



8th Meeting of the Worked Bone Research Group

Salzburg, August 29th – September 3rd 2011

Programme and Abstracts



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Organized by

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With the Collaboration of Petra Eitzinger, Andrea Kurz & Josef Ries

Universität Salzburg
FB Altertumswissenschaften
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Programme

Monday, 29th August

15.00-18.00	Registration (University of Salzburg, Churfürststraße 1, room HS 209)
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Tuesday, 30th August

Registration starts from 8.30 (University of Salzburg, Residenzplatz 1)

09.00-09.30	Introduction
09.30-10.00	Marloes Rijkelijkhuisen, Horn and hoof – Plastics of the past
10.00-10.30	Katarzyna Cebula, Traces of usage on the surface of bone needles from the early Middle Ages in the Odra valley
10.30-11.00	Alice Choyke, Talking Bone Tools: Modelling bone manufacturing and use through ethnography
11.00-11.30	<i>Coffee break</i>
11.30-12.00	Natacha Buc, Bone Technology in the Low Paraná Wetland before the Spanish Conquest. Testing an Evolutionary Model
12.00-12.30	Owen Mapp, Pre European Maori bone/ivory Artefacts of New Zealand
12.30-13.30	Astrid Dingeldey, Roman Bone Crafting: A demonstration of the manufacture of a gaming piece on a bow driven lathe
13.30-14.30	<i>Lunch</i>
14.30-15.00	Owen Mapp, Contemporary New Zealand Bone/ivory Carver Artists of New Zealand
15.00-15.30	Marcin Diakowski & Bernadeta Kufel-Diakowska, “Bone plates” and “antler whistles” – tools of undetermined function from the Roman period
15.30-16.00	Jakob Baerlocher & Sabine Deschler-Erb, On a bed of Bones. Three Roman burials from Vindonissa (Switzerland) with bone decorated couches
16.00-16.30	<i>Coffee break</i>
16.30-17.00	Aurélie Schenk, Bone, antler and ivory objects from Avenches / <i>Aventicum</i>
17.00-17.30	Kordula Gostenčnik, Ibex horn cores and a <i>sacrificium Capricorni</i> from Magdalensberg (southern Austria)
17.30-18.00	Sofija Petkovic, Two Roman fibulae made of bone found in Serbia

Wednesday, 31st August

Registration starts from 8.30 (University of Salzburg, Residenzplatz 1)

09.00-09.30	Heidi Luik & Valter Lang, Late Bronze Age elk antler tools in the Eastern Baltic
09.30-10.00	Zsuzsanna Tóth, Some Finds from the Late Neolithic Site, Aszód, Hungary

10.00-10.30	Petar Zidarov, Buried in pits away from tells: Three Late Neolithic worked bone assemblages from Upper Thrace, Bulgaria
10.30-11.00	<i>Coffee break</i>
11.00-13.00	Visiting the “Cathedral Excavations Museum”
13.00-14.30	<i>Lunch</i>
14.30-15.00	Selena Vitezović, The Neolithic bone industry from Starčevo – Grad (Serbia)
15.00-15.30	Isabelle Sidera, Chronology or not chronology that is the question. LBK Bone Assemblage example
15.30-16.00	Éva David, Magdalenian portable art of Piette’ collection (France), a first case of goods in motion

Thursday, 1st September

Registration starts from 13.00 (University of Salzburg, Residenzplatz 1)

09.00-14.00	Visiting the “Keltenmuseum Hallein”
14.00-14.30	Manuel Altamirano Garcia, Bronze Age osseous arrowheads from the archaeological site of Motilla del Azuer (Ciudad Real, Spain)
14.30-15.00	Malgorzata Winiarska-Kabacinska, Neolithic bone musical instrument from Kadero (Central Sudan)
15.00-15.30	Christopher Arabatzis, The bone tools from the Neolithic settlement of Proskinites, Greece
15.30-16.00	Andrzej Boguszewski, A trial to understand “the crown”: a mysterious type of Neolithic mining tool. Experimental sawing of antler using a horsehair saw
16.00-16.30	<i>Coffee break</i>
16.30-17.00	José Miguel Tejero, Bárbara Avezuela, Ruth Maicas, & Carmen Cacho, Magdalenian osseous industry from La Peña de Estebanvela (Segovia, Spain). A preliminary technological analysis
17.00-17.30	Maria Borao Álvarez, Technological study of antler industry manufacturing process in the Upper Magdalenian of Cova de les Cendres (Alicante, Spain)

Friday, 2nd September

Registration starts from 8.30 (University of Salzburg, Residenzplatz 1)

09.00-09.30	Emanuela Cristiani, Investigating Late Glacial Alpine adaptations: The osseous industry of Riparo Dalmeri (Southern Dolomites)
09.30-10.00	Jean-Marc Pétilon, Arrowpoints of the Santa Cruz Islands (Temotu, Solomon Islands). Preliminary inquiries into typology, raw material, decoration and what links it all together
10.00-10.30	<i>Coffee break</i>
10.30-11.00	Tomasz Płonka, Marcin Diakowski & Bernadeta Kufel-Diakowska, New ideas on final palaeolithic symbolism from a technological perspective
11.00-11.30	András Markó, Leaf shaped and osseous tools from old excavated cave sites: the first steps

11.30-12.30	<i>Lunch</i>
12.30-14.00	<p>Poster Session</p> <p>Corneliu Beldiman & Diana-Maria Sztancs, Inspired Double Break of Leg. Rare Eneolithic Point made of Pig Fibula with Trauma from Transylvania, Romania</p> <p>Maria Borao Álvarez, Bone industry and the manufacturing process in Upper Magdalenian of Cova de les Cendres (Alicante, Sapin)</p> <p>Barbara Carè, Knucklebones from the Funerary contexts of Locri Epizefiri (Southern Italy)</p> <p>Aleta Guadelli, The retouchoirs from the gravettian levels in Kozarnika cave</p> <p>Yanfeng Hou, An Experimental Reconstruction of Preparation Methods of the Late Shang Oracle Bones from Xiaomintun Site in Anyang Henan Province, China</p> <p>Bénédicte Khan, The Bone Workshop at Petra: Highlights on the 5th c. AD Bone Industry</p> <p>Viviana Miteva, Archaeozoological and taphonomic observation of bone assemblages from Kozarnika cave, North-West Bulgaria: climatic changes</p> <p>Xiaolin Ma, Cattle Bones and Hairpins: Analysis of Worked Bones from the Western Zhou Period of Central China</p> <p>Sean Rice, The Worked Bone from the Links of Noltland</p> <p>Marloes Rijkeljkhuizen, Versatile bone</p> <p>Diana-Maria Sztancs & Corneliu Beldiman, Prehistoric Adornments from Romania. Eneolithic Necklace made of Shell Beads discovered at Ariuşd, Covasna County</p> <p>Selena Vitezović, Spoonfull of sugar? Spoons-spatulas from Early and Middle Neolithic</p>
14.00-14.30	<i>Coffee break</i>
14.30	Closing Discussion / Christian Küchelmann, Changes in the website
19.30	<i>GALA DINNER</i>

Saturday, 3rd September

Post conference tour to Hallstatt

Please note that the excursion (20 €) is not included in the registration fee

08.30: Bus Transfer from Salzburg (Bus Terminal Nonntal, Erzabt-Klotz-Straße) to Hallstatt

10.00: Visiting the prehistoric salt mine

14.00: Lunch

15.30: Visiting the Hallstatt Museum

16.30: Visiting the Bone House

17.30: Return to Salzburg

19.00 (approx.): Arrival in Salzburg

Abstracts – Papers

in order of appearance

Horn and hoof – Plastics of the past

Marloes Rijkelijhuizen

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Due to the favourable properties of horn, it was an important raw material for object manufacturing. The elasticity and thermoplastic nature of horn allowed people to reform and flatten the horn and make a variety of objects out of this material. Although it probably has been used since early times to produce many different objects, the archaeological evidence of the use of horn is scarcer than that of materials which are better preserved in the soil such as bone or antler. In some exceptional cases horn objects or waste fragments have been preserved and excavated. Such glimpses of the past provide us with important evidence of the use of horn in the past. Indirect evidence such as horn cores with saw marks also reveal more information about this craft. In combination with historical and iconographical sources we can try to find out more about horn working.

The use of hoof is still obscure and the identification of this material is problematic. Only occasionally the raw material of an object can be identified as hoof. The processing and working techniques of hoof is similar to that of horn. Hoof is said to be used instead of horn as a cheap substitute.

In this presentation I will explore the different uses of horn and hoof and I will try to reconstruct the organisation of this craft through time with a focus on the area which is now called the Netherlands. These materials were probably very widely used until recent times. The elasticity and appearance have been copied into modern day objects of plastics.

Keywords: horn, hoof, the Netherlands

Traces of usage on the surface of bone needles from the early Middle Ages in the Odra valley

Katarzyna Cebula

Master studies, Institute of Archaeology at University of Wrocław

This paper is written based on the thesis entitled “Production and traces of bone and iron needles usage in the Oder Valley from the early Middle Ages” and on the basis of further research and reflection.

In Europe bone needles were used since the Stone Age. One of the collections of bone needles from that period is located in the museum in Dolní Vestonice (Moravia). Moravian archaeologists made experimental replicas of those tools. Such needles are also known from Polish territory since the Neolithic through the Bronze Age and the Roman period until the late Middle Ages.

The issue of bone needles in the Middle Ages is interesting. Not only because of their occurrence with iron needles in the same settlements or even in layers. Bone needles are more interesting artifacts because of the many traces of activities that can be found on their surface. Such as the knife during the production or the polish of the surface during usage of these tools. Precisely those traces are considered by this paper (traseological and experimental research). Moreover, considering the similarities and differences between the sizes, shapes and materials the finds may lead, to distinguish their types and functions, which could be different than the iron needles. What is more different types of bone needles also may have slightly different functions and to some extent have regional differences.

Traseological researches on the needles from the medieval Wrocław showed that traces of production, and traces of use, for example, surface smooth and polished, rubbed blade, smooth and extended eye of a needle, are still visible. In experimental studies such traces also appeared and the experiments are still ongoing.

Probably the analysis of traces of use on the needles, experimental studies, traseological analysis and comparison between shapes and sizes of needles (and contexts) can lead to the award of knowing the specific activities that they performed. Whether it was naalbinding or stapling thick fabric or braiding fishing nets.

Experimental studies were carried out in several variants. The first is the production of clothing (socks, gloves), needles of various sizes using the technique of bone naalbinding. The second option is a staple of various pieces of linen fabrics, different bone needles.

Keywords: bone needles, smoothing, polish, surface, traseology, archaeological experiments, traces of using, production traces, naalbinding.

Talking Bone Tools

Modeling bone manufacturing and use through ethnography

Alice Choyke

There has been a veritable explosion in innovative techniques for studying worked osseous materials over the past twenty years that have brought the field well beyond the typochronological studies of the past. New methodologies have produced data touching on many points in the production and use of these objects, from the procurement of their raw material to their manufacturing techniques use and finally discard. However, there is no escape from the fact that we produce our analyses in the context of cultures far removed from the people and objects of our study. Most of us are urban dwellers living in a complex market economy. How can we produce models to help us understand and bring together the data at our disposal? One possible route is the use of ethnographic data on how peoples in different parts of the world have exploited osseous materials to make a variety of objects. However, most ethnographic collections suffer from a number of problems, mostly related to the fact that they were collected more as by-products of research with very different goals. Questions of how objects are used, the subjective social value of bone objects to their makers and users are rarely touched upon in these studies and collection reports. In an increasingly globalised world even finding people who still actively use bone tools in any sense is becoming close to impossible. We are in a race against time. To this end, a questionnaire was developed aimed at getting at the actors involved in manufacture-use narratives and their attitudes towards the object(s) in question. The questionnaire is currently open for use for anyone who is interested and has been posted on the WBRG website for around a year now. Here, three case studies of

three very different objects will be presented to highlight the potentials of this kind of research.

Bone Technology in the Low Paraná Wetland before the Spanish Conquest

Testing an Evolutionary Model

Natacha Buc

National Institute of Anthropology and Latin-American Thought (INAPL)
National Council of Scientific and Technical Investigations (CONICET)

In a recent PHD dissertation, I have proposed an evolutionary model on bone technology in the Low Paraná wetland. Data analyzed on six archaeological sites show that a stable and well defined technological complex existed for the last 1000 years. However, I proposed that there was a technological shift linked to economic changes (acceleration moment in the intensification process) in the years before the Spanish conquest. This shift is supposed on the base of one archaeological site (La Bellaca II) dated around 600 B.P. and implies the presence of new morphological variants, a diversification on bones used as raw materials and functional variability of some morpho-functional groups. In few words, it would have been a new experimental moment occurring in a well defined technological complex.

The aim of this paper is to test this model considering new data on three sites recently excavated: Punta Canal, El Cazador 2 and El Cazador 3. For this porpoise, I analyzed morphological variability and bone raw material of these assemblages, and compared these results with the data obtained in previous research work.

Keywords: bone technology, morphological variation, bone raw material.

Pre European Maori bone/ivory artefacts of NZ.

Owen Mapp

In this lecture I will look at the neolithic tools and techniques used by Maori for the carving of bone and whale ivory. There will be images of NZ's earliest amulets and necklaces

shown, approximately 1000 years old, a range of bone tools and then the later period carvings up to contact with Captain James Cook in 1769 AD. Included will be a couple of stone worked wood items for contrast.

Contemporary bone/ivory carver artists of NZ.

Owen Mapp

In this lecture I will show a range of my carved work of the last 43 yrs. (I was responsible for re-introducing bone carving back into NZ. In the 1960's there was no bone carving being done or seen in NZ.). Collection of steel hand gravers/scrapers. Other artists work, Maori and Pakeha, will be shown with brief backgrounds. Comments concerning the status of carvers in NZ. today. How bone carvings are seen as a recognisable NZ. icon when worn overseas. Included will be some examples of jade carvings as contrast.

“Bone plates” and “antler whistles”

Tools of undetermined function from the Roman period

Marcin Diakowski & Bernadeta Kufel-Diakowska

The paper will present preliminary results of technological and functional studies of two types of tools from several sites in Lower Silesia (SE Poland) dated to the Roman period. In the Polish archaeological literature these artifacts are mostly described as “bone plates” and “antler whistles” and their different functions are determined intuitively, only on the basis of morphometric features. However, so far there are any exact interpretations how they could have been used. According to some researchers, “bone plates” were used as weaving tablets or scrapers for tanning hides. At least to two different functions are attributed also to the second type of tools. One group of archaeologists defines them as whistles while the other as objects for weaving nets. Besides, in the literature it is possible to find many other terms such as bow ends, parts of horse's bits, parts of buildings and many others. Microscopic analysis of use-wear traces allowed understanding the economic aspects of bone and antler tools in the Barbaricum.

On a bed of Bones

Three Roman burials from Vindonissa (Switzerland) with bone decorated couches

Jakob Baerlocher & Sabine Deschler-Erb

University of Basel

Ten cremation graves were found during the excavations at the two arterial roads of the Roman legionary camp of Vindonissa (2006 – 2009). Three of them contained pieces of carved bone which once decorated wooden couches. These couches had been burnt on a pyre together with the corpse and several grave goods such as glass phials, pottery and food. As a consequence of the cremation all objects are heavily fragmented and mixed up. In this paper we give an overview of these graves and suggestions as how such particular findings should be analysed.

Bone, antler and ivory objects from Avenches / *Aventicum*

Aurélie Schenk

Site et Musée romains d'Avenches, Switzerland

The town of *Aventicum* was founded at the turn of our era. Capital of the Helvetian, then elevated to the status of roman colony by Vespasien in 71/72 AD, it quickly became a very important politic, religious and economic center in the newly romanised territory of current Switzerland.

A remarkable assemblage of 1514 worked bone – antler – ivory objects, dated from the 1st to the 3rd century AD, has been found up to now. Indeed, since the earliest excavations (end of 18th century AD), the museum's collections never stopped to increase due to continuous rescue as well as planned excavations carried out throughout the modern city. This fabulous corpus nearly holds the whole range of utilitarian, ornamental and recreational objects known for this period, plus a few unique outstanding ivory masterpieces. Both the status and the rapid integration of the town within the trade and exchange network of the Roman Empire undeniably had an impact on the diversity and richness of this collection.

The transformation of bone and antler *intra muros* is only known from the waste products generated by settled or itinerant craftsmen activities. No workshop has been uncovered so far, but it certainly reflects the hazards of excavations. Nevertheless, the study of 114 raw pieces, draft and unfinished objects enabled to attest several stages of manufacturing, as well as different techniques like cutting, shaping, sawing, lathe turning, drilling, riveting, colouring or ornamenting. Still, the bone industry seems mainly devoted to simple daily use objects such as hairpins, needles, gaming pieces and crude handles, occasionally spindles, *cochlearia* and dice, any other artefacts, if not manufactured locally, might have been hawked in thanks to commercial relations.

In addition, osteological determinations provided interesting hints about the availability and management of raw materials in *Aventicum*, where equidae bones prevail over cattle bones, despite the fact that horse meat was seldom consumed during roman time. It is nowadays demonstrated that the choice of material was determined by regularity in the morphology, but above all by the size of the bones. However, the means of supply might have been very sensitive in this case compared to slaughter animals. Beside these resources, antler was also appreciated throughout the 1st century AD, but hit a significant recession along with the process of urbanization.

Finally, spatial distribution showed that this craft was well integrated within the urban landscape and economic networks, as it often seems to be settled in the near vicinity of other specialized craftsmen, like butchers or metal workers, doubtlessly skimmers and tanners, whom they may have collaborated with and even shared the same facilities.

Ibex horn cores and a *sacrificium Capricorni* from Magdalensberg (southern Austria)

Kordula Gostenčnik

Magdalensberg-group, kgosten@gmail.com

During more than 60 years of archaeological fieldwork, the Roman town on a mountain today called “Magdalensberg”, which flourished in between 50 BC and AD 50, yielded ibex bones and some ibex horn cores among the faunal remains. In addition to these, an inscription dating from AD 5 refers to a dedication made to the Capricorn. This sign of the zodiac is

especially connected with Emperor Augustus (27 BC – AD 14). Considering the inscription, those horn cores might have played a role beyond hunting trophies from high mountain areas.

Late Bronze Age elk antler tools in the eastern Baltic

Heidi Luik¹ & Valter Lang²

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The large number of bone and antler artefacts among the finds from the Late Bronze Age sites in the eastern Baltic region demonstrates the importance of bone and antler as raw materials in the society of the period. The paper deals with a certain type of antler tools in the Late Bronze Age fortified settlements on the eastern shore of the Baltic Sea. These tools are made from elk antler beam and palmate. Estonian archaeologists have regarded them as hoes or ard points, but in Latvia and Lithuania they have been usually called ‘axes’. In Estonia such tools have been found mostly from Asva, one artefact comes from Iru and some fragments from Ridala. In Latvia most examples come from Kivutkalns and some from Vīnakalns and Mūkukalns. Only a couple of finds are known from Narkūnai and Sokiškiai in the eastern part of Lithuania. According to the use wear and shape of artefacts it seems more likely that they were used as agricultural tools. The longest points are 25 cm, and the shortest only about 10 cm long, probably these have been repeatedly resharpened.

We have not found exactly similar antler artefacts from elsewhere beyond the eastern Baltic region. Comparative material can be found among ard points made from stone and wood, found e.g. from Finland, Scandinavia and the British Isles. Probable ard point made from stone was found during the excavations at the Saha-Loo Bronze Age field complex in North Estonia. Some other examples are known from several places in northern Estonia and two probable stone ard points are found also from Latvia. Some wooden ard points are found from the Neolithic settlement site of Šventoji in western Lithuania.

The fact that these tools are considerably more numerous in Estonia and Latvia, compared with eastern Lithuania, also suggests that they could be agricultural tools. Agriculture played only a secondary role in the region of eastern Lithuanian fortified settlements; cattle breeding, bronze-casting and trade were more important. Apparently the

scarceness of antler artefacts connected with agriculture also reflects the moderate role of agriculture in East Lithuania. Although the fortified settlement of Asva itself is not located on a site favourable for cultivation, both Asva and Ķivutkalns, where most of such tools have been found, are located in a region where natural conditions favoured primitive agriculture.

Clearance cairn fields and block-shaped fields (Baltic and Celtic fields) dated to the Bronze Age are known in northern and western Estonia. Stone clearance and introduction of block-shaped fields are an indication that ard was in use in Estonia by the Late Bronze Age at the latest. The size of plots and their quadrangular shape refer to the use of the crook ard. The oldest ard marks are discovered at Ilumäe in northern Estonia. These crossed ard marks date from the period between the beginning of the Bronze Age and the Late Roman Iron Age. Similar ard marks have been uncovered beneath the cultural layer of a Late Bronze Age fortified settlement site at Dievukalns, Latvia. Those ard marks are examples of crosswise ploughing with a primitive crook ard.

Keywords: Late Bronze Age, eastern Baltic region, fortified settlements, elk antler, agricultural tools

Some Finds from the Late Neolithic Site, Aszód, Hungary

Zsuzsanna Tóth

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The Late Neolithic site of Aszód, situated some 40 kilometres from Budapest in Central Hungary, yielded a large assemblage of worked osseous materials, bone and antler tools and waste. More than 1200 objects were discovered from the site, which makes it to one of the most important collections of the period in Hungary.

A special group of the bone assemblage, called hide-beamers, contains 56 objects. The preference of species and skeletal element seemed clear for the first sight. They seemed mostly made on large ungulate metapodials. Detailed study of several sites showed indeed, that besides wild and domesticated cattle, other species were used as well, and on some sites preferred, to produce this tool. The skeletal element preference seems to be more complex as

well as metapodials. The appearance of the tool is characterised by the 2 or 4 working surfaces, placed symmetrically on the sides. Although they seem to be a special tool-type, manufactured for a special activity, appearing quite often and in high numbers on all Late Neolithic sites, their function, based on use-wear studies remain in shadow. They are shaped with scraping, but all the stigmas visible on their surface can be identified as scraping marks and connected either to the manufacture process or the renewing of the tools, completely lacking all evidence of use. This makes the role, these tools are supposed to play in the hide processing, based on ethnographic parallels, at least doubtful.

The tool type is spread in Central and Eastern Europe, but lacking completely on the western side of the continent. Although they are easy to identify, the borderline of their distribution is not clear at the moment.

Keywords: Late Neolithic, hide beamer, Central and Eastern Europe

Buried in Pits away from Tells

Three Late Neolithic Worked Bone Assemblages from Upper Thrace, Bulgaria

Petar Zidarov

Construction works along the “Trakia” highway (E80) in southern Bulgaria have cut across a number of prehistoric sites, mostly characterized by dug-out features such as tens to hundreds of pits of varying dimensions and shallow ditches that often went unnoticed during routine field surveys. Three sites – Sarnevo, Hadjidimitrovo and Ezero-Dryanova mogila – yielded several hundred bone artefacts dating to the Karanovo III-IV and IV phases of the Late Neolithic (ca. 5400-4800 calBC). Simultaneous preparation of the final excavation reports from the three sites provided a rare chance for applying identical record procedures and studying the three assemblages in a comparative manner. This paper sets the finds in an excavation context and elaborates on the transmission of Early Neolithic traditions and the development of an innovative selection of manufacturing techniques and raw materials.

The Neolithic bone industry from Starčevo – Grad (Serbia)

Selena Vitezović

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The eponymous site of Starčevo culture, Starčevo – Grad in south Pannonia, excavated in the first half of 20th century, represents one of the most important sites for Early and Middle Neolithic in South-East Europe. However, many aspects of its rich portable material are still unpublished, including bone industry. In this paper will be presented 250 objects from osseous materials, collected during almost 100 years of research. Raw materials choice, techniques of manufacture, characteristic forms and traces of use were analyzed. From raw materials, bones were dominant, although antlers were far from being insignificant. Boar's tusks and mollusc also occur, although in small numbers. The analysis of traces of manufacture helped in reconstructing the „chaîne opératoire“, but also showed that there are some manufacture techniques typical for Early and Middle Neolithic. The existence of workshop or working place in the settlement was indirectly confirmed by the presence of manufacture debris. Most common objects were awls, needles, projectile points, scrapers, burnishers, punches, hammers, but also some specific tool types occurred, such as Early/Middle Neolithic spatulas-spoons, and some types of decorative objects. Usewear traces, when preserved, suggest most of the tools were linked with processing of organic materials (leather, hide, plant materials, wood). Objects made from *Spondylus*, although only few were found, demonstrate that Starčevo was on the trading route of prestige goods.

Chronology or not chronology that is the question

LBK Bone Assemblage example

Isabelle Sidéra

Laboratory Préhistoire et technologie, UMR 7055 – Nanterre - France

Changes in the bone assemblages between the late and final stages of Linear Pottery Culture in the Paris Basin are slight, even non-existent. Some shapes, however, become predominant in the Final Linear throughout the Paris Basin: they become much more

numerous and proportionally supplant other shapes that are more classically found in assemblages from Central Europe. There is also a continuity into the first stages of Villeneuve-Saint-Germain. Therefore, bone assemblages of Late and Final Linear Pottery Culture are good indicators of chronological trends.

The same evolution is not as evident, at least not systematically, from the buildings at Cuiry-lès-Chaudardes, nor from other sites that yield small bone assemblages.

This communication will address the problem of distortion between regional and intra-site observation scales.

Magdalenian portable art of Piette' collection (France)

A first case of goods in motion

Éva David

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What is the function of Palaeolithic art? A case study discovered from the Piette's bone collection of portable art shows evidence of first movie making by means of using optical together with perspective effects of purposed engravings. Discrete characters (details) of figurative motives enables reconstructing techniques used for art making. Dynamic between figures highlights full comprehension of the studied master piece thanks to video reconstructions.

Keywords: Portable art, Palaeolithic art, Techniques, Cognition, Cinema, Movie

Bronze Age osseous arrowheads from the archaeological site of Motilla del Azuer (Ciudad Real, Spain)

Manuel Altamirano Garcia

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In this paper I aim to present the first results from the study of a projectile points assemblage made from animal osseous material from the Bronze Age site of Motilla del Azuer (central Spain). These osseous artifacts display a wide variety in their morphological features, and are mainly made from red deer antler. The technical approach has displayed the existence of certain normalization in both flaking and manufacturing processes and techniques.

Both the spatial and contextual analysis have been also carried out here, in order to see the distribution of artifacts on the site and whether there is or not changes in morphology and manufacturing techniques through the occupation of the site.

Keywords: osseous arrowheads, worked bone, Bronze Age, Motilla del Azuer, Iberian Peninsula

Neolithic bone musical instrument from Kadero (Central Sudan)

Małgorzata Winiarska-Kabacińska

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In one of the graves related to the Neolithic stage of the Kadero site a skeleton of adult man and rich inventory was discovered indicating an important status of the deceased within the Kadero society. Among the offerings there were artifacts made of bones including several artifacts of hippopotamus ribs were most probably individual objects. The dorsal surfaces of two large rib pieces are engraved with a sharp tool making “V” shaped incisions with parallel

lines perpendicular to the longer rib axis. In the final stage of production wide zigzag-lines were engraved over the parallel lines on the surface. The back side of objects is undecorated. As the find is unusual for all the Khartoum Neolithic, a detailed microwear and functional studies were carried out. There can be no doubt that all the incisions recorded on the flat parts of the hippopotamus ribs are intentional. Their regularity, different widths in the cross-sections, clear traces of rubbing visible at pronounced parts of the pieces and finally the presence of a "rubbing" stick – strongly suggests these object might have been made to produced a specific sound.

The bone tools from the Neolithic settlement of Proskinites, Greece

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This paper will focus on the analysis of bone tools from the Neolithic site of Proskinites that is situated in the plain of Rhodope in Greek Thrace. Small scale excavations conducted at the 1980's revealed a settlement with great Balkan cultural affinities and yielded many tools made of bone, antler and tooth. The analysis of the manufacturing techniques showed many similarities with techniques used in the other Neolithic sites in Northern Greece. Microscopic analysis showed that bone tools were used in the everyday life activities of the settlement such as hide working or woodworking.

Keywords: bone tools, Neolithic settlement, Proskinites, Greek Thrace, Northern Greece

A trial to understand “the crown”: a mysterious type of Neolithic mining tool

Experimental sawing of antler using a horsehair saw

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During the study of the antler tools from some Neolithic flint mines in Poland, a few objects were raising our curiosity. Found in the deepness of the underground galleries of the mines in Krzemionki in central Poland this few objects feed our curiosity since many years. Describing and briefly presented for the first time on the WBRG conference in Wroclaw at 2009 as a "crowns", still remains the mystery. As well for their function and for the method of their production. Testing the possibly method of fabrication of this very specific kind of tools, we were used the horsehair saws: one with the horse tail hair and the other with the horse mane hair. This paper presents the results of these experiments.

Magdalenian osseous industry from La Peña de Estebanvela (Segovia, Spain)

A preliminary technological analysis

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The excavations carried out since 1999 at the site of La Peña de Estebanvela (Segovia, Spain), have provided an assemblage of Magdalenian osseous industry, whose preliminary technological analysis is presented in this work. We propose a hypothesis to describe the antler exploitation and, specially, the bone exploitation at the site. The bone working has two modalities to obtain the blanks (débitage): by fracturation (direct percussion) or by extraction

(double longitudinal grooving). The former does not have blanks production as its primary goal, but rather takes advantage of bone flakes from the fracturing of long bones for the consumption of bone marrow to make objects for the domestic assemblage with minimal technological investment (awls, intermediate piece). The extraction procedure is represented by double longitudinal grooving to obtain small blanks for needles. The antler working cannot be characterized very well, due to limited exemplars of this raw material and the absence of elements aside from finished objects.

Technological study of antler industry manufacturing process in the Upper Magdalenian of Cova de les Cendres (Alicante, Spain)

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Cova de les Cendres is located at the east coast of Peninsula Iberica, in Alicante. The cave is situated in a cliff at 60m above present sea level. There is a big chamber of 30x50m where yielded a deposit from Gravettian to Magdalenian, and from Neolithic to Iron Age.

The aim of this research is the reconstruction of the manufacturing process of antler industry of the layers IX-X, XI and XII (which excavation is in progress), corresponding to the Upper Magdalenian phase.

The study of faunal remains allowed us to discover several elements which have been identified as elements that belong to the operative chain as waste products, support, artefacts abandoned unfinished and finished artifacts. All these elements help us to reconstruct how these artifacts were manufactured.

Keywords: Antler industry, Technology, manufacturing process, Upper Magdalenian, Cova de le Cendres.

Investigating Late Glacial Alpine adaptations

The osseous industry of Riparo Dalmeri (Southern Dolomites)

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The end of the Late Glacial is a crucial moment in the prehistory of northern Italy, which saw the first human re-occupation of the Alpine region triggered by favourable environmental conditions after the Last Glacial Maximum (between ca. 25,000 and 18,000 years cal B.P.) and the retreat of the Würm glaciers. The marked diversification in site function and settlement pattern between bottom valleys semi-permanent occupations and mid-altitude seasonal camps for specialized tasks is a fundamental trait of the Late Glacial Alpine prehistory. Among the mid-high altitude Late Epigravettian occupations of the Southern Alps, Riparo Dalmeri in the Asiago-Sette Comuni Plateau has played a key-role in revealing socio-economic dynamics of settlement system and resource exploitation, owing to a good representation of different aspects of the archaeological record. Among various archaeological finds, a series of osseous objects found at the site represent one of few Late Epigravettian structured bone assemblages in Italy. The morphological and techno-functional studies carried out on the artefacts from Riparo Dalmeri allow us to clarify the role of the osseous technology in subsistence practices. At the same time, the integration of the techno-functional results with evidence available for the knapped stone industry, archaeozoological and anthropological remains reveal certain characteristics of the social organization characterizing the Upper Palaeolithic groups who inhabited the rockshelter and this region.

Arrowpoints of the Santa Cruz Islands (Temotu, Solomon Islands)

Preliminary inquiries into typology, raw material, decoration and what links it all together

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This paper presents preliminary reflections drawn from the study of a collection of arrows from the Melanesian archipelago of Santa Cruz (Temotu province, Solomon Islands). Nineteenth-century ethnographic sources state that arrows of this kind were war weapons, and that their points were made from the bones of the deceased (e.g., Codrington, 1891). The typological analysis of 56 arrows collected in the Santa Cruz in the late 19th century, as well as published information on other collections (Graebner, 1909; Speiser, 1909), show that two main arrow types actually exist, differing in both the decoration of the foreshaft and the dimensions of the point. Both types have a point made of hard animal material, but the most common type has only a small, 4-6 cm long tip, while the rarer type is fitted with a much longer point (ca. 20 cm). Furthermore, the design of the most common type is apparently intended to imitate that of the rarer one. Preliminary analyses by infrared spectroscopy on a small number of artifacts suggest that these differences might be linked with the raw materials used: the single small point analyzed appears to be made of a keratineous material, while the long points are truly made of bone, the species of which remains to be exactly determined. Building on previous studies with a comparable approach (e.g., Bosc-Zanardo et al., 2009), this case study aims at exploring the complex interactions between ethnographic sources and the study of artifacts; while providing food for thought to the archeologist confronted with the silent and biased record of the preserved archeological remains.

Keywords: Santa Cruz archipelago, Melanesia, ethnography, arrow, bone point, typology, imitation, infrared spectroscopy.

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New ideas on final Palaeolithic symbolism from a technological perspective

Tomasz Płonka, Marcin Diakowski & Bernadeta Kufel-Diakowska

The starting point for the renewed discussion about final Palaeolithic symbolism is a well preserved artifact made from elk antler, found in Rusinowo (Pomerania), presenting the unique on a European scale group of ornaments (Płonka *et al.* 2011). This artifact has become the subject of detailed analysis and experiments.

Studies on technology and ornament included microscopic analysis (SEM) of the artifact from Rusinowo as well as epoxy replicas of various groups and ornament, detailed documentation of over 2000 lines creating zigzag ornamentation and anthropomorphic motif and a number of experiments involving replication of particular activities.

This complex work aimed at clarifying a number of problems on the technology of ornamented objects, including types of flint tools used, order and direction of engravings, the length of time and the number of people involved in the work and skills of Paleolithic engravers. Our research has shown that detailed analysis of the ornaments and surfaces of decorated artifacts enable to answer many questions concerning production, usage and discard, in other words social biography of this kind of objects.

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Leaf shaped and osseous tools from old excavated cave sites

The first steps

András Markó

The presence of the well shaped bone, antler and ivory tools in Europe are often linked to the appearance of the Early Upper Palaeolithic Aurignacian culture or the anatomically modern humans.

In the presentation we will discuss four old excavated cave sites from the territory of Hungary and Slovakia, where the osseous artefacts (including split base points too) were found together with Late Middle Palaeolithic stone tools of the Jankovichian and Szeletian industries, characterised by leaf shaped implements.

The antler and ivory tools from the Jankovich, Bivak, Pálffy (Dzeravá skála) and the Szeleta caves will be presented in typological and partly technological point of view. Our conclusion is that the “bone tools” rather have a cross-cultural significance and they were first produced during the latest part of the Middle Palaeolithic period.

Abstracts – Posters

in alphabetical order

Inspired Double Break of Leg

Rare Eneolithic Point made of Pig Fibula with Trauma from Transylvania,
Romania*

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3 cm

In the last decades, the archaeozoologists paid a special attention to animal paleopathology with remarkable results. Nevertheless we could very rarely notice the interference between the paleopathological data and the study of artefacts made of bones with different pathologies. The piece that we present in this paper was noticed during the recent study of osseous assemblage recovered from Eneolithic site Ocna Sibiului – “Fața Vacilor” (“Cows Pasture”), Sibiu County, Transylvania, Romania.

The settlement is placed on a hill, on the left bank of Visa river, at 2 km West of Ocna Sibiului commune (Southern Transylvania). The Neolithic and Eneolithic levels belong to Vinča, Turdaș and Petrești cultures. The rare artefact in discussion was discovered in Petrești cultural context (Eneolithic culture with painted ceramic which developed in Transylvania during the Vth – the IVth millennia BC). During the systematic excavations led by Iuliu Paul in 1959 – 1960,

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there were identified three archaeological levels in an archaeological layer having a different thickness (between 0.80 – 1.80 meters). The artefact was discovered in the Section II which was excavated in 1959, at the depth of 0.80 meters and it was published without any details in the monograph of the culture (Iuliu Paul, *Cultura Petrești*, Bucharest, 1992, p. 43, fig. XVII/13). The piece is preserved in the collection of Brukenthal National Museum of Sibiu.

The bone point is made of left distal pig fibula, with a healed pathology of fracture at the diaphysis. The whole length of the artefact is preserved. Because of the very short length of the active part, we may presume that the piece was reshaped. The “manufacturing chain” supposed the débitage by direct percussion followed by the fracture of the bone in order to obtain the middle-distal part of the fibula; the shaping was done by transversal and oblique abrasion (which allowed the shaping of the active part). Probably, after a time of using, the piece was broken at the distal end and the oblique active part was reshaped by abrasion of the anatomical median, lateral and caudal sides. The morphometry is presented in the following table:

Total length	Proximal extremity	Middle part (sector of fracture)	Length of active part	Distal diameter
70	13,8/7,5	12/6,6	8,3	5/6,3

The pig fibula was fractured at a distance of around 40 mm of distal epiphysis. The thickened area (the fusion of the fracture edges) has a length of 15 mm. The anatomical morphology of the pig fibula predisposes to relatively easy diaphysis fractures (the extremities fixed upon tibia and the large space between the diaphysis of the two long bones).

The points made of fibulas of pig or medium-size mammals (dog, badger) are well-known in Neolithic and Bronze Age settlements from Europe. The reference for this type of artefacts is H. Camps-Fabrer, *Fiche poinçon pris sur fibula entière de suidé ou de petit mammifère* (4), 7 p., in H. Camps-Fabrer et alii, *Fiches typologiques de l'industrie osseuse préhistorique. Cahier III. Poinçons, pointes, poignards, aiguilles*, H. Camps-Fabrer (éd.), Provence University, Aix-en-Provence, 1990. The choice of the fibula for the manufacture of the points is frequent because of the anatomical morphology and the compact diaphysis. Undoubtedly, the choice of the healed fractured fibula in the case of point from Ocna Sibiului – “Fața Vacilor” was done randomly. It has no cultural or technological relevance, but it exemplifies a rare coincidence between archaeozoology/paleopathology and archaeology/raw material choice.

Keywords: bone point, bone technology, Eneolithic, fibula, paleopathology, pig, Romania, Transylvania.

Bone industry and the manufacturing process in Upper Magdalenian of Cova de les Cendres (Alicante, Spain)

Maria Borao Álvarez

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Cova de les Cendres has a big collection of bone industry corresponding to Upper Magdalenian. Needles, bone points, arpoons, rods, tubes, awls and ornaments complete the assemblage of bone industry. The manufacturing process is an area of study recently applied to it and it supposed to look for the technological elements which were not identified between faunal remains. Several artifacts were identified as technological elements to reconstruct the operative chain but high degree of fragmentation and level of transformation makes difficult to identify some items in this operative chain. The reconstruction of the manufacturing process were made from the supports to the finished objects because the difficulty of identify the waste products which are very similar, if not the same than cooking waste products.

This research allows us to know that there was a on-site production very abundant and rich which is manufactured, used, re-used and discarded on the site.

Keywords: Bone Industry, Technology, Manufacturing process, Upper Magdalenian, Cova de les Cendres.

**An Experimental Reconstruction of Preparation Methods of the Late
Shang Oracle Bones from Xiaomintun Site in Anyang
Henan Province, China**

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In 2003-2004, a large number of the Late Shang oracle bones (1250~1050 BC) were excavated at Xiaomintun site in Anyang, Henan Province, China. Based on the comprehensive analysis of manufacturing process of these oracle bones from Xiaomintun site, a series of reconstruction experiments were performed in an attempt to explore and determine the preparation methods of the oracle bones for divination during the late Shang Dynasty. The present paper exhibits the manufacturing process of oracle bones derived from turtle plastrons and cattle scapulas. Through the detailed comparison between the oracle bones from Xiaomintun site and our manufacturing oracle bones on saw marks, grinding marks, chisel marks, boring marks, and crack lines, I think that I have comprehended the actual physical process of oracle-bone divination of the late-Shang Dynasty. The making of the grooving and burning-pits as well as the use of hardwood burning in the form of a hot coal are considered to be the core technology of oracle-bone divination of the late-Shang Dynasty.

The Workshop of Petra, Jordan

Highlights on the Bone Industry of the late Fourth-early Fifth Century AD in the
Levant

Bénédicte Khan

Paris I – Panthéon Sorbonne

The workshop found at Petra, Jordan, is of great importance for bone industry studies, as it is one of the rare (if not the only) workshops “in hard” unearthed in the Levant from the Late Antique period. Installed on the ruins of the exedra situated north of the Qasr al-Bint almost right after the earthquake of 363 AD, it was most certainly abandoned after the tremor of 419.

The workshop belongs to a housing complex composed with a late Roman house, a courtyard where several waste deposits were uncovered and the workshop itself. Its short period of use (less than 60 years) gives us a pretty accurate hint on the way the artisans worked bone – and horn – at these times.

Two significant elements are missing from the material unearthed since the discovery of the workshop: the tools and the finished object linked to the different productions of the artisans. The only artifacts that could help determining the diverse manufactures were the waste found either in the workshop or in the waste deposits. And as no tool has been discovered on the site, the only indications we have on the tools and techniques are the tool-marks that could still be seen on some pieces.

Following a methodology greatly inspired and adapted from the Prehistoric studies on bone industry, especially the works of Aline Averbough and Noëlle Provenzano, 50 of the 520 objects (those that could be attached to a certain type of artifact) have been more closely studied. This analysis allowed the author to identify four to five types of production and to reconstruct almost completely two *chaînes opératoires* by examining the tool-marks left on the artifacts.

Indeed, it seems that the artisans of the Qasr al-Bint produced pins, rings, spindle-whorls, spoons and probably pyxis. We have numerous indications in the material for pins and rings, far less for the other productions. So we focused our attention on the waste from the production of the first two types of objects (i.e. the pins and rings) to find out that almost every step of fabrication, from raw material to the finished object, was directly or indirectly represented in the material.

We then realized that there was another way of producing ring, very different from the production at Caesarea Maritima and studied by Yehoshua Dray¹: the rings at the workshop of Petra are extracted from bone plaques circularly sawn instead of being extracted from the naturally circular bone shaft of a long bone. Many questions come out from this discovery, that is going to be developed during the presentation.

¹ Dray Y., The Technology of Bone and Ivory Crafting in Caesarea Maritima, Israel. In: Luik H. et al. (eds.), From Hooves to Hornes, From Molluscs to Mammoth: Manufacture and Use of Bone Artefacts from Prehistoric times to the present, proceedings of the 4th Meeting of the ICAZ Worked Bone Research Group at Tallinn, 26th-31st of August 2003. Tallin 2005, 247-252.

Cattle Bones and Hairpins: Analysis of Worked Bones from the Western Zhou Period of Central China

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Cattle bones for manufacturing hairpins were recovered from the Western Zhou (1046-771 BC) urban site of Lijiayao in western Henan province, central China. This presentation discusses the process that was used to make the hairpins, details about which were obtained by sorting, measuring and analyzing waste materials from the process. The goal of the present study is to understand the source of raw materials used for making the hairpins, the nature of manufacturing process and techniques, and the degree of specialization of craft production reflected in the workshop during this period at this site.

The Worked Bone from the Links of Noltland

Sean Rice

Containing a rich and diverse range of archaeological remains, the Links of Noltland, a 2.5 hectare site situated on the exposed north coast of the island of Westray, represents one of the most complete early prehistoric sites yet found in Orkney. Recent excavations carried out by EASE Archaeology and commissioned by Historic Scotland have focused on a large Neolithic structural complex and associated field systems located on an elevated ridge to the south east corner of the site and a Bronze Age settlement and contemporary burials to the south west. This work has produced a wealth of artefacts, including decorated Neolithic grooved ware pottery, Bronze Age steatite vessels, flint tools and items made of stone and bone. Two small Neolithic figurines, the oldest to be found in Scotland, and an unusual building with cattle skulls placed within the wall foundations have also been recently discovered.

One of the key factors which make the Links of Noltland so important is the high quality of bone preservation only seen here and at Skara Brae. Since 2007, over 1,200 items of worked bone have been recovered, including mattocks, awls, points, polished pins and

beads together with bone working debris. The scope offered by the extended chronology of the site and by such a complete and well preserved assemblage offers a level of interpretation rarely matched. It is hoped that detailed analysis will allow us to identify how and where bone materials were sourced, objects manufactured, used and discarded and how worked bone technology changed through the lifespan of the site. Together with the other finds from the Links of Noltland we hope to gain a more fully rounded picture of the prehistoric toolkit, economy, diet and environment.

Versatile bone

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Bone is a versatile material and was utilised in the past for various purposes. In this poster presentation the different uses for bone are explored. Bones were employed as ad hoc tools at home or at work, but also as a raw material for professional craftsmen. Non-professional and professional craftsmen used bone for the manufacture of objects of use and also luxury items. Examples of home made objects are for example children's toys, in which the original shape of the bone can still be recognised. These objects are sometimes hardly worked at all. Professional craftsmen worked bone in a more extensive way using tools such as files, saws and a lathe.

A clearly different use of bone is for industrial purposes. We can mention bone to make glue, fertilizer, 'bone black', and even soap. The byproducts of this industry are unknown to many people. Most of the industrial purposes of bone are dated to the 19th centuries, but the use of bone dust or bone black is also known in earlier periods. Bone black could be used as a colouring pigment and bone dust was presumably used for the fabrication of 'cupels', a small pot used for gold or silver extraction. Many other examples for bone use in the past can be mentioned, such as the use of bone as fuel or even for medicinal purposes.

Keywords: bone, home craft, industry, bone black, glue, soap

Prehistoric Adornments from Romania

Eneolithic Necklace made of Shell Beads discovered at Ariușd,
Covasna County*

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The eponymous archaeological site belongs to the well-known Eneolithic cultural complex Cucuteni-Ariușd-Tripolie and it represents a fortified settlement placed on a terrace in the North-West part of Ariușd (Erósd) village, Vâlcele commune, Covasna county, South-Eastern part of Transylvania, Romania. At the

beginning of the XXth century (1907-1912, 1924-1925), the archaeological excavations were led by Ferenc László, the Director of the National Székely Museum from Sfântu Gheorghe/Sepsiszentgyörgy. The research was retaken between 1968 – 1986 by a team led by Ion Nestor, Eugenia Zaharia (Institute of Archaeology from Bucharest), Zoltán Székely (Covasna County Museum, Sfântu Gheorghe) and Doina Galbenu (National History Museum of Romania, Bucharest).

The settlement has 11 cultural levels belonging to Eneolithic. In 1971, in the Northern part of the site, a ritual pit (G2/1971) with human remains was discovered. The pit belongs to the second level or to an undetermined superior one. In plan, the pit has a quite circular shape. In profile, the pit is cylindrical with slightly convex bottom placed at 2.60 meters above the actual level of the soil. The pit depth probably was around 1.70 – 1.80 meters. On its bottom there was a layer of cinder, with a flint arrowhead, animal bones, small pieces of ceramics and human skeletal remains probably from four individuals: the skeleton belonging to a child of 3 – 4 years old laying in crouched position having bones in anatomical connection; long bones

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of a teenager of 13 – 15 years old; there are another two groups of disparate bones (without anatomical connection) coming probably from two adults.

In the middle sector of the pit was discovered a thick deposit of burnt river shells (*Unio Sp.*). Above this, there was a layer of burnt ceramic fragments, thick of 10 – 12 cm. In the Western part of the pit, an unburnt bottom of a ceramic pot was put upside down; around it, a necklace made of *Unio* shell discs was discovered. The necklace was not burnt, but two discs of the same type with traces of burning were discovered on the layer of ceramic fragments.

With this occasion we present the shell adornments placed in the ritual pit no. 2. It is made of 256 discoid shell beads that made a necklace long of 55 cm. The beads have quite similar morphological and morphometrical (standardized) parameters like: the circular or oval general shape; the smooth edges or with slightly irregular outline; the convex-concave profile (anatomical morphology); the diameter which is about 12 – 15 mm and the thickness of 2 – 3 mm; often the perforations are placed in center of the pieces and their shapes are circular or oval, having the diameter between 2 – 4 mm. According to Typological List Beldiman 2007, the beads are considered discoid beads made of shell, type III E4.

The surfaces of the beads are anatomical and frequently they have the layers of nacre exfoliated. On 2/3 of the circumference, the edges have a smooth or slightly irregular morphology which might have been the result of shaping (percussion or pressure followed by the abrasion for obtaining the general circular or oval shape) and the use wear polish (by the contact with a textile or leather surface – clothes). The third part of the circumference presents intense traces of functional polishing which are very probably due to a long time use as necklace, appeared as result of long contact with a textile or leather surface – clothes.

The “manufacturing chain” of these shell beads may include the following stages: A. the débitage: a fragment of shell was obtained by direct or indirect percussion or by incising the shell and breaking off shell bead blanks by hand; B. the shaping: 1. perforating the shell starting from the concave surface of the blank using a bow drill and its finishing on the superior surface; 2. shaping the edges using direct or indirect percussion in order to obtain the slightly circular or oval outline of the bead; 3. the abrasion of the edges. The use wear identified consist in intense functional abrasion. This could indicate a long period of wearing the necklace (possibly during more generations; the inheritance of the object).

The necklace from Ariuşd is the first such discovery in Romania coming from a Prehistoric ritual context analyzed in detail. In Eneolithic/Copper Age cultures these types of artefacts are quite frequent but not with such large number of shell elements. We may quote

here the similar discoveries from Decea Mureşului and Tiszapolgár cultures in Romania and Hungary.

Keywords: adornments, Ariuşd, beads, Cucuteni-Ariuşd-Tripolie Cultural Complex, Eneolithic, paleotechnology, ritual pit, shell, Transylvania.

Spoonfull of sugar?

Spoons-spatulas from Early and Middle Neolithic

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The poster will focus on one of the most characteristic and at the same time most intriguing tool type of the Early and Middle Neolithic bone industry, spatulas-spoons, made from cattle metapodials. Very rich collection of almost hundred of complete and broken objects, recovered at several sites in Serbia is represented (Donja Branjevina, Starčevo, Baštine, Velesnica). Manufacture was reconstructed after one half-finished object from Donja Branjevina. Within given final form some variations are present, revealing skillful artisans who produced these artefacts. Intense use and long life of Neolithic spoons, along with demanding manufacture techniques suggest these were highly valued objects. Usewear traces do not support current hypotheses on their use as spoons for food preparing and consumption, but instead suggest that they were used on soft organic materials such as leather, hide and plant fibres, probably for preparing and applying pigments.