting role into a facilitating one. Many of the goals of the project nowadays would have been inconceivable to be completed within the time allotted and using the limited human resources without the aid of the powerful combination of GIS and GPS technologies. But besides this incredible increase in efficiency, GIS also enables us to focus more on our subject matter by relaxing our constraints in various ways. Being more flexible in the project planning also allows us to avoid certain known sources of noise in our data. Because the time between data recording and the first processing and analysis can be much shorter, often still the same day, it allows us to dynamically redirect the project based on recent results, on a day-by-day basis.

Parallel to the main process of surface pottery survey, the use of high-precision and high-speed differential GPS has enabled us to create a digital elevation model to visualise the otherwise invisible cityscape in much detail. Besides the benefits of spatial analysis leading to a model of the ancient living environment, this has also granted us the possibility to bring together the various branches of research (ceramic density and functional analysis, architectural survey, geophysics, geomorphology and the microtopographical research) into a 3-dimensional working space.

### **GIS METHODOLOGICAL APPROACHES TO THE STUDY OF SPATIAL BEHAVIOR**

Altschul Jeffrey H., Ciolek-Torrello Richard, Heilen Michael, Hayden William, Wait Gerry, Statistical Research, Inc. & Nexus Heritage (USA)

There has been a long-standing debate in academic archaeology on how to study the surface archaeological record. The debate has centered around whether to interpret the record as consisting of discrete sites and isolates



or as continuous distributions of artifacts, features, and deposits. Historic preservation laws, however, focus on discrete sites as the properties that need to be discovered, recorded, and evaluated. As more research is done within a heritage management framework, the outcome has been to focus on the site as the unit of analysis almost to the exclusion of the study of spatial behaviors that transcend discrete sites. To achieve the objectives of heritage preservation and to examine spatial human behavior that is unconstrained by the site concept, new methodologies are needed. As a move in this direction we use GIS to create hypothetical archaeological landscapes based on assumptions of human behavior that can be tested and refined with survey and excavation data. In this process we collect detailed surface data that GIS algorithms use to define discrete sites and, at the same time, to analyze continuous distributions of cultural materials. We illustrate this approach with a several examples from North America and West Africa using different field methodologies.

### **RASTERIZING THE WORLD AROUND. THE CONTRIBUTION OF GIS TO UNDERSTANDING LANDSCAPE AND ARCHAEOLOGICAL DATA**

Kuna Martin, Archaeological Institute of the Czech Academy of Sciences - Prague (Czech Republic)

The “idea of GIS” in Czech archaeology existed even before the first GIS programs. It was represented by an approach in which heterogeneous archaeological data were brought together by projecting them onto a regular grid resembling a GIS raster layer. This approach allowed to employ data from different sources for the study of the distribution and density of archaeological record. A “proto-GIS” approach was also inherent in some of the statistical methods used in the 1970s and in the “analytical” method of field survey in 1980s. The implementation of GIS in the early 1990s rather followed as a result than as the cause of a development in Czech archaeology. It was a tool settlement archaeology always dreamed about: a tool for representing the archaeological record not as a series of points but as a continuous surface reflecting the continual use of space in the past. Modern GIS software allows us to combine data of various types, formats, scales and geographic extents. The sophistication of modern GIS-based maps often masks, however, a poor understanding of the subject mapped. GIS has become a tool for visualization rather than for analysis and understanding. To avoid this we should pay more attention to the raster-based operations in GIS found at the very core of the “GIS philosophy” and which demand a deeper understanding of the subject on the side of the GIS user. The paper gives some examples of procedures missing in common GIS packages that would be very useful for archaeology.

### **CAPTURING THE RURAL LIFE IN ROME’S PROVINCES: THE ROLE OF GIS IN THE RECONSTRUCTION OF ROMAN LANDSCAPES IN THE LATIN WEST**

Jeneson Karen, Faculty of Arts, VU University - Amsterdam (The Netherlands)

This paper will show how the use of Geo-ICT in the data collection phase of a research project can be used to improve data interpretation. Case in point is a landscape-archaeological PhD-project, started in 2006 at the VU University of Amsterdam, aiming to analyse the Roman landscapes between Tongres and Cologne. Traditionally, research here focussed entirely on ‘villa’s’, a label used to indicate a wide variety of settlements, from palatial residences to simple stone buildings. Use of Geo-ICT enabled the removal of all interpretative labels, and a re-interpretation of the actual find material according to guidelines set by the researcher. Another problem was that the dataset consisted of archaeological ‘actions’ rather than sites; one ‘site’ being represented by various actions (survey, excavation, AP), often with different point locations. Geo-ICT enabled the researcher to survey the spatial distribution of the dataset and make informed decisions, aided by the use of spatial parameters concerning different types of settlements that are obtained through the analyses of completely excavated sites. This paper hopes to demonstrate that the reinterpretation of archaeological data with the use of Geo-ICT can result in meaningful improvements of the dataset, leading to new lines of inquiry and ultimately an improvement of our knowledge of the forms and meanings of past landscapes.

### **EVALUATING SITES OF NATURAL AND CULTURAL IMPORTANCE DURING THE PLANNING PROCESS - THE ESKILSTUNA PROJECT**

Bondesson Wivianne, Biwall Anders, Riksantikvarieämbetet UV Mitt - Hägersten (Sweden)

The Eskilstuna project started as the result of a competition initiated by the County Council of Södermanland in Sweden. The aim of this competition was to produce a model for the evaluation of sites of natural and cultural importance as well as to evaluate such sites and buildings in the area surrounding the town of Eskilstuna. The



background for the new model should be the European Landscape Convention. The essence of the project was the combined evaluation of 14 selected areas in regard to “nature” and “culture”, with culture referring to archaeological sites and buildings. The areas were ranked in three classes according to their potential for knowledge, experience and utility. Producing a traditional paper report covering such an extensive and complex subject and area would inevitably result in a large flip chart with many maps at various levels. We wanted to avoid this and instead chose to deliver the project on a CD as text and as a GIS project. The GIS project consists of different useful GIS layers for the planners and user-friendly digital maps published on the internet for public use. These layer will also be converted to be used in Google Earth.

### **FROM ANARCHY TO BIG BROTHER**

Thorén Håkan, Lund Karin, Riksantikvarieämbetet, UV-Teknik - Lund (Sweden)

The development of computer applications in archaeology has had many implications for archaeological research, and new soft- and hardware are still giving us more and more alternatives. But the most important task is still managing the field documentation. Many archaeological projects still use ad hoc solutions for field documentation, which in some cases ruins the possibilities for good research or reuse of information. The information derived from an archaeological excavation is in most cases very complex. When different researchers want to store complex data sets in the same environment this is not easily done. In order to combine and analyse complex data it must be well structured, and the different pieces of information must be able to relate to each other. This is almost impossible in a traditional relational database. Object-oriented databases offer inexhaustible possibilities for establishing relations between database objects but have not been used widely in archaeology. In the late 1990s the Swedish National Heritage Board developed Intrasis, an intra-site documentation system based on an object-oriented database. A decade of use has made clear that this enables the adoption of different approaches to digital documentation varying from “anarchy” to “Big Brother”. Today most archaeological institutions are somewhere in between those two extremes. In this paper we want to present how our organization through what we call “structured anarchy” has improved the quality of data capture and given the archaeologist possibilities, not just for GIS analysis, but also for interdisciplinary research without restricting the intellectual freedom.

### **ANALYSING VISIBILITY IN A PREHISTORIC TOWNSCAPE: THE SOCIAL FUNCTIONS OF THERAN MURAL PAINTINGS IN LATE BRONZE AGE AKROTIRI (THERA, GREECE, CA. 1640BC)**

Paliou Eleftheria, TOPOI, Free University Berlin (Germany)

To date, GIS-based visibility analysis has offered a useful theoretical and methodological framework for investigating social aspects of prehistoric landscapes. The analysis is, however, restricted to 2,5-dimensions that essentially limit the line of inquiries that could be pursued at small spatial scales. This is particularly evident when the interest lies in the visual impression of spatially complex 3D structures, such as buildings situated within a landscape or townscape. In this case it may be important to know, for example, which parts (e.g. façade, side walls, architectural details and decorations etc.) of a building are visible from the surrounding urban and natural environment. Such inquiries could help identify which features of the buildings were meant to be seen and the possible intentions of those who built these structures. This paper demonstrates that the integration of 3D modelling and GIS methods can allow the examination of the visual impact of vertical architectural elements in fully 3D townscapes. The proposed method of analysis produces scalar fields showing how much of the target object can be seen from virtually all observer locations in the study area. Such maps have been created to examine the visibility and communicative potential of Thera murals in the prehistoric townscape of LBA Akrotiri. The results of the analysis enhance current understandings regarding human-environment relationships in the settlement and shed new light onto possible social functions of the paintings, associated with the formation of group identities and strategies of social recruitment and exclusion in the prehistoric society.

### **THE LANDSCAPES OF ROMANIZATION IN EASTERN SPAIN: A GIS-BASED INQUIRY**

Orengo Hèctor A., Palet Josep Maria, Ejarque Ana, Catalan Institute of Classical Archaeology - Tarragona (Spain); Riera Santiago, Dept. of Prehistory, Ancient History and Archaeology, University of Barcelona (Spain); Albiach R., Prehistoric Research Service, Prehistory Museum of Valencia (Spain)

The Roman conquest of the Iberian Peninsula implied a complex cultural process involving both the imposition and the adoption of Latin cultural parameters by native populations. Multiple research perspectives have addressed

the study of such a dynamic and controversial process. Processual territorial approaches to Romanization have been common in Spanish archaeology, mainly dealing with sites distribution and territories on a macro-spatial scale. In this paper a micro-regional approach is proposed. Local case studies will be analysed from a landscape archaeology perspective in which factors such as environmental change or landscape perception are considered and analysed. Landscape archaeology provides plenty of evidence to analyse the extent, intensity and historical significance of this process. The Roman technical capacity to modify the environment resulted in not only new settlement parameters but the creation of typically Roman landscapes. Data gathered from different GIS-assisted landscape projects in Tarragona (the Ager Tarraconensis centuriations), Barcelona (Barcino centuriations and the Garraf Massif) and Valencia (the Carència project) will be employed in order to assess how Romanization influenced the way in which Mediterranean landscapes were perceived and exploited. The combination of surveying, digital archaeomorphological analysis, photogrammetry, multispectral imagery analysis, GIS-based topographical analyses and palaeoenvironmental data has allowed the inference of theories on how landscape changed with the arrival of Romans on the Iberian Peninsula. In this sense, multidisciplinary approaches have been essential in developing archaeological interpretations on ancient cultural landscapes. GIS acquires full significance as the environment in which all these techniques are integrated, queried and their results analysed.

### **MODEL BUILDING AND RESEARCH IMPLICATIONS OF AN OPEN SOURCE GRASS GIS APPROACH**

Polla Silvia, TOPOI, Free University Berlin (Germany)

This paper aims to consider the research implications of using an open source GRASS GIS approach in spatial analysis in landscape archaeology, especially concerning models of long term land use and movement in mountain environments. As an example a sample region in the South-western Swiss Alps will be analysed in order to consider whether and how a model building procedure could take advantage from the modular structure of this technology. Raster-based GIS models in archaeology have on the one hand a great analytical, explorative and interpretative potential. On the other hand methodological limitations and the risk of generating inconsistent models have to be considered, as raster conditional surfaces contain different information incorporating environmental as well as cultural constraints. Testing each variable and its effect on the model and iterating processes after changing locally defined influencing factors can allow us to work in a more transparent and comprehensible way and to make models reproducible. Such an approach can contribute firstly to enhance the reliability of GIS-based models. Secondly the improvement of the comparability of regional patterns and trends will be considered and critically assessed.

### **GEOMORPHOMETRY: QUANTIFYING ARCHAEOLOGISTS INTUITIONS ABOUT SITE LOCATION PREFERENCES**

Van Leusen Martijn, Institute of Archaeology, Groningen University (The Netherlands)

One of the problems with representing land forms in a GIS is that things that are intuitively clear can become very complex in terms of 'rules' for cartographic analysis. In our field surveys, certain site locations were quickly characterised as 'capes', 'balconies' and such. However, when we tried to extract such locations automatically from a DEM, we ran into problems of two kinds:

- The problem of scale: we experience the landscape at a range of spatial scales simultaneously. A landscape feature such as a 'cape' will have different properties, depending on the scale at which we look at it. Therefore proper landscape description should be multi-scalar.
- The problem of continuity: there are no hard boundaries between categories such as 'flat', 'gently sloping' and 'steeply sloping'. Therefore, however we define 'capes', the end result must be a continuum of 'capeness' values across the landscape.

Geomorphologists have developed land form definitions and analysis tools that can be used to recognise and extract certain types of landscape features: pits, channels, planes, ridges, hills, and saddles. Software such as LandSerf has therefore already been adopted by some archaeologists to help define 'natural' corridors etc. However, a significant challenge is presented by the fact that no morphometric tools exist for defining features of specifically archaeological interest - such as my example 'capes'. In the paper I will outline the current state of affairs, explain how a set of geomorphometric tools could be used to the landscape archaeologists' advantage, and present a worked example.



## **LANDSCAPE DESIGN FROM THE ARCHAEOLOGICAL AND PALYNOLOGICAL PERSPECTIVE**

Dreslerová Dagmar, Kozáková Radka, Archaeological Institute of the Czech Academy of Sciences - Prague (Czech Republic)

This paper presents the preliminary results of an ongoing project which aims to understand the long term process of human and environmental co-evolution, and the formation of cultural landscapes in the last 10 000 years. This can only be studied in an interdisciplinary way, for which the combination of archaeological and palynological research is one of the most efficient approaches. We aim to identify key stages of cultural landscape evolution during the Holocene and to study the individual processes driving environmental changes. A substantial part of the project is concerned with methodological questions about the theoretical area of pollen dispersion, the reliability of pollen analysis for reconstructing settlement history, and the potential and limits of synthesizing archaeological and pollen data. GIS was used to create a spatial model of human impact on the environment based on archaeological data from surface survey and excavations. These data, together with hypothetical models of subsistence needs of communities living within a particular space and time, are used to model settlement zones with arable land, meadows and pastures plotted on the background woodland. Spatially related archaeological data, topography and climatic data are then combined with simulated hypothetical vegetation cover in order to obtain the most probable landscape images during individual time slices. Such scenarios of landscape structure are subsequently verified using Humpol, a software package that simulates pollen spectra for each scenario that are statistically evaluated according to the existing pollen record.

G003

Session title:

## SEDIMENTS AS A ARCHAEOLOGICAL SOURCE

**Organiser:** Kalicki Tomasz, Jan Kochanowski University - Kielce (Poland)

**Co-organisers:** Kittel Piotr, Lodz University - Lodz (Poland)

### Session abstract:

The one of the intensively developing discipline of modern archaeology is the environmental archaeology. The environmental archaeology includes all earth science and biological research undertaken to study the environments of human societies activity in the past and the ecological context of the human societies in prehistory and history. Those results are reached during the multidisciplinary studies including geoarchaeological research and bioarchaeological research. Various disciplines of the Earth sciences (including: geology, palaeogeography, geomorphology, sedimentology, palaeopedology, palaeoclimatology, geochemistry, geophysics and geochronology) and the palaeobiology (focusing to the research of faunal and botanical remains and palaeoecological reconstructions) create whole spectrum of the environmental archaeology research.

The natural, organic and non-organic (clastic) sediments accumulated at and in the surroundings of the archaeological sites, before their develop and during their activity, are a source for environmental archaeology analysis, both geo- and bioarchaeological research.

We welcome at our session both presentation that concern palaeogeographical research connected with prehistory and history of human societies in various environments of Europe on the one hand and papers describing traces of the human activity preserved within a natural (or semi-natural) sediments and structures on the other hand.



### Paper abstracts:

#### **POLYSEMANTISATION OF CULTURE AND ITS INFLUENCE ON THE SOURCE FORMING PROCESS**

Tabaczyński Stanisław, Institute of Archaeology and Ethnology, Polish Academy of Sciences - Warsaw (Poland)

“In recent decades – as stressed by Hodder – not only the mind, but even the economy and the environment have come to be seen as social. The body and sex, too, have been pried from biology and placed firmly within the social realm. The overall goal of interpretation in archaeology has come to be to understand the past in social terms.”

That’s why the process of internal differentiation of human groups – previously homogeneous – has increasingly aroused interest. The “archaeological source forming process” also undergoes change. It is different within a monosemantic culture group from that in a polysemantic one.

It is clear that sites cannot be treated in such cases merely as a collection of “deposits” but also as a fossil text of material signs, of past symbols and notions.

This will be the topic of my paper.

#### **MESOLITHIC AND NEOLITHIC SETTLEMENTS AND LATE HUNTER-GATHERERS AND EARLY AGRO-PASTORALISTS ACTIVITY RECORDED IN ANNUALLY LAMINATED SEDIMENTS FROM LAKE GOŚCIAŻ (CENTRAL POLAND)**

Pelisiak Andrzej, Malgorzata Rybicka, Institute of Archaeology, University of Rzeszow (Poland); Ralska-Jasiewiczowa Magdalena, Institute of Botany, Polish Academy of Science - Krakow (Poland)

Lake Gościaż is located in the western part of the Gostynin Lake District (Central Poland). It belongs to a very infrequent group of lakes whose yearly laminated bottom sediments reflect annual depositing throughout the Late Glacial and Holocene.

The sediments of Lake Gościaż are especially interesting and interdisciplinary first of all palynological research on them was begun in 1987 within a projects (1)“Record of Holocene environmental and climatic changes in the laminated sediments of Lake Gościaż” (supervised by Magdalena Ralska-Jasiewiczowa and Leszek Starkel), and (2) “Environmental changes caused by prehistoric man in the Gostynin Lake District” carry out by Magdalena Ralska-Jasiewiczowa and Andrzej Pelisiak and Malgorzata Rybicka.

One of the most important aims of these projects was the reconstruction of prehistoric settlement in the Lake Gościaż



vicinity and determination of the relations between the economic activities of man and his natural environment. The seven phases (1 to 7) of environmental change identified in the pollen diagram from Lake Gościąg can be linked with Mesolithic (1-3) and Neolithic (4-7) activity in the Gostynin Lake District. Archaeological surface surveys and excavations in the Gostynin Lake District were carried out by Małgorzata Rybicka and Andrzej Pelisiak from 1990. Data relating to the Mesolithic and Neolithic settlement and economy in the Gostynin Lake District has opened the way to refine and/or correct many earlier hypotheses on the man-environment relation. Our discussions will focus on two areas: (1) the immediate vicinity of Lake Gościąg and, (2) the whole of the Gostynin Lake District. This means that our area of interest is much wider than that of the previous "Gościąg project", and contains the whole of the Gostynin Lake District as well as adjacent regions of central Poland.

### **GEOARCHAEOLOGICAL AND MICROMORPHOLOGICAL DATA AS BASE FOR NEW STRATIGRAPHY OF THE PALAEO-LITHIC SITE AT PIEKARY IN THE VISTULA RIVER VALLEY NEAR CRACOW**

Kalicki Tomasz, Institute of Geography, Jan Kochanowski University - Kielce (Poland); Budek A., Institute of Geography and Spatial Organisation, Polish Academy of Sciences - Cracow (Poland)

The Piekary group of the Paleolithic sites is situated on the northern slope of Vistula river valley about 12 km upstream of Cracow (southern Poland). The site Piekary II is located on the top (234.5 m a.s.l.) and slopes of the horst of Okrażek (Okrażlik) in the Tyniec Gate, which is the narrowest section of the Cracow Gate. The southern part of this hill was destroyed by a quarry. The site Piekary III is located in the bottom of a small dry valley between the hill of Okrażek and Gołabiec. Three other studies were situated in the caves of these hills.

A number of archaeological studies have been elaborated since 1880 (Morawski 1992, Sytlivy 1999, Van Vliet 1974). The first palaeopedological and micromorphological studies of this site were done by Van Vliet-Lanoe (1974) and a general concept of the stratigraphy was elaborated by Madeyska et al. (1994). New data was collected by Valladas et al. (2003). The presented paper focused on new geological and micromorphological results and their palaeogeographical consequences.

Jurassic limestone with a karstic hole in its top (227.6-229.0 m a.s.l.) is the Subquaternary substratum. The thickness of the Quaternary cover is 5-7 m. Gravels with sands of the buried (fossil) erosional-accumulational Vistula terraces lie on the bedrock. Two crystalline boulders 0.5 m in axis were found in the base of the alluvia. The thickness of fluvial deposits is approx. 1 m. In the bottom very bad sorted gravels with sands occur. Then were very homogenous and very bed sorted silty sands. On the basis on soil micromorphology about 1 m thick fossil soil complex occur. The lower member, yellow-orange sandy silts and silts with traces of pedological processes (PK1) cover the fluvial channel deposits. In the bottom a carbonate puppie level occurred.

Badly sorted silty sediments were in the upper part of the interpleniglacial soil profile. During the Younger Pleniglacial cold and dry climate the uppermost series of carbonate (8%) young slope loess were deposited. Loess cover overlies all trenches on the Piekary hill. The thickness of these deposits is 3-4 m. The uppermost part of the loess series was erosionally cut and covered by loess delluvia, which formed in few stages during the Lateglacial and the Holocene.

Micromorphological analyses indicate that the sediments in this site are polygenetic. The clay and iron pedofeatures below the depth of 2.5 m were disturbed by mostly leaching and solifluction processes. In the upper part of the Piekary site the thin sections show lamination consisting of reddish layers. The strongly decomposed organic matter appearing as dark cells, tissue and charcoal and the iron pedofeatures indicate palaeosol's horizon.

### **'SEDIMENTS AS MATERIAL CULTURE' PERSPECTIVE. SEEING LATE NEOLITHIC SETTLEMENT CHANGE IN EASTERN HUNGARY THROUGH SEDIMENT DATA**

Salisbury Roderick B., Dept. of Anthropology, State University of New York at Buffalo (USA)

This paper seeks to understand the changes in settlement organization and the use of space during the Late Neolithic of eastern Hungary, circa 5000-4600 BC, using sediments as an artifact class. Multi-element geochemical analysis of sediments from small Late Neolithic and early Copper Age settlements allows the correlation of chemical signatures with social activities. Data suggest that settlement size and the organization and use of space within these sites varied during this transitional period.

This methodological approach demonstrates the relevancy of a "sediments as material culture" perspective, as the links between human activities and site sediments are as significant as the connections between behavior and other classes of material culture. In theory and in discourse we do not give sediments the same prominence that we give to material categories such as lithics or ceramics. Soil is typically treated as the background on which things happen, and explicitly sedimentary research is still perceived by most archaeologists as useful only for site formation studies

and environmental reconstruction. However, sediments are the largest class of material remains at archaeological sites. This paper concludes that when sediments are treated as another category of archaeological material, as informative and interesting in and of itself, we gain new perspectives on prehistory and create new research and interpretative possibilities.

### **SLOPE SEDIMENTS AS A ARCHAEOLOGICAL SOURCE (EXEMPLARS FROM CENTRAL POLAND)**

Kittel Piotr, Institute of Earth Sciences, University of Lodz (Poland)

The paper presents some aspect of geoarchaeological research undertaken at few archaeological sites in central Poland.

The complex of prehistoric sites at Wierzbowa include two cemeteries and relicts of settlements of societies of Trzciniec, Lusatian, Pomeranian and Przeworsk Cultures. The discovered cultural layers were deposited within the slope wash sediments accumulated on surface of valley slope close to the small Gnida river. The lower one has been dated to the Bronze Age and Hallstatt Period and higher one - to the La Tene and Roman Period. The beginning of accumulation of the lower cultural layer and whole slope sediments complex had been estimated on ca. 2000 BC. It is documented by archaeological factors and by radiocarbon dating. The valley slope at Wierzbowa was staying under the prehistoric human impact almost from the Middle Bronze Age Period at least to the Late Roman Period.

Basing on that fact, the method of the estimation of size of the highest potential population, which could produce sufficient quantity of plant food in the prehistoric economy condition has been reached. The method has been elaborated using the „site catchment analysis” or „site territory analysis” and „carrying capacity”. This estimation was based on morphologic analysis of the surroundings of the settlement site.

### **LAST MILLENNIUM OVERBANK ALLUVIA ACCUMULATION IN THE VISTULA RIVER VALLEY**

Kalicki Tomasz, Szmańda Jacek B., Institute of Geography, Jan Kochanowski University - Kielce (Poland)

Many authors connected overbank deposition with anthropogenic factor. However overbank alluvia were accumulated in the Vistula river valley during the whole Late Glacial and Holocene. Therefore these sediments cannot be considered as anthropogenic one. We compare similarities and differences in lithology and origin of overbank deposits of the upper Vistula river in Sandomierz Basin and lower Vistula river in Toruń Basin. The intensity of the overbank deposition was different. An increase of the sedimentation rate followed in phases of intensive fluvial activity in Sandomierz Basin: Older and Younger Dryas, 9800-9300, 8500-8000, 6700-6000, 5500-5000, 4500-4000, 3500-3000, 2700-2600, 2200-1800 lat BP, 5th-6th, 10th-11th, 13th-14th c. and Little Ice Age. But only two series of overbank alluvia occur in Toruń Basin: the Late Glacial one (terrace III) and the Subatlantic from last 2000 years (floodplain).

The changes of mean size of overbank deposits occur in Sandomierz basin during the Late Glacial and Holocene. It is connected with the climatic warming and covering of the region by vegetation (from the Late Glacial to Atlantic) and anthropogenic deforestation (Subatlantic). Coarsening upward lithological sequence (from clayey to sandy sediments) is typical in overbank series deposited during last millennium. Human activity and deforestation was the main factor of this accumulation tendency.

### **PALAEOBOTANICAL RESEARCH AS A ARCHAEOLOGICAL SOURCE (EXEMPLARS FROM CENTRAL POLAND)**

Kittel Piotr, Institute of Earth Sciences, University of Lodz (Poland)

The paper presents results of multidisciplinary research undertaken at two prehistoric settlements dated to the Bronze and Early Iron Age and located in Central Poland in the Ner River valley. In Behcice we have documented relicts of bronze metallurgy connected with occurrence of settlement of Lusatian Culture.

The geoarchaeologic and paleobotanic research in Behcice site has been focused to palaeochannel fill discovered in flood plain of Ner river in the immediate vicinity of the site. Cut off and beginning of deposition has been dated to the period about 1340-1150 BC (3000±50 BP). Pollen analysis showed distinct deforestation in the close vicinity of the site, most probably connected with bronze metallurgy activity. Comparison of the palynological and anthracological results suggests that at least *Quercus*, *Carpinus* and *Fraxinus* were favoured.

New prehistoric settlement at Kolonia Behcice, site 1 is located about 1 km westward from Behcice. Numerous pits of Trzciniec, Lusatian, Pomeranian and Przeworsk Cultures dated to the Bronze Age and the Iron Age were



discovered. Most of pits are correlated with horizon of Trzciniec and Lusatian Cultures. Macrofossils of cultivated plants and weeds have been documented by archaeobotanical analysis. Some synanthropic plants have been recognized in pollen diagram from fill of large palaeochannel near the site.

Settlements connected with farming activity (as Kolonia Bechcice) have been located on surface formed by fine-grained sediments (mainly silty sands) and settlements with productive activity (as Bechcice) on coarser sediments (mainly sandy gravels).

### **MISSING A TRICK? THE USE OF PHYTOLITH ANALYSIS IN EUROPE**

McParland Hayley J., University of Exeter (UK)

Pollen analysis has long been used as a method of environmental profiling within archaeology and the limitations of this technique are widely understood. Issues with the preservation of pollen are widely known, as is the tendency to present data from a wider area rather than a site specific chronology. Phytoliths can, to a certain extent offer a solution to these problems. Phytolith analysis can 'fill in the gaps' by providing an 'on site' assemblage, even for dry, oxidized environments. This technique has much potential and has been used in South America, North America and the Near East successfully using samples from cave sediments, faunal remains, pottery residues and archaeological sites both prehistoric and historic. Phytoliths have been used to track the domestication of cultivars and the development of agriculture, yet in Europe, this technique has yet to be adopted. There is potential, although further development is needed, especially in Europe and the technique has yet to be widely accepted for commercial use, although the approach has been unsuccessfully trialled in the UK. This is in part due to a lack of knowledge, but also due to a lack of cohesiveness regarding sampling and preparation techniques as well as a lack of reference material from Europe, specifically the UK. This paper is intended to inspire discussion. Why are phytolith studies in Europe in their infancy? Is it due to lack of knowledge? Is it simply that more research is needed? Is research in Europe tackling these challenges? What are the potential applications? And what are the potential limitations?

### **PALAEOLOGY AND SEDIMENTOLOGY AS INDICATORS FOR ARCHAEOLOGICALLY RELEVANT LEVELS IN THE DUTCH PROVINCE OF FLEVOLAND**

Woltinge Inger, Groningen Institute for Archaeology - Groningen (The Netherlands)

In the Dutch province of Flevoland, the prehistoric surface is buried by marine sediments. Due to the reclamation of this land on the sea from the 1930s onwards, this area has been accessible for research for some time, but interest has only grown in the archaeology of the area since a lot of commercial campaigns have taken place as a result of the Malta Convention. Since the 1990s, fantastically preserved sites dating from the early Neolithic have been found. Most of these are chance finds, however. In this paper, a case study of methodologies usable for research and predicting of archaeological remains in this area are presented. Because the archaeologically relevant levels are buried several meters beneath the surface, most field work depends on (palaeo)geology, geomorphology and (palaeo)sedimentology or physical geography rather than purely archaeological remains. The case study presented is an old Pleistocene river system that has been transformed from drainage system to inlet system in the Holocene. Prehistoric habitation in the area seems to be in accordance with the river system, making the location of the main streams and secondary gullies vital for archaeological research. Because the marine sediment material (called Old Tidal Deposits) was deposited on the banks of the streams as well as in the channels, and because the channels were filled completely over time, it is hard to distinguish between the river banks and the infill lithologically, as it is all the same material. In other words, there is no conventional way to distinguish between banks and the river. Research into the older clastic sediments (of which these rivers and banks are made up) is under-developed in the Netherlands, giving the field work in Flevoland potential importance on a broader scale, especially in answering questions regarding the last phase of the sedimentation of the Wormer layer. On an even wider scale, the research could ameliorate the knowledge regarding the archaeological potential of buried landscapes.

### **TRACES OF FLASH FLOODS IN THE SEDIMENTS OF VALLEY FLOOR NEAR BRZESIE SITE 20 (S-POLAND)**

Tyniec Anna, Archaeological Museum - Kraków (Poland); Kalicki Tomasz, Institute of Geography, Jan Kochanowski University - Kielce (Poland)

Early Medieval settlement in site 20 in Brzezcie, Little Poland, (no AZP: 104/59/39) in the years 2004 - 2006 was excavated by the Krakow Team for Highway Research. The settlement is located eastward of Kraków in Sandomierz



Basin on slopes and bottom of a small valley (tributary of Tusznicza river, Raba river catchment basin). Valley dissected hills formed by Miocene clays covered by loess in the front of Carpathians.

The area of approximately 260 acres was excavated there, and over 600 archaeological structures were discovered (dwellings, a bath, wells, bloomery furnaces, hearths, ovens used for different purposes and storage pits). The majority of structures and archaeological artefacts is associated with the early medieval period. On the basis of the pottery material analysis they can be dated back to the 8th-11th century (these assumptions were verified by the dates obtained from the discovered wooden elements, from the year 752 AD to the youngest from 1039 AD).

A system of three palaeomeandered river beds from different time periods was discovered on the bottom of the valley occupied by the settlement. The youngest seems to coincide with the period when the early medieval settlement functioned there. In the layers filling the older river beds no movable artefacts were found. Section of 150 m-long of the palaeochannels was explored.

Exploration of the old river beds was conducted in stages. The shortest section examined in one time was 40 m long. Such approach allowed for conducting simultaneous observations of horizontal and vertical stratigraphy (at the edges of the digs full cross-section profiles of layers were obtained). In the banks of the river bed, besides pits dug out and used by man, some structures created as a result of flooding or washing away the banks were also distinguished. From the depth at which the old river beds boundaries were clearly marked in the layer undisturbed by human activity, the layers were plastically explored. The system of old river beds was the subject of specialist research. Two main series could be distinguished in the palaeochannel fill. Lower member is homogeny and was deposited in Early Medieval time. Upper one is heterogenic with intercalations of silts (loess layer C) and organic silts (layer A of soil). These deposits was accumulated by flash floods during Late Middle Ages and later. Distinct post-Medieval accretion phase was connected probably with anthropogenic deforestation and soil erosion triggered by land use changes and clustering of catastrophic events (flash floods) during Little Ice Age. Similar increase of accumulation rate could be observed in the same time on some sites in the neighborhoods.

#### **THE HISTORY OF THE MEDIEVAL OPEN SETTLEMENT OF STARE MIASTO (CIVITAS ANTIQUA) AT KALISZ (GREAT POLAND) TRACKED BY ISOTOPE CHRONOLOGY**

Baranowski Tadeusz, Institute of Archaeology and Ethnology, Polish Academy of Sciences - Warsaw (Poland); Calderoni Gilberto, Preite Martinez Maria, Dept. of Earth Sciences, University "La Sapienza" - Roma (Italy)

A comprehensive survey of the literature data and the critical re-examination of the excavation documentation dealing with the past archaeological investigations provided further evidence that the foundation of the Middle Age Kalisz was mainly triggered by the economic, social and political impulses sparkling out from Zawodzie (Polish for "behind the water") and Stare Miasto (Polish for "Old Town"), two among the numerous early medieval settlements located in the area. Based on isotope dating as a tool for overcoming some uncertainties encountered by the archaeological analysis, this paper is addressed to discuss the actual temporal relationships between the occupation models recognized at Stare Miasto since the Early and Late Middle Age at Stare Miasto up to the times of the urbanization of Kalisz. In turn, the Zawodzie settlement, strictly interconnected to Stare Miasto and sharing an analogous concern for understanding the cultural evolution of the ancient settlers has been previously studied and the results were reported elsewhere (Baranowski, Calderoni 2008).

Among the several trenches opened at Stare Miasto those referred to as X and XII have been selected due to the abundant findings and the relatively undisturbed stratification displayed on the walls. The trenches, dug at the top of a partially eroded relief on the reach occupied by the burial ground of the settlement, revealed a rather complex stratigraphy. Therefore, as an attempt for overcoming the difficulty of interpretation and to establish at the best the chronostratigraphical sequence some organic materials were collected for radiocarbon dating.

The five  $^{14}\text{C}$  readings (one from charcoal and two from human bones and wood fragments, respectively) bracketed two fairly distinct chronological intervals, 1165-1280 and 780-960 cal AD, respectively. Two out of the three youngest ages were yielded by well preserved bone samples which, because of such features, have been reasonably referred to the last burials prior to the erosion of the reach of the relief on which the cemetery was located. The third coeval sample, a wood fragment from the same trench, could be analogously assigned to a structure implemented shortly before the burial ground dismantling by erosion. On these bases it has been argued that a dry/warm climatic phase involving fluvial erosion could have affect the area during the second half of the 12th and most of the 13th centuries, just prior to the beginning of the world-wide climate deterioration of the Little Ice Age.

Finally, the ages of a wood and a charcoal specimens originated from distinct stratigraphic units of trench X resulted exactly coincident and calibrated at 780-960 cal AD. These readings are of some concern in that they fit into the time-span previously assigned to the first development phase of the fortified Zawodzie settlement and therefore provide us with sound evidence about the co-existence, on a close but distinct relief, of the Stare Miasto open settlement since Early Middle age.



As a result, by coupling the archaeological evidence with isotope data conclusion is drawn that the stepwise transition from the pristine, unruly Stare Miasto open settlement towards a proto-urban organization to coordinate and carry out economic activities lasted some four centuries.

### **NATURAL SCIENCE METHODS AS AN INSTRUMENT OF THE ARCHAEOLOGICAL STUDIES: VIKING AGE GNEZDOVO SITE**

Murasheva Veronica, State Historical Museum – Moscow (Russia); Bronnikova Maria, Golieva Alexandra, Institute of Geography, Russian Academy of Sciences (Russia); Marfenina Olga, Moscow State University (Russia)

Gnezdovo archaeological complex is known as one of the most important sites of the Ancient Rus state formation period (IX-XI centuries). It is situated at 12 km to the west from Smolensk. During the field works of 1999-2008 the expedition of the State Historical Museum studied the floodplain part of the settlement. The deposits are dry and any organic remnants are lacking. This means that there are only underground parts of buildings could be documented because all overground details are completely destructed and disappeared being comprised of wooden materials. The absence of organic remnants always yields difficulties in the interpretation of the functional purpose of constructions. So in this case it is necessary to seek some new possibilities for the advanced self-descriptiveness of the occupation deposits. The geochemical analysis of soils, biomorphic and mycological analysis is to be applied.

The interpretation of the results of biomorphic analysis allowed for the determination of some dwelling purposes and in some cases even the formulation of the hypothesis on the details of the overground constructions, such as turf made or rush made roofs. In one case the use of biomorphic analysis allowed to explain the controversies aroused in the consideration of the set of archaeological sources.

The mycological (fungal) characteristics of the occupation deposits was applied as a new bioindicator. Presence of the certain distinctions in structure of the microfungal communities was found to depend from the character of the ancient human activities.

Spatial multi-elemental analysis of occupation deposits was conducted in the floodplain part of the settlement. First results on spatial variability of geochemical characteristics demonstrated that the geochemical analysis is sensitive for diagnostics of the palaeoanthropogenic geochemical anomalies. Often a good correspondence is observed between the geochemical data and its archaeological context.

Thus, our experience demonstrated that in the study of occupation deposits without the architectural remnants the application of natural science methods is to be considered as a new important kind of archaeological sources.

### **SEDIMENTS AND CULTURE LEVELS OF THE EARLY MEDIEVAL PRZEMYŚL (SE POLAND)**

Sosnowska Ewa, Regional Office of Culture Heritage Protection - Przemyśl (Poland); Kalicki Tomasz, Institute of Geography, Jan Kochanowski University - Kielce (Poland)

Przemysl is situated in the SE Poland, 8 km westward of the border with Ukraine. It was located on the limit between two distinct physico-geographical regions – Flysh Carpathians and Subcarpathians Basin. However geology and natural relief of Przemyśl was significant transformed by human constructions and buildings. Therefore reconstruction of the natural environment is necessary in the studies of Medieval town.

The extended embankments are 6-11 m thick and mainly occurring in the area of the Old Town on the right bank of the San river. Geoarchaeological research based on analysis of 300 profiles (drilling and excavation probes) located throughout the city including 70 in old town (within the walls, or in the immediate vicinity). Only 23 boreholes reached the basement rocks (flysh). It was possible to recognize the fossil terrace and flood plain of San river, some erosional surfaces covered with loess and also some erosional valleys cut the southern slope of the San valley. Natural relief was strictly used for location stronghold on the Castle Hill (9th c.), Old Town with oldest church on erosional surface and also for road network.

### **THE ORIGIN OF OVAL STRUCTURE SITES OF TRYPILIA CULTURE**

Tkachuk Taras, National Preserve of Monuments “Ancient Galich” (Ukraine)

After aerial prospection from late 1960s and magnetometric data interpretation the large Trypilian sites have been discovered. Most of them has oval structures. These enclosures were made by wooden-clay houses. They were spread from stage A III (4600 BC) until C I stage (3600-3400 BC) development of the culture.

From its origins in the Near East the idea of ovals or rounds houses, sacred places and enclosures together with

farming spread through Europe, by land through Anatolia, the Balcans, the Danube valley, and the Central Europe reaching East Europe (Trypilia culture) comparative late.  
The idea of oval structures of Trypilian sites possibly came from Lengyel or Tisza Neolithic settled circular features (5th millenium BC).



**G004**

**Session title:**

## **VOLCANOES IN EUROPE'S PREHISTORY AND HISTORY**

**Organiser:** Riede Felix, Section for Prehistoric Archaeology, Institute of Anthropology, Archaeology & Linguistics, University of Aarhus (Denmark)

**Discussant:** Grattan John, Aberystwyth University (UK)

### **Session abstract:**

Volcanic eruptions are potentially powerful stimulants of cultural change and volcanoes – active, dormant or extinct – are significant features of human landscapes wherever they occur. While much attention has been paid to a small number of well known eruptions, Thera and Vesuvius in particular, recent collaborative volcanological and archaeological work has demonstrated that volcanic events were a recurring feature in many regions of Europe since its initial settlement by early hominids.

This session will focus on Europe's many volcanoes and their relationship to past human societies. The session will pose the question of when, where and how prehistoric and historic groups were influenced by volcanoes in their immediate and distant environs. Contributions will cover all aspects of 'archaeovolcanological' research, ranging from stratigraphic correlations and tephrochronology, to palaeoenvironmental studies, to issues of volcanically derived secondary effects (e.g., tsunamis, crop failure, health hazards), to volcanoes as landscape features and volcanic products as resources, to the use of archaeological case studies in risk assessment and mitigation plans for future eruptions.



### **Paper abstracts:**

#### **ASPECTS OF ARMAGEDDON**

Grattan John, Dept. of Geography & Earth Sciences, Aberystwyth University (UK)

Volcanic eruptions are very tempting phenomena for archaeologist; they represent palpable moments of drama that punctuate the past and which tempt us towards determinism "surely there must be some impact, some negative response" we think and so we may find what we seek. Professor Mike Baillie warned of this danger in his seminal paper "Suck in and smear" where he illustrated the wide range of conflicting impacts attributed to a single volcanic event. In this paper I want to review the evidence for volcanic impacts in Europe and realistically assesses the potential impacts that we may expect to detect. In particular I wish to stress the nuanced nature of the impact of volcanic forcing, that it can be both positive and negative and that contrasting impacts may be experienced in very proximal locations. Finally I wish to propose that rather than see volcanic eruptions as a negative force in the past we should consider that they were often spurs to development promoting vigorous growth and perhaps only eliminating the weak and unsuccessful.

#### **VOLCANISM AND PREHISTORY. ARCHAEOLOGICAL ANALYSIS OF THE IMPACT OF VOLCANIC ACTIVITY ON PREHISTORIC SOCIETIES IN NORTHEAST IBERIAN PENINSULA**

Alcalde Gabriel, Institut Català de Recerca en Patrimoni Cultural, Universitat de Girona (Spain); Bassols Emili, Planagumà Llorenç, Puiguriquer Marta, Parc Natural Zona Volcànica de la Garrotxa (Spain); Saña Maria, Dept. de Prehistòria, Universitat Autònoma de Barcelona (Espana)

**Abstract** The primary aim of this project is to study the impact that events such as volcanic eruptions could have had on the dynamics of prehistoric societies. A detailed archaeological analysis will be carried out in the only area of the Iberian Peninsula where quaternary volcanism was been documented (the Natural Park of the Garrotxa Volcanic Zone), covering a time period from 40,000 to 3,000 cal B.C. Achieving this goal requires an integrated interdisciplinary approach in which geoarchaeology, archaeogeomorphology, paleoecology and archaeology are employed to reconstitute the specific relations between society and the environment before, during and after each volcanic eruption.

### **EXPLORING THE IMPACT OF VOLCANIC ERUPTIONS ON PREHISTORIC HUNTERGATHERERS: THE LAACHER SEE ERUPTION (C. 13,000 BP) AS A CASE STUDY**

Riede Felix, Section for Prehistoric Archaeology, Institute of Anthropology, Archaeology & Linguistics, University of Aarhus (Denmark)

Approximately 13,000 years ago, the Laacher See volcano – located in presentday western Germany and today a pleasant lake in the heart of the country's winegrowing district – erupted catastrophically. Depositing volcanic ash over large parts of Europe, this eruption seemingly influenced the settlement patterns and culturehistory of contemporaneous Late Glacial huntergatherers.

The impact of Laacher See ashfall on human populations varied with distance from the volcano and considering these differences and their underlying mechanisms is instructive for evaluating how prehistoric volcanic events may have impacted on forager populations in general. These impacts and their associated mechanisms are complex and likely acted indirectly on human populations, but it is argued that the Laacher See eruption could serve as a useful model case study for investigating other, especially more ancient, prehistoric eruptions.

### **VOLCANOES AND MAN: KEY STUDY FROM VALLEY OF COLCA, PERU AND COLIMA, MEXICO**

Krupa Joanna, Kalicki Tomasz, Instytut Geografii, Uniwersytet Humanistyczny, Przyrodniczy Jana Kochanowskiego - Kielce (Poland); Kalicki Piotr, Instytut Archeologii, Uniwersytety Jagielloński, Gołębia - Kraków (Poland)

Abstract As volcanoes are part of the natural environment, there have always been interactions between humans and volcanoes. We summarize volcanological and archeological linkages in areas settled by PreColumbian societies in the Americas and in prehistoric Europe. The aim of our research is to define and explain societal responses to volcanism. As examples we have chosen two regions of PreColumbian America: Colca Valley in the Andes and Colima in western part of the Mesoamerica. The first objective of the study was to analyse archaeological remains to identify all volcanic areas, which were attractive for ancient cultures.

One of the most important resources was obsidian, used for producing tools in PreColumbian America. Obsidian quarries have been discovered in the Colca Valley near Cerro Hornillo and in the mountain ranges of Colima. Obsidian blades together with turquoise, serpentine, jadeite, gold and silver (Peru) were traded to distant regions as Altiplano in Andes and Central Valley in Mexico. Thick layers of fine volcanic sediments deposited during explosive events, in conjunction with a variety of environmental factors, also created fertile soils. This allowed the development of intensive agriculture characterised by largescale agricultural terraces in Colca Valley and chinampas fields in Mesoamerica. In addition, volcanoes influenced not only the material sphere, but also the symbolic culture and religious beliefs: the impressive volcanic cones dominating in the landscape were often worshipped.

### **BEYOND THE CATASTROPHE: INTERACTION OF VOLCANIC EFFECTS AND HUMAN FACTOR IN THE FORMATION OF THE VESUVIAN LANDSCAPE**

De Simone Girolamo F., St. John's College, Oxford University (UKUK)

The study of the Vesuvian area usually focuses on the eruption of AD 79 and its shortterm effects in a very narrow area – the cities of Pompeii and Herculaneum. This paper broadens the chronological and spatial frameworks by analysing the longterm effects of the eruption in ancient southern Campania.

Matching archaeological data (ancient sources, archival documents, and evidence from new excavations) with information from related scientific disciplines (volcanology, palaeohydrology, palaeoclimate) this paper describes the complex relationship between humans and the environment, which developed after the catastrophe. Additionally, an archaeological map of sites in the environs of Vesuvius and an exhaustive overview of the settlement pattern before and after the AD 79 eruption will be presented in detail. This study consequently analyses the changes in production, distribution, and economic networks after the Plinian eruption up until the AD 472 eruption. Additionally, the long term effects of the eruptions allow us to trace the complex and variable relationship between man and his environment which brought for example to the formation and transformation of marshes.

### **“LAMENTABLY RARE”: POMPEIANA AND THE ORIGINS OF ARCHAEOLOGY**

Carver Geoff, Dept. of Anthropology, State University of New York at Buffalo (USA)



This paper examines the role Pompeii played in the early history of archaeology, and how after what Glyn Daniel called the “antiquarian revolution” of the 1860s that role was rewritten to conform to more “scientific,” “uniformitarian” principles. Before the revolution, Pompeii excited the popular imagination, inspiring everyone from poets and novelists to the British porcelain manufacturers. Among the things that excited the British public, at least, were the everyday artifacts, and the glimpses these gave into private life. This view changed with the beginnings of prehistory, the focus shifting to treasures with Schliemann’s work at Troy, and Pompeii was tainted by links to catastrophism. This process will be examined by considering the roles some of the major participants including Dickens, Bulwer Lytton, Layard, Prestwich, Babbage, Pitt Rivers and Lubbock played in this revolution. As historiography, it uncovers some of the ideologies and basic assumptions buried within the history and theory of archaeology.

# POSTERS

## FIELDWORK & NEW RESEARCH

### P001

#### LANDESMUSEUM FÜR VA NEOLITHIC FISHING FENCE IN THE LAKE ARENDSEE, SACHSEN-ANHALT, GERMANY

Hellmund Monika, Leineweber Rosemarie, Döhle H. J., Lübke Harald,

In 2003 members of the local diving club discovered in the Arendsee, an inland water lake in the North of Sachsen-Anhalt (Germany), not only a medieval wooden log boat but also parts of a Neolithic wooden fishing fence structure. Situated at the northern lake border it was found in a horizontal position covered with lake marl. So far the estimated length is more than 150 meters. Due to a natural landsubside triggered by subsidence processes the position of the fishing fence is nowadays to be found in a water depth of 9 to 11 meters, much deeper than in the past. Radiocarbon dates are pointing to the third millennium BC. Since 2004 scientific research activities led to excavations at different sites and to the collection of sediments for pollen analyses. The results of the pollen analyses are supported by those coming from wood analyses of the Neolithic fence. The fence was made of thin wooden sticks of *Corylus* bound with ropes. Samples of the rope points to the phloem of *Acer cf. campestre*. The pollen spectra of the on-site sediments of the Neolithic fence are characteristic. They can be dated to the Subboreal, i.e. the period after the decline of the *Ulmus*-curve. The Neolithic fishing fence demonstrates a practice that was often made use of, but the object itself rarely outlasted

### P002

#### NEW IRON AGE WATERLOGGED DEPOSITS ON THE VLADAR HILLFORT, CZECH REPUBLIC

Smejda Ladislav, University of West Bohemia (Czech Republic)

Vladar is a multi-period site, located in west Bohemia, Czech Republic. It occupies a prominent hill above the Strela river and is best known for its later prehistoric finds related to enormous fortification system. The large area (over 100 ha), impressive superelevation above the river and a variety of conditions (wet and dry) encountered on the site makes it quite unique. In 2007, new waterlogged deposits were discovered in a lower part of the hillfort (the western bailey). Here, the excavation revealed an elaborate system of wooden chambers, preserved up to 1 m above the bedrock (the recorded stratigraphy is 2.5 m high). The majority of finds that came out of the trench are organic: oak planks, woven container, wooden chips, botanical macrofossils and pollen. A local (floating) dendrochronological curve could be established from available samples and correlated with west European oak chronologies. The result confirmed by a series of radiocarbon dates is that the wooden chambers from Vladar were built in the 5th century BC, probably in two phases. Palaeoenvironmental analysis points to the fact that standing water was present in at least one of these chambers. The provisional interpretation takes the whole situation as an example of water management that was being practiced on Iron Age hillforts. In the case of Vladar, water cisterns of different types have already been documented in two separated spots. The construction dates of both point to the early La-Tene phase and suggest a complex approach to the strategic problem of water logistics.

### P003

#### NEW RESEARCH ON THE SUBMERGED CITY AT PAVLOPETRI, LACONIA, GREECE

Henderson Jon, University of Nottingham (UK); Spondylis Elias, Ephorate of Underwater Antiquities of the Hellenic Ministry of Culture (Greece); Gallou Chrysanthi, University of Nottingham (UK)

Pavlopetri in southern Laconia, Greece, is the oldest submerged town in the world with remains dating from at least 2800 BC through to intact buildings and streets dating from the Mycenaean period (c.1600 – 1000 BC). In 2009 the Ephorate of Underwater Antiquities of the Hellenic Ministry of Culture and the University of Nottingham began a 5-year collaborative project to outline the history and development of Pavlopetri. This year fieldwork consisted of detailed digital underwater survey of the structural remains (using shore based total stations and sector scan sonar techniques) alongside sampling of the artefactual material across the site. In addition to the digital recording of the buildings identified in 1968 over 150 square metres of new buildings were identified, including what appears to be an early form of a megaron and a new street lined with buildings. New cist graves were also discovered alongside a recently exposed pithos burial. The ceramics recovered suggest occupation during the EBA, MBA and LBA (EB I-LH III B2, all sub-phases represented) alongside a more limited range of the Final Neolithic sherds. Over the coming



years the Pavlopetri Underwater Archaeology Project aims to establish when the site was occupied, what it was used for and, through a systematic study of the geomorphology of the area, how the town became submerged.

#### **P004**

##### **PRELIMINARY REPORT ON EXCAVATIONS AT MONTE BELVEDERE (FIUMEDINISI, SICILY)**

Tykot Robert, Bowers R., Brown Keri, Kahn L., Markovicz M., Vianello Andrea, Villari P., and J. W

Excavations were started in 2008 within and near the medieval castle of Monte Belvedere, atop a mountainous area above the town of Fiumedinisi, within view of the northeast coast of Sicily and the Straits of Messina. Following initial work by P. Villari in 1981, and more recent informal surface survey following some clandestine activity, it was clear that this area had been inhabited in both Greek and Bronze Age time periods, and hypothesized that the location was significant because of its proximity to a copper-lead-silver mine. With permissions granted to the University of South Florida, a team of staff and students conducted cleaning, surface collection, and modest excavations, within the castle; several meters downslope to the east; and in a more open area further downslope.

Overall, more than 18,000 ceramic sherds were recovered, along with stone and some metal tools, tiles, slag, coins, and both faunal and paleobotanical remains. The upper area includes a stone wall with associated vernice nera ceramics dated to the V-IVth century BC, while the lower area includes hut walls, with substantial amounts of ceramics dating to the Early Bronze Age. Within the castle, a small area with stratigraphic layers was cleared, with ceramic finds dated to the XII-XV centuries AD. Details on the structures and initial analyses of the material remains discovered will be presented, along with a preliminary assessment of the importance of this site and the future work that is planned.

#### **P005**

##### **STARTING TO EXCAVATE A ROMAN VICUS - THE CASE STUDY OF ASSE (BELGIUM)**

Magerman Kristine, Lodewijckx Marc, Pede Ruben, Van de Vijver Katrien,

The Roman vicus of Asse is situated to the north of Brussels and positioned at a fork of two Roman roads. The site itself is sheltered by a modern town which is rapidly growing because of the continuous expansion of Brussels. From the nineteenth century onwards, many discoveries were made and lots of interesting finds came to light. Over the past decades, however, only a few rescue excavations were carried out by amateurs or professional archaeologists, and because of the limited surface area and the lack of additional funding, no key information was acquired. Then, in 2007, as a result of the increasing application of the Treaty of Malta, we were able to explore a large surface area at the edge of the Roman vicus. On that occasion, the boundary ditches of the Roman road towards Rumst were discovered and, more importantly, a pottery kiln came to light. Many misfired pots were unearthed which allowed us to depict local production. In addition, a Merovingian cemetery was discovered and we were able to investigate it to a certain extent. This is the first sign of any missing links in the history of the Roman settlement and the settlement as it is today.

In 2008, we were able to continue our research a little closer to the former town centre. Unexpectedly, a well preserved Roman road was found, bordered by many remains of different kinds of activity. The road had been carefully constructed, using many layers of lime stone, and appeared to have been repaired over and over again. At that point, it became clear that the Roman settlement, although it was never completely deserted, had been dismantled in the third century AD and on later occasions: the Roman remains were covered by waste from the late Roman period, many cart loads of tiles appeared to have been dumped at the perimeter of the settlement and most of the lime stones in the buildings are assumed to have been used in the lime kilns, which is still the main toponym for this location. Our research resumed in April 2009 and, at the time of writing, some new remains have been unearthed. Nevertheless, it is too early to paint a clear picture of this part of the settlement

#### **P006**

##### **THE SHELTER MANDRA DI DOS CAPEL AND THE SHEPHERDS' ROCK INSCRIPTIONS OF THE FIEMME VALLEY (TRENTINO, ITALY)**

Bazzanella Marta, Museo degli Usi e Costumi della Gente Trentina – Trento (Italy); Wierer Ursula, University of Siena (Italy)

The rock shelter Mandra di Dos Capel is located above the village of Ziano di Fiemme (Eastern Trentino) at 2030 m a.s.l. on a high terrace near the lower margin of the Val Bonetta pastures. Also nowadays the area is free from

arboreal vegetation and therefore suitable for foraging livestock and for overnight stays. The shelter contained a dwelling structure of old appearance formed by 29 wooden elements of various dimensions. Next to the structure a fireplace could be recognized due to the blackening of the rocks and the presence of sediment rich in charcoal. The walls are covered with inscriptions made by the shepherds in modern times. For this purpose they used a red local ocre called bol. An ethnographic research conducted in the Fiemme Valley in order to investigate the phenomenon of the inscriptions on the Monte Cornon (attested in a great quantity between 1200 and 2000 m a.s.l.) allowed to identify the last shepherd which had used the site. According to him the upper elements of the dwelling structure were made by his father in the beginnings of the 1940s of the last century. At that time the other elements, disposed by an unknown "builder", had already been there.

In 2007 an archaeological sondage of 2x4 sqm was made to investigate the structure as well as the fireplace in order to verify the information of the interviewed shepherd. The deposit was excavated for one meter. Two fireplaces and several layers containing charcoal could be documented. A stone wall had been built to avoid the erosion of the sediment. Material culture is constituted mainly by metal objects, some wooden fragments and rare bone remains, all from historical times. The C-14 AMS dating of charcoal particles coming from different layers indicates that the shelter was used beginning from prehistoric times.

#### **P007**

##### **THE SMELTING SITES OF SEGONZANO AND TRANSACQUA (TRENTINO, ITALY): ARCHAEOLOGICAL AND ARCHAEOBOTANICAL DATA**

Silvestri Elena, Bellintani Paolo, Archaeological Heritage Office of the Autonomous Province of Trento (Italy); Biagioni S., Degaspero N., Marchesini M., Martinelli N., Pignatelli O.

Since 2007 the Archaeological Heritage Office of Trento (southern Alps, Italy) is carrying on archaeological excavations in two copper smelting sites: Segonzano Peciapian (Cembra Valley) and Transacqua (Primiero area). The south-eastern Alpine region is rich in copper ore deposits; archaeological research shows that they had been exploited intensively throughout Prehistory.

In Transacqua slag accumulations, ore-dressing tools and pieces of destroyed smelting furnaces have been found in three small trenches. The excavation in Segonzano, due to a road construction, had unearthed a large accumulation of slag sand, slags and several ore-dressing tools. The site is located in a peat bog, so the state of preservation of botanical remains is exceptional. Archaeological findings allowed to date the sites to the Late - Final Bronze Age and it is confirmed by radiocarbon dating. In an effort to understand the palaeoenvironment and its role in social and economical processes archaeobotanical sampling has been carried out during the archaeological excavations. Samples for pollen, micro-charcoal analyses and botanical macro-remains (woods, charcoals and seeds) were collected in the smelting sites where human activities had aid to modify the appearance of the area. Archaeobotanical data suggest that the area has been hardly characterized by human activities. A first core (1 m from the ground level) for palynological and micro-charcoal analyses has been studied in an out-site location near Peciapian in order to reconstruct natural landscape during the Bronze Age in the area.

#### **P008**

##### **TOWN AND WATER. THE RELEVANCE OF ARCHAEOLOGICAL DISCOVERIES FOR THE RECONSTRUCTION OF WATER SUPPLY TO THE CITY OF WARSAW (POLAND) FROM 14TH TO 19TH CENTURY.**

Pela Włodzimierz, Historical Museum of Warsaw (Poland)

The oldest part of Warsaw, The Old Town, was established in the previously uninhabited place, in the left-bank valley of the Vistula River, nearby the duke stronghold built over ten years beforehand. Formation of the town and its location dates between 1294 and 1313. In the following centuries the next elements of spatial development of Warsaw appeared: The New Town, established in the 15th century later surrounded by jurisdictions (private towns) which started to be established from the 17th century by the Polish church and magnats (the nobilities). The town which since the 16th century was a royal residence, was expanding systematically, in the 19th and the 20th century it became one of the largest cities in this part of Europe, having its water-supply and sewage system.

The problem of water supply during a several hundred-year history of the city has been widely studied, including analysis of natural features of Warsaw territory as regards acquiring water, its hydrographic changes, analysis of written sources (among others calculation of expenditures connected with water supply) as well as cartographic and iconographic sources. The said works were often of more comprehensive character and they focused on sanitary culture and city economy.

Archaeological discoveries also considerably contributed to the solution of the problem. Information concerning finds of wooden pipes and wells were reported already in daily newspapers of 19th century. 20th and 21st century

brought further comprehensive details on the methods of ensuring water supply for the city of Warsaw. Gathered materials enabled us to verify previous findings and hypothesis as well as provided new, sometimes very precise data on location and construction of old devices ensuring water supplies for Warsaw residents. The said discoveries also explain us and make it possible to understand lots of terms and descriptions from the written sources. Therefore, it is the said discoveries that are going to be the subject of today's speech: traces of old natural water sources visible in the archaeological and building digs, in the location, construction and dating of wooden pipelines, in location and construction of wooden wells.

**P009****UNDERWATER NEOLITHIC SITES OF NORTHWESTERN RUSSIA: DISCOVERY AND RESEARCH**

Mazurkevich Andrei, Dept. Archaeology and Eastern Europe and Siberia, The State Hermitage Museum

Underwater excavations have been held since 1983 on the territory of North-Western Russia. Long session of underwater excavations allowed us to gain a huge experience in holding and organizing underwater explorations, to develop the methodology of underwater excavations. Pile-dwellings appeared on this territory at the boundary of AT-3/SB-1 (4600-4500 BP) coeval with the regression of lakes. The changes of climatic conditions and degradation of broad-leaved forests, fall of the water level of lakes, their bogging and reduction of their productivity in Sb could result in reduction of natural food resources on this territory and troubled the access to water resources. These circumstances resulted in changes of economical strategy – settlements became installed on the boundary of different types of landscape, became inhabited during all year long. The building of pile-dwellings was the form of adaptation to hard ecological conditions of Sb. At this particular time, on the boundary of Atlantic and Subboreal we traced the appearance of high-capacity vessels, inhabitants started to store up food and water. The population became more settled, the quantity of population increased that resulted in strengthening of “horizontal” social links, the formation of “big-man” institution.

## ENVIRONMENT AND CULTURE

**P010**

### **ENVIRONMENT AND EXPLOITATION OF AQUATIC RESOURCES BY MEMBERS OF THE KÖRÖS CULTURE AS REVEALED BY THE ANALYSIS OF MOLLUSKS RETRIEVED FROM SITES ALONG THE NORTHERN MARGIN ...**

Gulyás Sándor, Sümegi Pál, Raczky Pál, Dept. of Geology and Paleontology, University of Szeged (Hungary)

The earliest agriculturalists on the Great Hungarian Plain (Alföld), known as Körös Culture appeared sometime during towards the end of the seventh millennium BC, shortly after the Neolithic became well-established in the southern Balkans. According to detailed archaeological investigations, the economic basis of this cultural group was rather bifocal. Besides farming and animal husbandry, the traditional Mesolithic foraging continued to be important given the location of the sites was near water as well on the floodplain of the river Tisza and its tributaries. Nevertheless, very little is known about the actual importance of these aquatic resources including shellfish in the life of these communities, not to mention patterns of temporal variations. General field surveys talk about large heaps of shells implying the importance of this resource in the lives of these communities, but no details is given about the composition or other parameters of the harvested fauna. Here we would like to present the findings of detailed archeomalacological investigations implemented at three sites located in the Middle Tisza valley of the Great Hungarian Plain, corresponding to the northern margin of the distribution of the referred cultural group. Analysis was targeting the aquatic mollusc faunas and terrestrial mollusc faunas of the sites, as aquatic molluscs are generally represent cultural components of site formation in contrast to terrestrial mollusc representing natural accumulations. Thus composition and other quantified parameters of the aquatic molluscs retrieved from the sites can inform us about various aspects of shellfishing (environment, intensity, selectivity, seasonality). Conversely, the paleoecological parameters inferred from the analysis of the terrestrial mollusc fauna convey information about the vegetation and microclimatic conditions of the site itself. A comparative analysis of the two faunas thus can inform us about both the environmental conditions of the flood-free sites located on natural highs of the floodplain and the adjacent aquatic habitats (flood-water drainage channels, backswamps, riverbeds, floodplain etc) on the one hand. On the other hand, it can reveal the importance and provenience as well as utilization of aquatic resources as reflected by the shellfish material of the sites. The temporal evolution and importance of shellfishing could have been also studied from the beginning of site formation. The inferred environmental gradients were correlated with environmental proxies from Europe and the Carpathian Basin to see whether changes in the provenience of shellfish material and/or microclimatic conditions reflected by the terrestrial molluscs could be linked to major environmental events.

**P011**

### **ENVIRONMENTAL CHANGES IN HISTORICAL TIMES NEAR KECEL ON THE DANUBE-TISZA INTERFLUVE, HUNGARY (ARCHAEOLOGICAL EXPLORATION AND OPTICALLY STIMULATED LUMINESCENCE (OSL) DATING)**

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A major advantage of luminescence dating is that it enables the direct dating of sediments containing quartz. Up till the last couple years Hungarian researches applying luminescence have mainly been concentrating on the dating of loess profiles, and hardly any attempts were made on the investigation of the sediments of historic times, in order to complement archaeological findings and results. This work will present a complex analysis based on archaeological research and OSL dating. The growing population, the development of agricultural techniques and the changes in land use caused human induced environmental changes, which became increasingly significant in history. Good examples on it can be found on the Danube-Tisza Interfluves where the change in climatic conditions and the anthropogenic disturbance both caused aeolian activity during historical times. Therefore the original geomorphological setting of the area transformed, the Pleistocene forms were reshaped by Holocene sand-movements. The present work will provide good evidence on sand movement in historical times caused by human impact on the environment with the help of OSL dating and archaeological research in the vicinity of the village of Kecel, which is located on the largest blown-sand area of Hungary on the Danube-Tisza Interfluve.

**P012****INTEGRATION OF MOBILE INDIVIDUALS IN BRONZE AND IRON AGE SOCIETIES IN SOUTHERN GERMANY. AN ARCHAEOLOGICAL ANALYSIS**

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Starting from the thesis, that the individual mobility and possibilities of integration are dependent on the social status, gender and social age, the research project “reconstruction of life cycle of mobile individuals in sedentary societies” shall inquire into possibilities to integrate those aspects in current models to technology transfer and cultural change. The project is running from 2008-11 at University Leipzig and the Max-Planck-Institute of Evolutionary Anthropology Leipzig. The aims of the archaeological part-project of the University Leipzig are:

- interaction-models between individual mobility and technology transfer in diachronical comparison of two case studies from the Early Bronze Age and Early Iron Age in the northern area of the Alps.
- test of new archaeological methods of individual life cycle reconstruction, i.e. integration index and mobility type analogy.

In the centre of the studies are placed two important cemeteries of the EBA and EIA. The EBA-cemetery of Singen was excavated in 1950s and published by R. Krause in 1988. The 95 graves in five groups are dated in Bronze Age A1 (C14: 2580–1980 cal BC). It is reputed as necropolis of a central distribution site within the northern alpine chain of metallurgy. Completely excavated and published in the 1970s by K. Spindler, the EIA-tumulus Magdalenberg contains with 126 burials (Ha D1; 616–c. 550 BC) one of the greatest cemeteries of the Western Hallstatt Culture. Varied burial objects could be connected with the early iron smelting in the Black Forest. Both sites show various contacts to regions far away in Europe.

**P013****JÁSZFELSŐSZENTGYÖRGY-SZÚNYOGOS AND SZÉKESDÜLŐ: ISSUES OF CONTEMPORANEITY AND CHRONOLOGY AT TWO NEIGHBOURING LATE UPPER PALAEOLITHIC SITES IN NORTHEAST HUNGARY**

Priskin Anna, University of Pécs (Hungary)

The Upper Palaeolithic sites of Jászfelsőszentgyörgy-Szúnyogos and Jászfelsőszentgyörgy-Székes-dűlő were excavated by Viola T. Dobosi in the early 1990s and described in short preliminary reports. She classified these open-air settlements as temporary Epigravettian hunting camps. Due to the short distance between the two sites it has been suggested that they are not two separate sites, but two occupation areas of the same site. The lithic material from these sites was found at different depths, raising the possibility of the existence of two “occupation layers”. The aim of this poster is to address these issues through the typological analysis of the lithic implements, refitting and the study of raw materials. The results of the refitting of the material indicate the existence of only one single occupation layer. I also attempt to demonstrate the contemporaneity of the two areas and refine their “cultural affiliation”. The presence of exotic raw materials among the implements implies strong relations between the Carpathian Basin and other remote areas to the north and east.

**P014****MULTIPROXY PALEOECOLOGICAL AND ARCHEOFAUNAL ANALYSIS OF MOLLUSKS RETRIEVED FROM ARCHAEOLOGICAL SITES AND REFUSE PITS: AN INTRODUCTION TO THE APPROACH ON HUNGARIAN EXAMPLES**

Gulyás Sándor, Sümegi Pál, Dept. of Geology and Paleontology, University of Szeged (Hungary)

The mollusc shells retrieved from archaeological sites represent two ecologically distinct groups in general: terrestrial molluscs and aquatic molluscs. Aquatic molluscs due to their depositional history are usually alien elements of the site or refuse pit from an ecological point of view as they end up at the site as a result of human activities. Reconstructions based on the taxonomic and size composition of the aquatic fauna thus are aimed at elucidating the natural endowments of aquatic habitats in the wider surroundings of the site on the one hand. On the other hand by looking at the taphonomic history of the site and elucidating predepositional biases (preference shown for certain taxa or size classes during shellfishing) and postdepositional biases (fracture due to cracking and sample size) one can also make inferences about human activities responsible for shell accumulation. Conversely, as terrestrial molluscs represent the elements dwelling at the site or in the vicinity of the refuse pit the analysis of taxonomic composition reveals ecological conditions at the site itself. Paleoecological analysis is generally aimed at elucidating the relationship between once-lived organisms and their environment. In case of archeofaunal remains this also includes the relationship between humans and animals as well. To fully capture and understand the complexity of the relationship between organisms and their environment requires the pursuit of numerous lines of evidence

using techniques that will not mask or skew the evidence. Paleocological community studies generally involve the investigation of several samples and the investigator is searching for a pattern a posteriori. Multivariate ordination is really useful in handling multiple samples composed of numerous species together and search for trends or gradients in our complex data sets. These gradients can inform us about the ecological conditions under which the site was formed. The methods of NMDS and DCA were adopted in our work to capture the main ecological component of site formation; i.e. the environment in which the harvested or terrestrial mollusc fauna lived. This however must be interpreted in the light of other information on taphonomy and shell use. The received variables used as proxies for various components of human activities (harvest evenness, mean targeted size, size distribution parameters of the targeted fauna) and environmental parameters were interpreted in the light of other variables reflecting taphonomy (valve presentation, valve fracturing),. This modified version of the multivariable method, different from multivariate statistical methods enables us to capture the human component of the site formation as well. Pearson's rank correlation was calculated for the individual components to assess the strength of relationship between human components and natural components of site formation.

#### **P015**

##### **PALEOECOLOGICAL AND CHRONOLOGICAL RECONSTRUCTION ON THE BASIS OF ANTHRACOTOMY IN SOUTHWESTERN HUNGARY**

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Charcoal and wood remains that can be found on archaeological sites have an important function in research of Holocene environments. The basis of microscopic determination of wood fossils is that the anatomical build of the species are unique. The different species or genres can be distinguished from each other by the analyses of the characteristic features on three sections (transversal, tangential and radial). Charcoal and wood residues come from firewood, the burning of houses and other buildings or from wood fires.

In this study I would like to present the anthracological results of archaeological sites in Zala county, southwestern Hungary. Our aims were the chronological classification of the sites and to compare charcoal data with pollen results to reconstruct the former environment. The studied sites give results not only from past environments, but also from the anthropogenic impact on vegetation from Neolithic.

#### **P016**

##### **PHYTOLITHS AND ENVIRONMENT OF THE DUTCH NEOLITHIC SITE SWIFTERBANT AS SEEN FROM SAMPLES RETRIEVED FROM SOILS, PIG DROPPINGS AND MOLARS**

Persaits Gergő, Dept. of Geology and Paleontology, University of Szeged (Hungary)

The major aim of our work was to elucidate the environmental background of the Dutch Neolithic site Swifterbant based on the investigation of phytolith remains retrieved from soil samples. Another interesting question was to clarify the nature of various pocket structures observable in the layers- whether they were formed as a result of human productive activities (plowing) or simply attributable to natural post-sedimentary processes. Samples were taken at 1 cm intervals vertically from the soil section plus additional samples were taken from each of these pocket structures and the adjacent horizons above and below. Pig coprolites yielded an astonishing phytolith assemblage which was compared to that of the soil samples. A pig tooth also yielded evaluable material via detailed investigation using SEM. The evaluation of phytolith assemblages retrieved from the soil horizons plus those ending up in the droppings of pigs feasting in the area enabled to draw a relatively reliable environmental picture of the area. All these refer to the presence of a Neolithic horticulture (cereal cultivation) under balanced micro-climatic conditions as a result of the vicinity of the nearby floodplain.

#### **P017**

##### **NEW CHRONOLOGICAL AND ENVIRONMENTAL HISTORICAL DATA TO THE FIRST IDENTIFIED UPPER PALEOLITHIC SITE OF THE GREAT HUNGARIAN PLAINS: SZEGED-ÖTHALOM**

Sümegi Pál, Dept. of Geology and Paleontology, University of Szeged (Hungary)

The surroundings of the city of Szeged form an interface between the alluvial fan of the Danube-Tisza Interfluvium and the alluvial Plain of the river Tisza. This part of the Tisza valley harbors the lowest point of the Great Hungarian Plains with an elevation of 79 m ASL. The island-like Pleistocene lag-surface of Szeged-Öthalom covered by loess forms the highest point above this low-lying alluvial plain of the Tisza. No wonder it has been continuously inhabited

since early prehistoric times. Scientific studies dealing with the loess sequences around the city of Szeged, and the archaeological finds retrieved from these Pleistocene lag-surfaces date back to the 19th century. János Banner started a campaign at the site in 1935, which yielded about 21 Gravettian tools, a mammoth tusk and some bones of the giant deer, as well as numerous charcoal fragments of *Abies alba*. Based on the analysis of these artefacts, as well as the embedding deposits, plus those of some molluscs retrieved from the site the environmental conditions of the site during the Gravettian were briefly outlined. Unfortunately the site was unavailable for further comparative studies after WWII, as it hosted a Russian artillery base until the early 1990s. New scientific campaigns started after the pullout of the Russian troops in Szeged-Óthalom, which were all aimed at reconstructing the geomorphology and environmental history of the area based on absolute chronological data. The extensive end Pleistocene and Holocene sequences covering an area of several hectares at the study site are exposed in a 400 m long and 150 wide sandpit. The wall of the sandpit was cleaned in a width of 200 m, and the site was systematically sampled for sedimentological, geochemical, radiocarbon and malacological, as well as vertebrate paleoecological analyses to reveal the environmental history and geomorphology of the site. 9 samples subjected to radiocarbon analysis (including the mammoth tusk retrieved by the campaign of Banner) ensured a sound chronological background for our studies. According to the comparative paleoclimatological analysis of the profiles studied at Óthalom, the different morphological units in the sand dune area were characterized by differing microclimatic conditions during the Upper Würmian. Some of these units (interdune depressions) enjoyed favorable hydrological and climatic conditions from the side of the fauna and the flora even during the coldest phases of the Würmian, enabling the survival of arboreal elements and the related mollusc faunas. These smaller areas acted as refugia for the temperate arboreal flora and accessory mollusc elements even in a lowland setting as well. These findings were corroborated by palynological investigations at the site of Óthalom indicating the collective presence of pines and deciduous arboreal elements during the Upper Paleolithic. The site of Óthalom is also important from a biostratigraphic point of view as well, giving the type locality of the *Vestia turgida*-*Punctum pygmaeum* zonula marking the end of the Upper Würmian and having been correlated with the Ságvár-Lascaux interstadial.

#### **P018**

##### **NORTHERN LOWER AUSTRIA IN THE LATE BRONZE AGE**

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Six parameters (geographic position, topographic characteristics, fortification, material remains, despositions, burial customs) selected for the description of the three central settlements show that an independent regional development of the Middle Danubian Urnfield Culture had taken place here. The most distinguished features of the three hillfort sites Oberleiserberg, Stillfried and Thunau were compared by means of a poster to illustrate similarities and differences. These settlements played a central role in terms of crafts and trade and suggests a lively cultural awareness of their populations, which had always been in exchange with other cultural centres due to their geographic position. The development of the nearly identical fortified settlements to becoming centres of the younger Urnfield Culture (Podol Culture) did most likely take place because of their topographic characteristics. In Stillfried domestication of wild animals and the form of animal burial gives insights into uncommon aspects of life. Pits with human skeletons give the impression, that the fate of the settlement was connected with the fortune of certain families. Attentively packed valuable objects had been hidden and deposited in a safe place in apparent emergency situations.

Not before the contemporaneous destruction of the settlements of Stillfried and Thunau, which depicts the collapse of the Middle Danubian Urnfield Culture, did a new impetus for the formation of a different culture influenced from the west and the south become visible.

#### **P019**

##### **SHEPHERDS/ENVIRONMENT RELATIONSHIPS FROM PREHISTORY TO THE XVIII C.: THE CASE OF LESSINI HIGH PASTURES (VERONA, NORTHERN ITALY)**

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The Lessini high pastures lie to the north of the city of Verona and have been exploited by groups of shepherds since prehistory and through time until nowadays, although very few traces of this exploitation survived. A systematic field survey has been made by the authors since 2005 in order to:

- detect and document the traces of shepherds and sheep farming in the area and their change through times;
- understand the patterns of these traces inside the frameworks of the different elements composing the landscape

of the high pastures;

- understand the interaction between sheep farming and the time-changing environmental and landscape features in the mountain ecosystem;
- single out the specific characters of pastoral sites, selecting the common and repetitive features of shepherds' occupation through time.

At the moment, more than 200 pastoral structures have been documented and put on a map thanks to the GPS technology. A data-base is being carried out, which collects geo-morphological as well as architectural information. A typology of the structures is proposed, according to the differences detected in their geo-morphological collocation, in the employed building material, in their form, dimensions and possible use.

In next fieldwork, the authors intend to study some stratigraphic sequences in order to recognize the features typical to shepherds deposits and try a chronological assessment of the structures. For this last problem archaeological excavations will be organized. The work we are carrying out is meant to be important also for the future of this mountain area, that needs to be recognized as a significant part of Italian cultural heritage.

## **P020**

### **SHORELINE DETERMINATION BASED ON PHOSPHATE ANALYSIS**

Ilves Kristin

In the areas with a regressing shoreline, the connection between the archaeological monument and the contemporary shoreline has been mostly determined on the basis of shore displacement calculations – a geological method that is actually constructed to measure long time periods and do not give accurate information about the shoreline at a certain point of time. Therefore, instead, do find the relation between a given site and the shoreline at the time when the site was used, a method based on phosphate analysis is suggested and demonstrated to be useful.

## **P021**

### **STRATIGRAPHY OF THE TOBA SUPER-VOLCANIC EVENT IN THE SON VALLEY, INDIA, AND ITS IMPLICATION FOR UPPER PALAEOLITHIC HUMAN SETTLEMENTS**

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The Toba super eruption (the “Younger Toba Tuff “ dated 74 - 2 ka BP) is the largest known eruption of the Quaternary (Rose et al., 1987). Previous research has suggested that it was responsible for severe and prolonged global cooling (Rampino et al., 1992). Nevertheless, there are still many uncertainties concerning the impact of this event on both environment and humans from local to global scales. Recent studies have highlighted the lack of knowledge about the physical parameters of the eruption (Oppenheimer, 2005) and the impact of Toba on humans are hotly debated (Ambrose, 1996; Schultz, 2002; Jones, 2005; Petraglia et al., 2007). YTT tephra have been identified in Upper Palaeolithic archaeological contexts of Kurnool Valley (Andhra Pradesh), and Son Valley (Mandhra Pradesh). The unique association of geological and archaeological records provides tremendous opportunities to assess the environmental and human impact of the eruption in India with implications for longer range impacts. I present here the preliminary results of fieldwork undertaken between February and April 2009, focusing on the tephrostratigraphy of the Son Valley, which will provide a framework for interpretation of the environment in which hominins were settled prior to the eruption.

## **P022**

### **THE FOOD SYSTEM IN THE IRON AGE OF TRENTO-ALTO ADIGE: RURAL LAND USE, AGRO-PASTORAL ECONOMY AND FOOD CONSUMPTION**

Pisoni Luca, Museo Usi e Costumi della Gente Trentina – Trento (Italy)

Nutrition, which is often reduced to the level of anecdote or curiosity, must not be considered as a mere sum of aliments, but rather as a system of elements closely connected with the social and economic system.

Using archaeological, archaeozoological and paleobotanical data, in this essay are analysed some themes - concerning the social organisation and the production, distribution and consumption of aliments - which are at the basis of food systems study. From this research it seems to emerge that, in the area of Trentino-Alto Adige, agricultural and pastoral practises - by which alimentary goods were produced - were probably directed to self-consumption and were managed by household groups.

On the contrary, one of the fundamental features of the flourishing metallurgical industry, which is only briefly



mentioned, was the production of a surplus, which was subsequently put onto the exchange circuit. With regard to consumption, which is probably the most complex part to examine, here are shown some preliminary considerations, based on the aliments availability, on the variety of domestic tools and on the Latin sources.

**P023****VOLCANISM AND PREHISTORY. ARCHAEOLOGICAL ANALYSIS OF THE IMPACT OF VOLCANIC ACTIVITY ON PREHISTORIC SOCIETIES IN NORTHEAST IBERIAN PENINSULA**

Alcalde Gabriel, Institut Català de Recerca en Patrimoni Cultural, Universitat de Girona (Spain); Bassols Emili, Planagumà Llorenç, Puiguriquer Marta, Parc Natural Zona Volcànica de la Garrotxa (Spain); Saña Maria, Departament de Prehistòria, Universitat Autònoma de Barcelona (Spain)

The primary aim of this project is to study the impact that events such as volcanic eruptions could have had on the dynamics of prehistoric societies. A detailed archaeological analysis will be carried out in the only area of the Iberian Peninsula where quaternary volcanism was been documented (the Natural Park of the Garrotxa Volcanic Zone), covering a time period from 40,000 to 3,000 cal B.C. Achieving this goal requires an integrated interdisciplinary approach in which geoarchaeology, archaeogeomorphology, paleoecology and archaeology are employed to reconstitute the specific relations between society and the environment before, during and after each volcanic eruption.

# HERITAGE

**P024**

## **ARCHAEOLOGICAL CAMP OF INTERETHNIC YOUTH - ULPIANA**

Kemajl Luci, Museum of Kosova (Kosova)

With the initiative of the archaeology sector at the Museum of Kosova and the support of the OSCE (Prishtina), the Archaeological Camp of Interethnic Youth began its work in 2004. This is the first camp of its kind to be organized in Kosova – one that introduces archaeology to high-schools students from various ethnic backgrounds and from all over Kosova. During the first part of the camp participants attended lectures presented in multi-media form, explaining definitions and aims of archaeology as a science. In addition the lectures treated the relevance of Kosova's archaeological heritage of all periods, beginning from the Neolithic up to the Middle Ages. The participants visited numerous heritage sites, including the ancient city of Ulpiana, the Novobrdo Fortress (Artana), the Deçan Monastery, as well as various monuments in the old town of Prizren. During 2005 The center of the camp activities was the ancient city of Ulpiana, where archaeological excavations and conservation efforts have not been conducted for the past couple of decades. For this reason, camp activities focused on the cleaning of surfaces. Following the end of camp activities, the participants of the camp visited the Archaeological and Byzantine Museum in Thessaloniki, Greece, as well various archaeological site of the region. On their way to Kosova, participants also visited sites in Macedonia. The entire trip was recorded and a publicly shown documentary film was produced. In 2006-2008 the camp participants were directly involved in the archaeological excavations of Ulpiana. This year's activities will enable youth from various backgrounds to become better acquainted with each other, but also make an important impact on public opinion and enable the better presentation of Kosova's cultural-historic heritage to its visitors, local and foreign.

**P025**

## **A RESEARCH STRATEGY FOR MAPPING PREHISTORIC SUBMERGED ARCHAEOLOGICAL LANDSCAPES ON THE SEABED OFF NORTHERN IRELAND AND NEWFOUNDLAND**

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The Submerged Landscapes Archaeological Network (SLAN) is an international, multidisciplinary research group that investigates the prehistoric environments and archaeology of drowned landscapes off Ireland and Newfoundland. Both regions experienced lowered relative sea-level (RSL) during their earliest colonization. For Newfoundland, the earliest archaeological sites are believed to be located on 6-9 ka-old shorelines that are now submerged in 10-30m water depth, whereas along the north coast of Ireland, sea levels were lowered by 5-30m during the earliest known Mesolithic (c.10 ka). Our objectives are to understand how these now-submerged environments facilitated the expansion of the first populations and how the evolving coastal landscape, resources and climate may have stimulated social and cultural change. Our approach is explicitly landscape-focused and first attempts to map and reconstruct the palaeo-landscape using a variety of datasets including geophysical models of RSL change, high-resolution multibeam bathymetry and sub-bottom profiles. The intention is to identify areas where the palaeo-landscape is preserved and where features preferentially utilised by past humans (e.g. river valleys, sheltered lagoons) are situated. Identified zones of high archaeological potential can subsequently be targeted for local site survey and testing. This paper will outline our research strategy and provide illustrated examples of current work.

**P026**

## **CAPIDAVA REDIVIVA PROJECT**

Ratiu Alexandru-Mircea, Opris Ioan C., Bira Monica, Borş Corina, National History Museum of Romania (Romania)

The "Capidava Rediviva Project" is proposed by the National History Museum of Romania in partnership with the University of Bucharest - The Faculty of History and a series of Romanian museums in order to better protect and disseminate a unique archaeological site located on the banks of the Lower Danube, namely the Roman settlement

from Capidava. Considered by certain scholars as a spectacular site on the Roman Limes in this part of Europe, Capidava provides a remarkable set of features for archaeological field researches (including for the archaeological practice stage for the students from 3 Romanian universities), cultural tourism and study of a particular natural landscape. All of these characteristics were the basis for this initiative of cultural development aiming to promote this site on various levels, as well to involve different stakeholders (e.g. the local community including pupils, the local and central authorities, the scientific community etc.). During the first year the project is also financed by the Administration of the National Cultural Fund (AFCN). For more details see [www.capidava.ro](http://www.capidava.ro) (soon also with an English version).

#### **P027**

##### **CONSERVATION OF THE ROMAN THERMAE IN ODESSOS AND THE ECONOMIC CRISIS**

Haralambieva Anna, Roman Baths of Odessos - Varna (Bulgaria)

The economic crisis did not spare archaeological monuments either. The Odessos Thermae is the largest public building from the Roman period on the Balkan Peninsula. The Thermae are located on the Black sea coast and are exposed to the negative climatic influences and for almost 50 years now have been slowly decaying.

Until last year varying amounts of money had been allotted to conserve separate parts of the Thermae, mainly those, which were in poorest state of ruin. Regardless of the good amounts raised by sold entrance tickets (about 40 000 BGN or 20 000 EUR per year), a small portion of this proceeds was allotted for conservation. There was a single facility of BGN 20 000 (EUR 10 000) extended in 2008. At that time the Bulgarian economy was still in the periphery of the global crisis. No conservation facilities will be extended in 2009. The financing for the Varna museum was cut off by another 10% a few days ago (to reach a total cut off value of 20%). Not only limited finances but their management, too, account for the lack of conservation funds. Even the proceeds from entrance fees gained on the site are used for the needs of other museum units or for other purposes. Regrettably, these latter units are incomparable in importance with the Roman Thermae. This site is now 18 centuries old and should be preserved for the coming generations and human heritage. That is why a realistic assessment of its condition is required plus purposeful allotment of larger funds in the forthcoming one or two years. Any other financial policy can be defined as unprofessional.

#### **P028**

##### **EXPERIENCE, INFORMATION, COMMUNITY. AN ESSAY ON INTERACTIVE ARCHAEO – PARKS**

Serbanescu Adrian, Spiru Haret University (Romania)

The way archaeo-parks function today implies a separation of the public from the experimented phenomena. It is hoped that the audience participates to the archaeological actions, without altering the process of the archaeological experiment.

My poster will present an attempt to visualise the abovementioned interaction, how the scientific information will be processed and directed to the spectators which, in turn, will become actors. I intend to construct virtual contexts containing the sensorial experience of actors – experimentalists, which could be accessed by the large public.

#### **P029**

##### **FORGING GLOBAL RELATIONSHIPS AMONG HERITAGE MANAGEMENT CONSULTANTS**

Majewski Teresita, Grenda Donn R., Statistical Research, Inc. (USA); Polk Michael R., Sagebrush Consultants, LLC (USA)

The American Cultural Resources Association (ACRA) is a U.S.-based not-for-profit organization that promotes the professional, ethical, and business practices of the cultural resources (heritage management) industry, including all of its affiliated disciplines, for the benefit of the resources, the public, and the members of the association. A current strategic planning initiative of the organization aims to explore the value of internationalizing its goals, which include promoting professionalism, supporting the business and training needs of the industry, and encouraging awareness of heritage policy, legislation, and management in general. We propose that forging global relationships and communication among heritage management consultants can strengthen the ability of practitioners in their own countries to develop and sustain best practices in regard to identifying and preserving resources, engaging

all relevant stakeholders in making heritage-management-related planning decisions, and when necessary, appropriately mitigating negative impacts to sites, buildings, and landscapes. Examples from around the world are used to bolster the argument for international communication within the industry and create a model for relationship-building.

**P030**

**HERITAGE RESOURCES IN PERIL: NON-DESTRUCTIVE METHODS TO DOCUMENT ARCHAEOLOGICAL SITES AND HISTORICAL BUILDINGS AND MONUMENTS THREATENED BY NATURAL AND MAN-MADE DISASTERS**

Douglas Diane, Wait Gerry Anthony, Page-Smith Kate, Statistical Research Inc. (USA)

Global warming and human land use practices endanger the preservation of heritage resources in many regions of the world. Several climate scientists predict that over the next 50 to 100 years natural disasters are going to intensify due to global warming. Destructive hurricanes and El Niño storms will increase in magnitude and frequency; eroding shorelines will expand due to rising sea level; and intensified drought will fuel the extent and frequency of wildfires. In addition to these climate driven events, overgrazing on marginal landscapes is causing the expansion of deserts in Asia, Africa and the Americas; deforestation in other regions leaves slopes susceptible to erosion and mudslides. Each of these types of events, whether induced by climate change or human land use practices, threaten heritage resources in many regions of the world. With limited funding dedicated to mitigating the adverse effects of climate change, overgrazing, deforestation and consequential erosion on heritage resources, many significant cultural sites will be lost within the next 50 to 100 years. Nexus Heritage (Nexus), with its sister company, Statistical Research Inc. (SRI), has developed and deployed sophisticated non-destructive means of documenting heritage resources to provide a more comprehensive understanding of site formation and use of the landscape; these methods are generally used to guide archaeological investigations and management of cultural resources. We propose using these methods to document heritage resources threatened by natural or man-made disasters before they are destroyed, and the unique snapshot of human history that these resources provide is lost to future generations.

**P031**

**PERCEPTIONS OF HERITAGE. CREATING A DATABASE FOR THE ROMAN LAW ON BUILDINGS**

La Monica Denise, Anguissola Anna, Cresci Stefano, University of Pisa (Italy)

The poster illustrates the features and engineering outline of a new project developed by “LARTTE” (<http://lartte.sns.it>), a laboratory of the Scuola Normale Superiore in Pisa. A web-database named “Solone” is being developed with the aim of providing an extensive platform on both ancient and modern law on cultural heritage. Among the several sections already completed or in progress, and currently on trial, there is one dedicated to the rules on architecture, building materials, urban planning and facilities management in Roman and Late-Antique times, from the first-century BC municipal and colonial charters to Theodoric’s rescripts seven centuries later. Research is allowed according to chronology, jurisdiction, authority, type of assets and problems, relations (of passing, reaffirming, repealing, rejecting) between administrative acts. The comprehensive nature of “Solone”, spanning over two thousand years of legislation, allows to frame information into a much broader context, and therefore to investigate long-term cultural changes or to look into the history of a given geographical area. On the other hand, careful attention has been given to report the evidence for each source (manuscript or epigraphic), its textual and editorial history, meaningful differences in its translation into the main modern languages, as well as an updated bibliography. With its user-friendly interface, our database is not only meant to be an accessible reference tool, but also (and foremost) an efficient scientific instrument aimed at archaeologists, art historians and jurists dealing with the topic.

**P032**

**REVIVING ULPPIA TRAIANA SARMIZEGETUSA**

Ardeu Adriana, Museul Civilizatiei Dacice si Romane – Deva (Romania); Tentea Ovidiu, Museul National de Historie a Romaniei (Romania)

The poster will present a series of activities aiming to set on value and promote the archaeological heritage of the former capital of the Roman province of Dacia, namely the site of Ulpia Traiana Sarmizegetusa. The main components of this dissemination strategy developed for the archaeological site are:

- restoring the site museum
- elaborating a series of promotional publications
- initiating a management plan, both referring to the scientific research and the public presentation of the vestiges and finds
- implementing a cultural partnership with the local community
- updating the town-planning documentations for a achieving a better protection of the site

**P033****SAIL AND FORTIFY: A RESEARCH PROGRAM FOR PORTUGUESE OVERSEAS EXPANSION ARCHAEOLOGY (15TH-18TH CENTURIES)**

Teixeira André, Bettencout José António,

Portugal played an important role constructing the first worldwide globalization since the 15th century and maintained afterwards an active role in this field. This process left relevant heritage in the formation of urban spaces, building of new societies and agricultural landscapes. Simultaneously, the Portuguese action had important repercussions in Europe, transporting products from different parts, changing trade circuits and common life. The archaeology group from Centre for Overseas History has two main research areas related to this issue. The first one involves the Portuguese settlement in those regions during the 16th century, mainly focusing the fortification processes, a crucial element in its overall colonisation. It has studies related to the first forts built in the Indian Ocean and archaeological work at an ancient Portuguese city of Morocco (Azemmour). It has done excavations and archaeological studies in Portuguese castles next to the borderline (Almeida and Evoramonte), mainly as a comparison element.

The second one is related to Iberian navigation between 15th and 18th centuries, developed through underwater archaeology, looking for trade routes, cargo, shipbuilding, life on board and maritime landscape. This group is mainly researching at Azores islands, the main Atlantic port of call for Iberian navigation, where numerous shipwrecks are documented. It develops a program of research at Angra Bay, once the main Azorean port, and specific activities at Horta. This poster enounces some results of these archaeological studies, but rather presents our research program in this area, expecting to contribute for an agenda for European post-medieval archaeology.

**P034****STRATEG PROJECT**

Tentea Ovidiu, Muzeul National de Historie a Romaniei (Romania)

STRATEG – Defensive Strategies and Trans-Frontier Policies. Integration of the Lower Danube Space in the Roman Civilization (2007-2010)

One of the specific targets of the project is the integration of the research results in the programme “Frontiers of the Roman Empire”, conducted under the aegis of UNESCO. Consequently, the main activities performed included: Indexation and assessment of information of any nature available up to the present days regarding the Roman limes and the fortification lines in the areas advanced for research (Dobruja, Oltenia, Muntenia and the South-East Transylvania); Organizing an International Colloquium entitled “Limes And Barbaricum. Roman findings in the proximity of Dacia and Moesia”; developing mechanisms for managing information sets by means of specific databases, developing the spatial analysis mechanisms (including hydrological and morphometry analyses of the terrain); developing the mechanisms of web transfer, viewing and query of information in MapServer net.

**P035****UNDERWATER PALEOLANDSCAPES IN PERIL: CHARACTERISING AND MANAGING THE UNDERWATER HERITAGE BEYOND THE REACH OF DIVERS**

Skoglund Fredrik, Peacock Elizabeth E., Vitenskaops Museum, Norwegian University of Sciences and Technology - NTNU (Norway)

The deepwater coastal areas of Northwest Europe are being increasingly exploited and developed for the harvesting of energy resources, such as oil, natural gas, wind power, and aquaculture. This phenomenon is global. The inevitable disturbance of the seabed, as a direct consequence of trawling and the installation of massive pipelines, platforms, wind turbines and other structures, can disrupt the continued long-term preservation of underwater cultural heritage. CHM has too few tools at its disposal for understanding our deepwater cultural heritage. There is an explicit need for detailed knowledge of the actual preservation and deterioration processes, as well as guidelines for specific

measures that can and should be taken for the in-situ management, protection and environmental monitoring of deepwater cultural landscapes. DePMAS is a research project based at the Norwegian University of Science and Technology (NTNU) that draws upon multidisciplinary resources and expertise to address the long-term, in-situ preservation and management of deepwater sites. It builds upon experience gained in deepwater marine archaeological exploration and ROV technology by NTNU, and the preservation and management of underwater archaeological remains by the RAAR consortium. Still in its infancy, DePMAS aims to carry out long-term actualistic burial studies in comparable environmentally characterised and monitored deepwater environments to investigate tangible cultural materials that makeup sites, such as shipwrecks, and modern polymeric materials for potential in-situ preservation stabilisation, leading to informed protocols for site management. Submerged paleolandscapes are not solely at diver-accessible depths; DePMAS can contribute to the dialogue addressing the preservation of this heritage.

**P036**

**WODAN - DEVELOPING AN ARCHAEOLOGICAL WOOD AND CHARCOAL DATABASE FOR IRELAND**

Stuijts Ingelise, The Discovery Programme (Ireland)

The WODAN project aims to create an integrated wood and charcoal database from Irish archaeological sites, with the possibility of international applications.

The prototype database is being designed by the Discovery Programme, and is supported by the Heritage Council (Instar grant no 16679).

One of the aims of the project is the development of international standards for recording and storing wood and charcoal data.

We are looking for responses from EAA members and possible future collaboration with the project.

# MATERIAL CULTURE

**P037**

**“CHARMING ROMAN CIVILIZATION”: TRACES OF ROMAN INFLUENCES IN MATERIAL CULTURE OF D`YAKOVO TRIBES (THE VOLGA AND OKA RIVER`S INTERFLUVE)**

Saprykina Irina, Institute of Archaeology, Russian Academy of Sciences – Moscow (Russia)

**P038**

**MODELLING TRACES IN VESSELS FROM BRONZE AND IRON AGES IN THE MIDDLE EBRO VALLEY (SPAIN)**

Fanlo-Loras Javier, Pérez-Lambán Fernando, Picazo-Millán Jesús V., Dept. de Ciencias de la Antigüedad, Universidad de Zaragoza - Área de Prehistoria - (Spain)

Modelling traces from hand made pottery are the result and only evidence of each gesture involved in the act of building a piece of pottery. Their identification is the first step when establishing the chaînes opératoires. However the correct interpretation of these traces remains the main problem in order to create useful chaînes opératoires that allow us to explore the production processes and even to understand past societies. In other words, it is not enough to describe traces; we need to interpret them and understand the gestures and actions that caused them. In this poster we offer a graphic and descriptive catalogue of modelling traces identified on archaeological vessels and shreds, their gesture interpretation and experimental reproduction. This catalogue has been done with vessels recovered in two archaeological sites located in the Middle Ebro Valley (Northwest Spain): Los Collados from the Ancient Bronze Age and El Cabezo de la Cruz from the First Iron Age. In the correct interpretation of traces it has been essential the dialogue between archaeologists and potters.

**P039**

**MOLLUSC ADORNMENTS FROM SOME NEOLITHIC AND COPPER AGE SITES IN HUNGARY WITH SPECIAL ATTENTION TO THE ROLE AND PROVENIENCE OF SPONDYLUS SHELLS**

Sümegei Pál, Dept. of Geology and Paleontology, University of Szeged (Hungary)

Mollusks have always played an important role in the life of prehistoric communities in the Carpathian Basin. Numerous shell heaps discovered during the excavation of Neolithic, Bronze Age and Copper Age sites clearly talk about their importance as a second-line food resource in the diet of these communities. Nevertheless, shells of mainly freshwater mollusc of local origin, as well as exotic marine species often turn up at the sites as accessory elements of burials or as everyday commodities like pendants, beads reflecting their importance of these mollusc in the social life and ritual of these communities. Freshwater species easily available at the sites located near the major rivers or lakes of Hungary are more common and less appreciated in contrast to exotic marine species like *Spondylus gaderopus* reflecting long-distance interaction of these communities. In some sites we have also discovered shells which are extinct from the modern biota of the nearby seas of the Mediterranean, Aegean and Adriatic. These fossils were retrieved by humans from nearby fossiliferous outcrops mainly of Miocene Age and preserving the remains of ancient subtropical seas. This work will present some modified mollusc adornments retrieved during recent archaeological campaigns implemented in Hungary and will highlight their provenience and role in the life of Neolithic and Copper Age communities inhabiting the Carpathian Basin.

**P040**

**OBSIDIAN ARTIFACTS AT NURAGHE ORTU CÒMIDU (SARDARA, SARDINIA): SOURCING ANALYSIS AND SOCIOECONOMIC INTERPRETATIONS**

Tykot Robert, Freund Kyle, University of South Florida (USA)

Although the use of Monte Arci (Sardinia) obsidian subsources has been well studied for the Neolithic period, little has been done for the later Nuragic (Bronze-Iron Age) period in Sardinia. Long-distance trade connections have been documented for the Late Bronze Age, with the exchange of copper oxhide ingots, Mycenaean and Cypriot ceramics with the Aegean world, but few studies have focused on socioeconomic systems within Sardinia. This is addressed through the sourcing analysis of nearly 150 obsidian artifacts from the Nuragic site of Ortu Còmidu, in

the Sardara region of Sardinia, excavated in the 1970s by M. Balmuth and P. Phillips. These flakes, lunates, and other tools and debitage were analyzed non-destructively using a portable X-ray fluorescence spectrometer (pXRF) that distinguishes between the Monte Arci subsources (SA, SB, SC), as well as the other Mediterranean obsidian sources. The sourcing results are compared directly with the patterns observed for the Neolithic, and with the few other Bronze Age sites already tested. Variation between these sites, and between the different contexts the artifacts were found in at Ortu Còmidu, are also evaluated and integrated with the technological and use-wear studies done. Overall, this study exemplifies the importance of analyzing a statistically significant number of artifacts in order to make strong interpretations about ancient lifeways and socioeconomic systems.

#### **P041**

##### **PYROTECHNOLOGY OR FIRES: SPATIAL ANALYSIS OF OVERFIRED POTTERY ON THE LATE BRONZE AGE SETTLEMENT IN TURNOV - MASKOVY ZAHRADY (NE BOHEMIA)**

Thér Richard, UHK Hradec Kralove (Czech Republic)

A high proportion of over-fired pottery is a characteristic phenomenon of pottery assemblages from Late Bronze Age settlements in Central Europe. The amount of over-fired pottery is incomparable to any other prehistoric period. Accidental fires do not seem to be an adequate explanation of the phenomenon. Spatial analysis has been used to test the hypothesis that over-fired pottery is a consequence of systemic behavior, i.e. secondary use of sherds in pottery firing technology. The hypothesis has been supported by experimental research. The settlement of Turnov-Maškovy zahrady (NE Bohemia) revealed a spatial pattern that could be used for modeling the spatial consequences of this hypothesis. The spatial analysis was based on two interpolation methods: Inverse Distance Weighting and Kriging (performed in ArcGIS Desktop). The analysis has revealed a spatial correlation between clusters of post-holes and the distribution of the over-fired pottery at the site. The significant presence of temperatures exceeding 1000°C in the assemblage is therefore probably due to settlement fires rather than to the firing technology.

#### **P042**

##### **REFLECTION ON CULTURAL AND GEOGRAPHICAL DIFFERENCES IN YOUNG BRONZE AGE WITH REGARD TO THE VARIABILITIES OF CERAMIC VESSELS**

Prekop Filip, University of West Bohemia – Pilsen (Czech Republic)

The aim of the poster is to present master thesis, which content focuses on formalised analysis of the qualities of 300 vessels from Young Bronze Age. The vessels come from various geographical regions of Bohemia. Some of the vessels originate also from Saxony. The analysed collection of ceramic material is represented by material from North-Alpine cultural complex, Lusitanian cultural complex and several smaller cultural groups. Main variabilities are defined by Principal Component Analysis and its results are geographically projected by GIS. The results show that the values are not randomly widespread, but indicate a connection to specific regions. Some of them are possible to attribute to cultural complexes, but most of them probably reflected minor local 'cultural' groups.

#### **P043**

##### **SHELL BRACELETS IN NEOLITHIC ITALY: A CHRONO-CULTURAL AND TECHNOLOGICAL OVERVIEW**

Micheli Roberto, independent researcher

One of the most characteristic personal ornament of the Neolithic is the armring/bracelet made of stone or shell. Its spreading involves several cultural groups of the Italian territory between Early and Middle-Late Neolithic. The distribution of these objects is very large, especially in the Northern regions, indicating that the employment of this peculiar personal ornament was trans-cultural and had a long lasting tradition during the Italian Neolithic as an important component of the Neolithic costume.

The poster focuses on the shell type extracted from valves of big Lamellibranches (*Spondylus gaederopus* and *Glycymeris* sp.) and occasionally from shells of big Gastropods (*Charonia* sp.). It offers an overview of the Italian finds and presents the chrono-cultural spreading of shell bracelets, their employment and manufacturing process, drawing upon archaeological, experimental and ethno-historical data.

A description is given of the shell bracelets manufacturing process as it is known from the relevant remains discovered in the Arene Candide cave in Liguria. Nevertheless, new data obtained from a recent analysis of the old shell Neolithic collection of the Tremiti islands enable us to identify a new technique of shaping of shell bracelets and improve our knowledge of Neolithic shell personal ornaments technology.



**P044****“STONE DISKS” FROM SINTASHTA SITES: CLASSIFICATION AND INTERPRETATION**

Molchanov Ivan, Institute of History and Archaeology, Russian Academy of Sciences (Russia)

Settlements and cemeteries of the Sintashta culture are concentrated in northern steppe of south Trans-Urals. Period of their existence is cal. 2040-1750 BC.

Excavation of the fortified settlement Kamenny Ambar (Olgino) produced materials related to the Sintashta culture. The collection includes pottery, bone, bronze and stone products. Among the last a series of “stone disks” is allocated. Pays the attention The fact of their presence in many Sintashta sites is interesting since the function of such disks is not clear.

Disks are made in two specifications: small - diameter from 50 to 90 mm and big - diameter 120-130 mm. Products have form close to the circle. Their thickness fluctuates from 5 to 25 mm. Subjects are made by removal of edge from flat stone storage, before giving it a round shape. The surface, as a rule, was not processed specially, any appreciable development traces are not seen.

Unfortunately, the functional destination of disks authentically is not established till now. Assumptions are come out, that in an antiquity they could serve as sinkers (Serikov J.B.), or supported ceramic vessels (Kuzmina E.E). However, these points of view require the proof. Standardization and proved choice of a certain material for manufacturing is observed, it testifies to purposeful manufacture of the given products.

Allocation of two specifications of “stone disks” and absence of exact understanding of a functional destination show necessity carrying out study traces analysis and causes interest of researchers.

**P045****THE BONE ANVIL: AN EXAMPLE FOR THE EXPLOITATION OF PRIME MATERIALS OF ANIMAL ORIGIN BEYOND AS FOOD PROVISION**

Gál Erika, Archaeological Institute of the Hungarian Academy of Sciences (Hungary)

One of the most important finds recovered during the excavations made at Pantanello, chora of Metaponto (Southern Italy), is a bone anvil dated so far roughly to the 1st century AD – 2nd century BC. The 161.5 mm long object was made from a cattle metacarpus. This artefact was employed when the bended teeth of iron sickles used during in harvesting had to be straightened. The teeth of sickles left well recognisable marks on the anvil carved out from cattle leg bone.

The earliest evidence for bone anvils, described as bone rasps or files, comes from the Hellenistic site of Olbia in south-central Ukraine. Similar finds were also reported from Neapol and Thanagoria, the Graeco-Scythian area around the Black Sea. Consequently, the Pantanello find is probably the oldest bone anvil of this type in Europe. Absolute dating of the specimen shall bring new information in this question.

This type of tool has been first described from Italy. It represents indirect evidence for the use of iron sickle in the region on the one hand, and hints to the exploitation of prime materials of animal origin beyond as food provision. Ethnographic parallels of bone anvils made from cattle-, horse- and dromedary bones are known from Spain and Portugal, while similar archaeological finds were so far found in Ukraine, France and Morocco. Within the chronological and regional distribution of metapodial anvils, the Metaponto specimen fills a gap between the eastern Hellenistic regions and the Visigothic Period (5th–6th century AD) in Spain.

**P046****THE MATERIAL EVIDENCE OF THE “PRODUCTION SEQUENCE”. THE CASE OF THE POTTERY ENSEMBLE OF LOS GITANOS CAVE (CASTRO URDIALES, CANTABRIA, SPAIN)**

Cubas Miriam, Instituto Internacional de Investigaciones Prehistóricas de Cantabria (Spain)

We employ the concept of “chaîne opératoire” or “production sequence” based on a theoretical framework where the characterization methods are the main analysis tools for the study of the different phases of the complex production systems. This paper presents the study of the pottery ensemble from Los Gitanos’s cave (Castro Urdiales, Cantabria, Spain). This cave is one of the few archaeological sites where the ancient Neolithic has been documented in the Cantabrian Region. The subject of this paper is an approach to the “production sequence” of the ceramic sherds as direct material evidence. We have developed a methodology based in different levels of analysis. The macroscopic analysis is the basis for the systematic sampling and for the following mineralogical studies. We present the description of the mineralogical variability of the pottery ensembles, which is based on petrographic analysis. With this study we aim to describe the different manufacturing groups, based on the different mineralogical

and textural characteristics, and to point out the technological features of the Neolithic pottery in the Cantabrian Region, related with the ensembles known in the Iberian Peninsula.

**P047**

**THE MATTER OF SOUND: RECONSTRUCTING A CHORDOPHONE FROM ANCIENT MESSAPIA**

Urso Alessandro, University of Salento (Italy)

The Sound of the Matter: Musical Instruments from Ancient Messapia

Particle Induced X and Gamma-ray Emission techniques are used to investigate the nature of metallic parts belonging to a group of chordophones from Ancient Messapia, South Italy. The results are used to attempt a virtual reconstruction of the vibrational behaviour based on physical modeling methods.

**P048**

**THE STUDY OF QUERN-STONES FOR FORMULATING A DIETARY MODEL FOR NORTHWESTERN BOHEMIA IN THE NEOLITHIC PERIOD**

Káčerik Ales, Kučková Stěpánka, Archaeological Heritage Management of NW Bohemia (Czech Republic)

The postgradual research project is a joint project of the Institute of Archaeological Heritage Management of NW Bohemia, Most and the Institute of Chemical Technology, Department of Biochemistry and Microbiology, Prague. The main goal of the project is to obtain environmental data from the surface of querns found on the Neolithic sites in northwestern Bohemia. The surface of these grinding stones may contain organic residue from the milling of grain, wild plants (grass seeds), nuts, medicinal herbs, natural dyes, as well as meat. The poster is going to present the innovative chemical method Matrix Assisted Laser Desorption/Ionization (MALDI-TOF method) detecting the proteins that adhered after manipulation with plant seeds on querns. The preliminary data collection will be interpreted in terms of archaeological experiments with grinding tools, recent ethnoarchaeological and ethnobotanical studies in rural Anatolia.

**P049**

**TWO TYPES OF CHALCOLITHIC SETTLEMENT AREAS IN CENTRAL TURKEY WITH RESPECT TO GROUNDSTONES**

Řídký Jaroslav, Archaeological Institute of the Czech Academy of Sciences - Prague (Czech Republic)

Two systematic archaeological excavations of settlement ranges dating to Early and Middle Chalcolithic in Turkey (6200 – 4500 B.C.) are running presently in Cappadocia. Both sites are located in the basin of Melendiz river, in the distance of 50 km. The site Güvercinkayaşı is monocultural settlement located on the rock (5220 – 4680 B.C.), whereas Tepecik-Çiftlik site represents typical tell-settlement from the turn of the Late Pottery Neolithic and Early Chalcolithic period (several samples are dating to 6328 – 6041 B.C.). Ground stones are studied in two major levels:

The investigation of context directly in terrain (inside the room, outside the room, near the hearth or storage bin, in the wall, on working area, etc.). Micro-remains from working parts of chosen tools are also separated (if possible) immediately after having been removed from the founding context.

The classification of types, working parts and wear traces.

**P050**

**WALRUS ON THE SIDE OF THE DRAVA? AN IVORY BELT PLAQUE FOUND IN A TURKISH GARRISON IN SOUTH-WESTERN HUNGARY**

Gál Erika, Archaeological Institute of the Hungarian Academy of Sciences (Hungary)

Archaeological excavations carried out on the area of the Castle of Barcs in South-Western Hungary in 1989-2003 yielded the most abundant animal bone assemblage from this period in Hungary. According to historical documents, the garrison has been erected and settled by 170-200 Turkish watchers in 1567-1664 and provided the landing stage on the bank of the Drava.

The belt plaque carved out from the basic segment of a walrus tusk represents the most interesting find of animal origin. The margin of the 52.3 mm long, 39.1 mm wide and 6.5-7.0 mm thick object is symmetrically engraved. The

exterior of the plaque is decorated by four lines most probably representing a plant symbol. The back side is heavily polished. According to the two series of drillings and (remains of) iron pins placed in a larger and a smaller triangle shape, the plaque has been fixed two times or to two different belts.

The artefact is one of the rare luxury objects in addition to a decorated knife from Styria and a few pottery of Balkan and Chinese origin. Since only simple people were living in the garrison, these items may have been arrived to the castle through trade or other similar ways.

The object from Barcs is the second artefact carved out from walrus tusk in Hungary. The other object represents a fragment of a crosier and it was found in a medieval grave deposit of the Veszprémszentgyörgy convent in Western Hungary.

## RITUAL AND SYMBOLISM

**P051**

### **BETWEEN THE SACRED AND THE PROFANE - RITUAL SITES OF THE BRONZE AND IRON AGE IN THE JURA MOUNTAINS (GERMANY, FRANCE, SWITZERLAND)**

Denk Isabella, Université de Bourgogne (France) & Albert-Ludwigs-Universität Freiburg (Germany)

Prehistoric finds in caves, at the foot of cliffs or on the top of mountains have been published since the 19th century. Since the establishment of Prehistory as a university discipline in the late 19th century, archaeologists have always had much difficulties to classify these finds in relation to their prominent topography. It is hardly possible to integrate these finds such as pottery, bones, metal objects, coins or beads in the classic archaeological categories like settlement or funerary features, therefore a ritual context is often suggested. Thus a new approach of classification and interpretation of these places has to be developed.

In my German-French PhD-Thesis I examine the archaeological evidence of these places in the German, French and Swiss Jura Mountains during the Bronze and Iron Age. In this regard several questions become evident: What finds/features classify these supposed ritual sites without architectural structures? How can previous classifications and terminologies of these places be revisited in order to get an unprejudiced view on these features? Are there phenomena in other European regions that have parallels, such as the so-called Brandopferplätze in the Alps? Is it possible to establish some kind of a "sacred landscape"? Is it feasible to reconstruct catchment areas of these places? And is it generally possible to trace prehistoric religion or cult on the base of the scarce evidence that we know?

**P052**

### **CLUSTERING OF BARROWS ON THE BRONZE AGE AND HALLSTATT CEMETERIES**

Kristuf Petr, Dept. of Archaeology, University of West Bohemia – Pilsen (Czech Republic)

This poster deals with research of spatial distribution of barrows within the Bronze Age and Hallstatt cemeteries in Bohemia. Some structures in spatial distribution have been observed. We study the role of large barrows (by cubature) within the clusters recorded.

The main question of our study is whether these large barrows present funerary monuments of members of social elite. We are also trying to analyse relations of other barrows to these large ones. Analyses of some cemeteries under study suggest that these large barrows are probably not funerary monuments of the social elite and that the reasons for creation of such monuments are related to different social circumstances.

**P053**

### **GENDER AND MITOCHONDRIAL HAPLOGROUP IDENTIFICATION OF INFANT REMAINS REVEALED IN TELL YUNACITE BY MOLECULAR GENETIC METHODS**

Kurnosov Alexey, Shemyakin-Ovchinnikov Institute of Bio-organic Chemistry, Russian Academy of Sciences (Russia)

Molecular genetic methods are implemented for gender identification of remains if traditional anthropology methods are not applicable for some reason. Molecular genetic approaches to human gender identification are based on isolation of genomic DNA from available biological materials and subsequent PCR amplification of loci located on sex chromosomes (X and Y). An approach to identifying mitochondrial haplogroups is based on the detection of diagnostic mutations in the hypervariable region of the mitochondrial DNA. 28 infant burials have been registered in the Early Bronze Age cultural deposits of Tell Yunacite (Thracian Plain, Bulgaria). 26 of them were discovered within the dwellings, the remaining two were located near the houses. All infants belonged to the age group under 1.8 years old which makes anthropological methods not applicable for gender identification. At the current stage of the research bone samples from 10 burials have been analyzed using the molecular biology methods. Unambiguous results of gender identification for six samples were obtained. Data acquired using the applied molecular assays reveal that all six samples belong to male infants. Mitochondrial DNA study is the second goal. The results of the detection of the diagnostic mutations in three infant DNA samples show that two individuals belong to the HV0 haplogroup and the third individual possesses genetic markers for both HV0 and the related H6 haplogroups. These haplogroups are rather typical for modern Europeans. Our study could provide data crucial for the comprehension of historical and cultural features of ancient inhabitants of the region.

**P054****MORTUARY PRACTICES IN CHAMPAGNE ARDENNE (FRANCE) FROM 1st C. BC TO 5th C. AD : A REGIONAL PROJECT**

Paresys Cécile

Since 2006, a scientific project, grouping 10 archaeologists (INRAP and SRA), was born around mortuary practices in the antiquity in Champagne Ardenne. Our objective was to characterize integration of funerary groups into spaces with varied functions, to understand behavior towards death and deceased, to emphasize interrelationship and to deduce indications about society's structuration. In this way, we studied different ways : the treatment of the body, the gender and age of the population, the duration (with interruption or not) of funerary occupation and the organization of funerary space.

In this poster, we develop some results about the children, of which treatment of the body and spatial location change according to the age of the death.

**P055****THE HALLSTATT PERIOD RITUAL SITE ON THE BURKOVÁK HILL (CZECH REPUBLIC)**

John Jan, Chytráček Miloslav, Chvojka Ondřej, Michálek J., University of West Bohemia (Czech Republic)

The poster summarises information on a ritual site dating to the period of the Hallstatt Culture and located on Burkovák Hill near Nemějice in Southern Bohemia. Activity at this site can be dated to Reinecke's periods Ha C2-D2, or perhaps Ha D2/3. This hill top site is well known for numerous finds of small ceramic sculptures. The majority of the sculptures represents symbols of the sun and imitation of jewellery (beads). Objects as spools or horse figurines are also presented. These votive objects were probably deposited on the site within some ritual ceremonies. Fragments of pottery funnels and vessels allowing us also speculate about drink-offerings.

The assemblage of sculptures from Burkovák is unique in Central Europe for its size and importance for analysis of Iron Age symbolic system.

**P056****THE PRESENCE OF ANIMAL BONES IN PERDIGÕES: SOME IDEAS ABOUT IT SIGNIFICANCE**

Costa Cláudia, Valera António Carlos, Universidade do Algarve (Portugal)

Perdigões is a ditched enclosure complex, located in Alentejo region, southern Portugal, dated to the 3rd millennium BC. The site has been excavated during the last decade (<http://www.nia-era.org/content/view/281/33/>), in different archaeological contexts like the ditches, pits and the necropolis area (semi circular area with tombs delimited by the external ditch). The research already provided a numerous faunal remains collection, mostly vertebrate, from all contexts excavated. The remains are, in general, in great preservation status and come from the tombs, where the bones are commingled with the unconnected human bones; from pits, with anatomical limb association in direct association with human burials; and from the ditches. We intend to present the preliminary results of the faunal study from the ditches of Sector I excavated during 2007 and 2008. The contextual analysis points to animal bone depositions, some of them structured, in some places additionally with archaeological artifacts. These accumulations correspond to a large list of species, namely ungulates: *Bos* sp., *Sus* sp., *Cervus elaphus*, *Ovis/Capra*; and *Canis* sp. and *Oryctolagus cuniculus*. The study emphasizes a taphonomical approach in order to understand the possible differences between "intentional depositions" and "refuse disposals" as well as the stratigraphic and diachronic meaning of animal bones patterning.

**P057****TRYPILLIAN BIOARCHAEOLOGY: THE NEOLITHIC IN UKRAINE**

Madden Gwyn, Weed Kelly, Karsten Jordan, Grand Valley State University (USA)

Over the last 130 years, archaeologists have discussed the origin of Neolithic agricultural societies east of the Carpathian Mountains. This debate has sparked questions, such as, who were the first farmers of the Ukrainian territory? Were they native foragers using borrowed technology or were they newcomers? We suggest a Neolithic out-of-Danube migration eastward across the Carpathians by the Danubian Linear Pottery Ceramic (LBK) culture at 5,500 BCE. In 200-300 years LBK then formed the beginnings of the Ukrainian agrarian culture known as Trypillian along the Prut, Dnister and Boog rivers. Ukrainian archaeologists joined with an American microbiologist

and bioarchaeologist to excavate at Verteba Cave near modern day Borschiv, in western Ukraine. This is one of two sites known to hold skeletal remains from the LBK/Trypillian time periods, the other being Bil'shivtsi Village. Fourteen individuals were identified from a 12 meter square area within the cave, ranging in age from six months to 50 years old. Overall health of the individuals appears to be fair, although unhealed trauma suggests several individuals met violent deaths. Osteologically LBK has not been differentiated from Trypillian based on heritable traits. Several issues obstruct the description of the Trypillian mortuary behavior observed at Verteba Cave. Skeletal elements, along with many pottery fragments, a few stone tools, a horn, and antler digging tool were found mixed within the matrix. These findings suggest ancient looting, making the site more difficult to use for comparative purposes.

**P058**

**VARIABILITY OF FEMALE BURIALS OF CORDED WARE CULTURE**

Kristufova Tereza, Dept. of Archaeology, University of West Bohemia (Czech Republic)

The funerary ritual of Bohemian Corded Ware Culture is significantly structured in certain dimensions. Gender differentiation is perhaps the most significant one. Male and female burials differ in position of the body, as well as, in their funerary assemblages. This poster is devoted specifically to female burials. The variability amongst the female burials is being analyzed in our project. We try to find out whether this variability is a chronological phenomenon or if it is reflection of social categories etc. Some structures found within female burials are presented in this poster.

# SPATIAL TECHNOLOGY AND ARCHAEOLOGY

**P059**

## **CENTERS AND COMMUNICATION IN SOUTH-EASTERN ESTONIA DURING THE IRON AGE IN THE CONTEXT OF EARLY MODERN ERA MAPS**

Veldi Martti, Tartu University & Estonian National Heritage board (Estonia)

The paper focuses on the study of prehistoric roads and communication in south-eastern Estonia during the Iron Age (500 BC–1227 AD) using Early Modern maps from period between 1684–1839 and distribution of archaeological sites on landscape. Early Modern maps were digitally customized with today's maps in order to locate historic main land roads on today's landscape as precisely as possible. The maps were digitally registered with Earth's coordinates in GIS software, and separate map layers for roads on each map were created. After that the correlation of historic roads, archaeological sites and hill-forts as power centers was analyzed. The results of the research showed that during the first half of the Iron Age (500 BC–450 AD), the Migration Period (450–600 AD), and Previking and Viking Age (600–1050 AD) water routes dominated over land roads, in the Late Iron Age (1050–1227 AD) land roads became of more importance. The analyses concluded that the position and function of the hill-forts is very much defined by the landscape. Most of the hill-forts are situated on the edges of landscape regions, very often on the borders of large natural obstacles on the crossroads of land and water routes. Therefore one of the main functions of the hill-forts was to control and regulate traffic that enabled for the hill-forts strategically to distribute resources.

**P060**

## **EARLY AND MIDDLE NEOLITHIC SETTLEMENT SYSTEMS IN NORTH-WESTERN RUSSIA**

Dolbunova Katerina, Mazurkevich Andrei, Dept. of Archaeology of Eastern Europe and Siberia, The State Hermitage Museum (Russia)

This poster reports the use of GIS in a landscape archaeological study in the upper river basin of the Western Dvina. The region is situated at the watershed of three main rivers, the Volga, Dvina and Dnepr. This is the intersection of main water-ways and consequently of people and their cultures. The aim of our research is to gain a broader historical perspective for the Neolithic period through GIS modeling and data analysis. This has helped us to reveal different types of Neolithic sites, to construct models of the economic activities of hunter-gatherers in the region, and to determine the appearance of new inhabitants occupying different portions of the landscape. We have tried to understand why people chose specific parts of the landscape for settlement. In this research, GIS has allowed us to retrieve information about site placement and to investigate socio-environmental relationships. For example, topographic analysis of the placement of pile-dwellings, found at the border of lacustrine mires, has made clear that the majority of these were situated at the foot of the islands. We were also able to characterize the different groups of early Neolithic hunter-gatherer sites as seasonal sites, base camps, sites on the migration tracks and checkpoints. Furthermore, the use of GIS has revealed the density of sites and the zones of economical activity, which allowed us to interpret some sites as synchronous, to question theories of site appearance, and to better understand the prehistoric economic system.

**P061**

## **GIS BASED ANALYSIS OF SETTLEMENT TRANSFORMATIONS OF THE MIDDLE AGES**

Malina Ondrej, Dept. of Archaeology, University of West Bohemia (Czech Republic)

This poster will focus on two issues. The first one is the use of GIS as a tool for analysing the factors influencing surface artefact survey results. Information about past settlement activities is provided by surface artefact surveys and stored as attribute values of a grid. Geographical factors are derived from a DEM at a 1:10 000 scale by extracting elevation and slope values to other attributes of the same grid. A final group of attributes is formed by information about erosion derived from geo-referenced historical aerial images and land use recorded on 19th century cadastral maps. Factor analysis was then applied to see how these parameters influence the results of surface artefact survey. The results are being tested by comparing four different sites surveyed with the same (analytical) method. Two of these were previously investigated using a different, site search-oriented method so this was taken into consideration. All sites show differences in the most determining factors for artefact survey results – soil type (with related degree of erosion) and the probable intensity of past settlement. The second issue is an

attempt to map the influence of hydrological and geomorphological factors on settlement transformation. The input assemblage of sites includes the group mentioned above supplemented with randomly selected sites as well as localities surveyed and published by other scholars. Statistical tools will be applied to test the role of the observed factors

**P062**

**GIS METHODOLOGICAL APPROACHES TO THE STUDY OF SPATIAL BEHAVIOR.**

Ciolek-Torrello Richard, Heilen Michael, Hayden William, Altschul Jeffrey H., Wait Gerry, Statistical Research Inc. (USA) & Nexus Heritage (UK)

There has been a long-standing debate in academic archaeology on how to study the surface archaeological record. The debate has centered around whether to interpret the record as consisting of discrete sites and isolates or as continuous distributions of artifacts, features, and deposits. Historic preservation laws, however, focus on discrete sites as the properties that need to be discovered, recorded, and evaluated. As more research is done within a heritage management framework, the outcome has been to focus on the site as the unit of analysis almost to the exclusion of the study of spatial behaviors that transcend discrete sites. To achieve the objectives of heritage preservation and to examine spatial human behavior that is unconstrained by the site concept, new methodologies are needed. As a move in this direction we use GIS to create hypothetical archaeological landscapes based on assumptions of human behavior that can be tested and refined with survey and excavation data. In this process we collect detailed surface data that GIS algorithms use to define discrete sites and, at the same time, to analyze continuous distributions of cultural materials. We illustrate this approach with several examples from North America and West Africa using different field methodologies.

**P063**

**INTRA-SITE GIS ABOUT ARCHAEOLOGICAL EXCAVATIONS: WHAT MORE COULD BE LEARNED ABOUT POMPEII**

Maratini Chiara, Dip. di Scienze dell'Antichità e del Vicino Oriente Antico, University "Ca' Foscari" – Venezia (Italy)

This paper is about the intra-site GIS constructed for the representation of archaeological data gathered during the research activities in Pompeii of Ca' Foscari University (Venice, Italy) in the Regione V and VI since 2000 (Scient. Directorship, prof. A. Zaccaria Ruggiu). GIS technology in this project is intended as the real research framework, realizing not only interaction between different archaeological disciplines, but also allowing "more traditional" research (such as studies about topography, building techniques, frescoes paintings, finds) to interact with archaeobotany, archaeozoology, archaeometry and digital devices (for our purposes, we chose one of the most common commercial software packages, ESRI ArcGIS). The GIS project was set up in 2005 to manage all data concerning stratigraphic units (layers as well as wall-structures), architectural features and finds (pottery, glasses, frescoes, metals, coins, faunal remains, charcoals). The advantages obtained by using GIS are both methodological and interpretative, since they consist in representing spatial-temporal relations and at the same time in analyzing at a multiplicity of levels (in terms of calculating attribute values, i.e. by displaying records satisfying query expressions, or of buffering features and overlaying data) as well as acting as a support for objective interpretative evaluations. Other aspects still under implementation concern digital photogrammetry and 3D-modeling. The GIS also provides geomorphological information about the Vesuvian landscape surrounding Pompeii and other archaeological sites. In conclusion, it plays an important role in the planning phase of our fieldwork research activities and also for the preservation of the cultural heritage.

**P064**

**LAND-COVER AND LAND-USE MODELING FOR AN IRON AGE HILL-FORT USING INTEGRATED ARCHAEOLOGICAL AND POLLEN-ANALYTICAL DATA**

Danielisová Alzbeta, Pokorný Petr, Archaeological Institute of the Czech Academy of Sciences - Prague (Czech Republic)

This poster aims to present spatial models of prehistoric cultural landscape evolution. The project, dealing with the Iron Age hillfort of Vladař (western Bohemia), focuses on past land-cover and land-use reconstructions. The primary aims are to detect individual human activities chronologically and spatially and to model their impact on the surrounding landscape.



A multidisciplinary approach was undertaken combining both archaeological and environmental data. Absolutely dated on-site pollen profiles offered detailed insight into the chronology of the site, covering not only the archaeologically documented periods, but also those with little or no archaeological record. The ideal method of combining spatially related data with time-related pollen records is GIS-modeling of probabilistic landscape scenarios. For each scenario the relative abundance of pollen indicative for the relevant land-cover units was calculated. Those units were then associated with particular topographical preferences and located within a site catchment. In this way we aimed to detect the temporal dynamics of land-use. Scenarios with extreme human impact and those with little or no human impact were compared to “null”-scenarios and historically documented scenarios for validation. The approach undertaken shows the potential of GIS-based modelling for dynamical landscape reconstructions. It offers an intriguing new way to assess the validity of current archaeological data and also allows us to gain insight into those aspects of the human interaction with the landscape that are not easily detectable from the archaeological record alone.

### **P065**

#### **NEW OPPORTUNITIES FOR THE AERIAL ARCHAEOLOGY IN BELGIUM**

Lodewijckx Marc, Pelegrin René, Corthouts Luc, Goffioul Claire, Toussaint Michel,

After many decades of field surveys in the loess region of Central Belgium, the University of Leuven started conducting aerial surveys of eastern Flanders in 1997. Attention was first concentrated to the less prospected area of the Kempen, the sandy region at the north of the provinces of Antwerp and Limburg, but the compartmented landscape did not exhibit many archaeological features. Therefore, the project turned to the loess region of the Hesbaye and its neighbouring areas, such as the Hageland and the Meuse valley. Since the linguistic border between Flanders and Wallonia is not perceptible from the air and since the landscape and archaeological features on both sites are very alike, some Walloon colleagues were contacted, who immediately expressed their interest in organizing aerial surveys in teamwork. As a federal state, the authority on cultural matters in Belgium, including archaeology, belongs to the 3 regions (Flanders, Wallonia and Brussels Capital Region) and to the German Community at the border with Germany. This, however, does not prevent services and organisations from working effectively together for the same goals.

At the start of the partnership between the University of Leuven and the Department of Archaeology of the Walloon Region, we primarily carried out survey flights over the loess area of Central Belgium. However, we swiftly turned to the less familiar landscapes of the Condroz and the Ardennes, where more and pristine discoveries were expected. Despite less favourable weather conditions, we spotted a number of new archaeological sites. Flights are organized all year round with a four-seat, single-engine, high-wing Cessna 172 Superhawk, with two pilots for safety reasons. All pictures are taken in high resolution with a digital camera. Archaeological features on the photos can easily be located due to the link between the GPS on board the aircraft and digitalised maps. The poster presents some of the most outstanding discoveries and a selection of views showing the variety of landscapes of the Walloon region. We hope that this recent evolution will lead to new opportunities for the aerial archaeology in Belgium.

### **P066**

#### **REGIONAL PROJECT: TEL NAMI**

Salmon Yossi,

The regional project of Tel Nami has been a target of an intense interdisciplinary research since 1970 until today. Studies of seven seasons of excavations and some preliminary geological geo-morphological fieldwork are now advancing towards a conclusion. The results reveal evidence of a very interesting interaction between man and forces of nature that took place during the second millennium BCE on the Levantine coast. During this long period of time the region of Tel Nami has gone through various geo-morphological processes, changes in sea level, establishment of urban settlement, desertion, and later re-habitation towards the end of the period in the shape of a small cultic sanctuary.

The traditional path of research includes an expansion of the archaeological excavations and geo-archaeological field work into larger areas. Another method, which is now available to us, can be carried out on the basis of theoretical and practical advances in landscape archaeology. New survey techniques that incorporate spatial analyses, GIS analyses, geo-chemical surveys, and remote sensing methods allow us to sample a larger area and on the basis of them we can carefully choose small excavation areas that more likely would answer our research questions. In this presentation I will present the preliminary results of a Ground Penetrating Radar survey, an

underwater survey and the mapping of the archaeological and geomorphological features, that enable us to depict the plausible settings of an anchorage from the second millennium BC (ca. 4000 BP).

**P067**

**SITE CATCHMENT ANALYSIS REVISITED - GIS-BASED MODELING OF A SETTLEMENT LANDSCAPE IN THE SWISS SOUTHERN ALPS**

Della Casa Philippe, University of Zürich (Switzerland); Sauerbier Martin, Swiss Federal Institute of Technology (Switzerland)

Site catchment analysis (SCA) has a long tradition in landscape archaeology, and has undergone substantial theoretical and methodical adaptations over the years. GIS-based tools are particularly appropriate for further developments in SCA due to their wide potential for structurally related algorithmic calculations and modelling. Likewise, the Alpine region offers a complex spatial background for various ecological and economical analyses, in particular also SCA, since site topography and ecology appear as key factors in the understanding of Alpine settlement landscapes. Using the Bronze and Iron Age settlement of Airolo-Madrano in the Ticino valley (Switzerland) as a starting point, the paper investigates the possibilities of GIS-based SCA using a comprehensive site/environment database, factor analysis of ecological parameters, and predictive modeling, including cost surface calculations using Tobler's hiking function, and agronomic parameters for pasture and cultivated land. The Airolo-Madrano SCA aims, beyond cartographic illustration and modeling, at an empirically founded survey of economic territories and production yields, to be correlated with the results of the archaeological and biological investigations of the site.

**P068**

**THE NEOLITHIC SETTLEMENT OF BYLANY IN THE DIGITAL ERA**

Kvetina Petr, Koncelová Markéta, Archaeological Institute of the Czech Academy of Sciences - Prague (Czech Republic)

Large scale excavations of the Early Neolithic settlement of Bylany have been conducted since the 1950s. It was the first time that such a large Neolithic settlement area surface with many house plans and adjacent pits was exposed. Processing of the excavated material has gone on since; it comprises large sets of data and information about the archaeological sources and their formal, symbolic and spatial attributes. Owing to the immense quantity of data collected over the many years of archaeological research in Bylany, it proved necessary to create a central system allowing for effective use of the recorded data. The result was a compact set consisting of a database, graphic documentation and GIS map that were published on CD and were also released on internet ([www.bylany.com](http://www.bylany.com)). The main problems studied used to be settlement chronology and interpretation of the spatial distribution of the Neolithic settlement remains. We attempted to answer these questions anew using GIS and multivariate statistics. Our results confirmed the existing chronology. Other sets of questions, neglected until recently, relate to the formative processes of the archaeological material. On the one hand, we seek to recognize the overall trends of refuse management at the scale of the settlement area, and on the other hand to analyze particular cases of pit fillings. The latter problem was approached by means of micro-GIS analyses and model reconstructions of pit fillings.

**P069**

**UNDERWATER RESEARCH OF THE SUBMERGED LANDSCAPES IN THE BLACK SEA, CRIMEAN PENINSULA, UKRAINE**

Stepanchuk Vadym, Shidlovsky Pavel, Morozova Yana, Kobets Viktor, Ryzhov Sergey

Underwater archaeologists from Kiev National Taras Shevchenko University have been conducting exploration in the Black Sea for more than fifteen years. Their underwater research is devoted to the various aspects of history and archaeology of the Ukrainian marine territories from prehistorical period to the Middle Ages. The coast of the Crimean Peninsula is one of the main regions where underwater research takes place at present.

The Crimean peninsula played an important role in the history of the first period of colonization in Ukraine specifically, and Eastern Europe in general. The initial peopling of the territory of modern Ukraine is currently dated to the Early Pleistocene period and is characterized by mobile populations and movement over the landscape. The periodic climate fluctuations of the Eopleistocene-Pleistocene, marked by the changes of the water level in the Black Sea basin, influenced patterns of settlement and the lifestyles of prehistoric populations, especially during periods of global climatic shifts.

The earliest reported Paleolithic inhabited territories in Crimea are located next to the modern coastline and on high marine and riverine terraces. During the later Pleistocene/ Paleolithic, the settlements in the Black Sea coastal zones disappear and the population is concentrated in piedmont area of the Crimean Mountains, although there is evidence of the sporadic use of marine resources by Middle Paleolithic groups.

The significant source for scientific investigation of mentioned processes is submerged caves in the Black Sea, situated both at the West and East of the Crimean coastal zone.



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