

PAST

THE NEWSLETTER OF THE PREHISTORIC SOCIETY



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Excavating an extraordinary burial of the Early Hallstatt period from Otzing, eastern Bavaria, in the museum laboratories

During rescue excavations in 2010, a spectacular Early Iron Age find was discovered in the little village of Otzing near Deggendorf in Lower Bavaria, close to the Danube. The excavation, directed by district archaeologist Karl Schmotz, revealed one of the most spectacular burials of the Early Iron Age from Bavaria. Besides some Neolithic settlement pits and two other badly preserved Early Iron Age burials, a circular ditch with a diameter of 18.5 m surrounding a rectangular burial chamber of about 13 m² came to light. A large set of ceramic vessels and animal bones was unearthed in its eastern part. The set consists of more than 20 vessels of different types and one cup of sheet bronze. The latter already indicated an outstanding ensemble, since bronze vessels are very rare grave goods in the Early Hallstatt period in Bavaria and beyond. Surprisingly, in the middle part of the chamber, where the actual burial was expected, a wooden artefact decorated with a huge amount of bronze studs was detected. This object would later turn out to be a richly decorated yoke.

Knowing that he had discovered an exceptional burial, Karl Schmotz called the Archaeological State Collection Munich (Archäologische Staatssammlung München), which block-lifted almost the whole burial chamber under the supervision of Erich Claßen in 2011. Two large blocks, one consisting of a part of the vessel set and one of the area of the burial itself, were transported to the museum laboratories. The bigger block originally measured 2.3 × 1.7 m. Ever since, the burial has been excavated under laboratory conditions and restored with financial support of the Ernst von Siemens Foundation. The process is being documented using both analogue and digital methods. As it was initially quite unclear what to expect within the block, the whole block was x-rayed. Its content exceeded all expectations.

In the chamber, the inhumation of a young man lay on a richly decorated piece of furniture. This part of the burial

interior consists of several pieces of wood lavishly decorated with thousands of bronze studs. Similarly decorated leather straps lie beside the long wings of the wooden construction. In the northern part, underneath the legs of the deceased, wooden parts decorated with bronze plates and other ornaments were found. Richly decorated horse gear and a yoke suggest that the piece of furniture on which the deceased was resting may be a wagon box or a chair-like bier originally placed on a wagon. The horse gear and the yoke clearly reference a wagon burial, although at the current stage of



Photogrammetric image of the burial chamber before block lifting. The red lines mark the sizes of the blocks. In the eastern part the vessel set and the animal bones are already uncovered. The block in the southern part covers the decorated wooden yoke (photogrammetry ARCTEAM, modifications E. Claßen).



Above: Detail of part of the furniture on which the deceased rested. The uppermost layer of decorated wood in the upper right is part of the badly preserved yoke; underneath it a decorated wooden pole of the piece of furniture is visible, overlying another decorated leather strap (C. Mazzola, Archäologische Staatssammlung München).

Left: X-ray of the richly decorated furniture piece before excavation (S. Gussmann, Archäologische Staatssammlung München).

excavation it remains unclear if this piece of furniture was indeed a wagon box of a hitherto very rare type and how it was set up in the burial.

Besides the vessels as containers for food and drink, the animal bones can also be seen as offerings securing the provision of the deceased in the netherworld. In addition to the horse gear, the yoke and the furniture, he was buried with an impressive amount of other grave goods. Next to his head was a large set of different tools. Two spears and an early antenna dagger represent the weaponry, the latter dates the burial to the second half of the seventh century BC. The leather belt of the dagger is decorated with bronze studs, matching the decorated furniture. On the chest of the deceased, bronze and probably iron pins were discovered along with preserved textiles. Next to those finds, toiletry articles such as tweezers were recorded, probably originally in a bag closed by a large amber bead under the chin of the buried man.

The burial contains mostly grave goods well known in the Early Hallstatt period. Overall, the deceased may be seen as a member of the Early Iron Age elites. Although the Otzing burial clearly dates to the seventh century BC (i.e. the Late Ha C period), it already features some aspects, notably the weaponry, which are typical for the well-known princely graves of the Later Hallstatt culture (sixth and fifth centuries BC) in eastern France, Switzerland and south-west Germany, the so-called north-west Alpine Hallstatt circle. Other aspects, like the pottery, are more typical for the beginning of the Hallstatt period. Otzing is therefore a connecting point between earlier and later ostentatious burials of the western Hallstatt culture and will certainly be of interest for the ongoing debate about the dynamics of the social organization of Early Iron Age society in central Europe.

The general outline of the Otzing burial and its elements fits well into the known pattern of Early Hallstatt ostentatious

burials. The best comparisons for the yoke were found in burials of the central Bohemian Bylany culture and in a burial in Frankfurt. The furniture finds its best parallels in a burial from Mitterkirchen in Upper Austria. There are, however, also obvious links to Etruscan concepts of furniture or wagon boxes. Until now, carefully excavated Early Hallstatt elite burials are very rare, especially in as good a



The block containing the burial during excavation in the restoration laboratories in April 2014 (S. Friedrich, Archäologische Staatssammlung München).

state of preservation as Otzing. Therefore, micro-stratigraphy and additional detailed analyses are indispensable for understanding the composition and arrangement of grave fittings in this and other comparable burials. In the course of restoration, several hundred samples of organic (wood, leather, botanical remains etc.) and other materials were uncovered, which will be thoroughly studied in the course of our project at the Archaeological State Collection Munich. Several colleagues from different institutions and disciplines, including zooarchaeology, human osteology, wood analyses and others, are part of the project team. We hope to contribute to the understanding of the burial rites of the Hallstatt culture in central Europe by revealing a precise picture of the set-up of the burial and the context of the grave goods, thus inspiring further discussions on archaeological

and social aspects of the Hallstatt culture in Germany and elsewhere. Due to its outstanding composition and preservation, the burial of Otzing will be an extraordinary piece in the upcoming new exhibition of the Bavarian Archaeological State Collection in Munich.

Acknowledgements

We would like to thank the conservators of the Archaeological State Collection, who did (and are still doing) a tremendous job over the last years in preparing and understanding the Otzing burial (Stefan Gussmann, Edith Lindinger, Gabriele von Looz, Cristina Mazzola and Ina Schneebauer-Meißner), as well as all other colleagues who contributed their expertise to a better understanding of this grave.

*Rupert Gebhard, Archaeological State Collection Munich,
Carola Metzner-Nebelsick, University of Munich
and Robert Schumann, University of Hamburg*

Prehistoric prospecting for copper near the source of the River Severn, Plynlimon, Wales

As part of a broader field investigation of prehistoric copper mining sites on the east side of Plynlimon undertaken between 2012 and 2015, the Early Mines Research Group had been trying to re-locate an ancient openwork sited upon a copper vein crossing the bed of the River Severn approximately 150 m downstream of the 'Severn-break-its-neck' waterfall on the north side of a formerly wooded gorge at Nantyricket in the Hafren Forest.

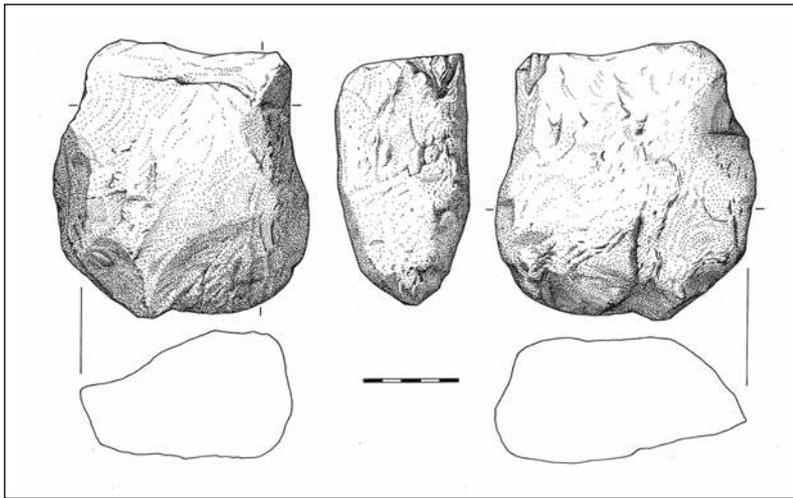
Last seen in 1998, this old working known as Lloches y Lladron (Thieves Den), together with its shallow mound of burnt rock and associated fractured river pebbles utilised as hammerstones, was thought to have been destroyed or else buried beneath bulldozed scree following recent forestry operations carried out on the slopes above. Visits made in 2012 and 2013 had failed to re-locate it, although the discovery of a few rolled hammerstones downslope of the most likely location encouraged the team to return here in October 2014 and cut a further two trenches, this time across a shallow rise located to the east of the projected course of the vein, and only 6 m away from the river bank. These sections revealed a thin layer of fine-grained gritty mine spoil (or perhaps a buried soil beneath this) containing flecks of charcoal, some ashy material, burnt stone and a small amount of finely crushed vein-stuff and quartz consolidated by iron pan – the latter being a horizon considered worthy of dating given the overall similarity of this site to other primitive mines within the Plynlimon area. Some eight of these sites have now been radiocarbon dated to the Early Bronze Age based on the sampling of charcoal from well-contextualised firesetting layers, together with individual mine timbers, wooden tools and antler picks – examples of which have been found within the mine excavated at Copa

Hill, Cwmystwyth, some ten miles to the south-west on the other side of the Cambrian Mountain divide. Meanwhile, just a few miles upstream from Nantyricket lies the larger Bronze Age mine of Nantyreira (Snowbrook), first investigated by our team in 1988 and again in 2014.

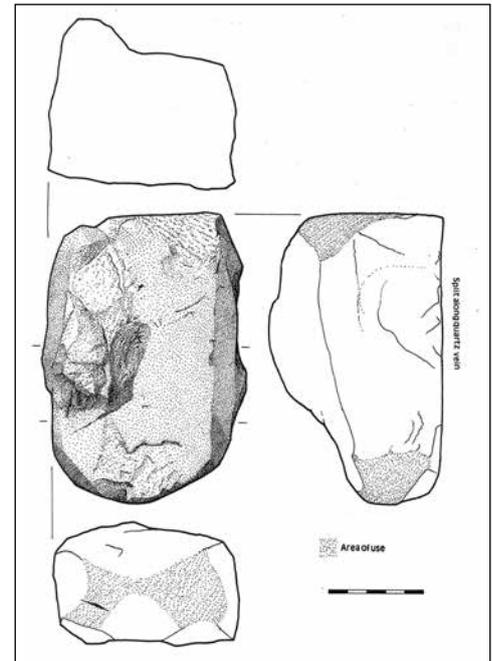
Both Nantyricket and Nantyreira were mentioned as ancient mines by the geologist O.T Jones in 1921 and subsequently by Oliver Davies, who visited the former and then dug a trench at the latter in 1938 under the auspices of the British Association for the Advancement of Science's (Section H) committee established in 1935/36 to investigate early mining in Wales. In 1922 Jones noted that that the ancient mine tip at Nantyricket contained a 'quantity of charcoal and burnt fragments of grit and slate', yet by the time of Oliver



Site of Lloches y Lladron (Nantyricket) and evaluation trench on the steep slopes of the Severn Gorge, Hafren Forest (October 2014).



Above: Hammerstone recovered from the banks of the River Severn below Nantyricket (2013).



Right: Hammerstone recovered from the trench evaluation (October 2014).

Davies' visit in 1937 this was described as 'denuded mine spoil' devoid of any charcoal, an indication perhaps that some of the exposed tip material had been washed away by the river, a process which may have continued right up to the present day.

In 2014 a small amount of burnt stone, but no hammerstone flakes or traces of copper or lead minerals usually associated with such sites, was recovered from the Nantyricket evaluation trenches at a depth of 30–40 cm beneath the modern re-deposited stone and forest soil, from a layer sealed in places by a thin palaeosoil. From this horizon several pieces of oak charcoal were collected, the largest of which was submitted to SUERC for dating, kindly supported by the Prehistoric Society/SUERC Radiocarbon Award.

The result for this charcoal fragment (SUERC-59891) was an Early Neolithic radiocarbon age of 5783 ± 29 years BP (4707–4551 cal BC at 95.4% probability). This was slightly unexpected perhaps given the early second millennium date obtained from the nearby and similar site of Nantyreira, but certainly not unique amongst the corpus of more than a hundred radiocarbon dates already obtained from investigations of these prehistoric metal mines and prospecting sites within Wales and England carried out over the last 25 years. Some 95% of the dates recovered do indeed adhere to a model which suggests a phase of widespread prospection for new metal resources which seems to begin in south-west Ireland at the end of the third millennium cal BC, spreading eastwards to west Wales (but preceding the end of use of the Ross Island mine), then north Wales and finally central and north-west England over the next 400–500 years. However, some of the actual vein

outcrop exposures sampled at these mines have returned anomalously early radiocarbon dates, suggesting perhaps an interest in these sites ranging from the Late Mesolithic to Late Neolithic. Indeed, rare examples of this have been found within the Plynlimon area at Cwmystwyth (Copa Hill) and Erglodd, as well as in north-west England at Alderley Edge (Engine Vein). However, a more critical examination of the taphonomic processes involved in the deposition and re-deposition of mining spoil, and in the processing mineral, is important here. As mining proceeds, mineral spoil is being continually shifted, sometimes removing and then mixing up the underlying ground surface (soil) within it. Nevertheless, the implication that there is 'pre-mining' charcoal and even antler fragments resting on the buried land surface just metres away from the vein outcrops, which carry enriched as well as colourful copper and iron minerals, raises other important questions about the earliest interest in such sites. One possible explanation is an interest in pigments, another simply a curiosity in investigating unusual and striking types of rock and mineral. If there was already a 'mental geological map' of the British Isles in place by the Later Neolithic, which coincided with the widespread evidence for stone axe procurement, then when did that 'mapping' actually begin? Those sites which are currently difficult to understand may well hold the key to explaining why the search for metal was so rapid and widespread when it happened.

Acknowledgements

We would like to thank the Prehistoric Society and SUERC for awarding us the date for this work. Fieldwork within the Hafren Forest was undertaken with permission of Natural Resources Wales and CADW.

*Simon Timberlake (University of Cambridge)
and Early Mines Research Group*

Testing the limits of survival at Star Carr: microscopic residues

The site of Star Carr is one of the most important Mesolithic sites in Europe, and its artefacts merit close and careful study. Star Carr offers glimpses into a time when people were adapting to climate and environmental change – a transitional period that opened up new landscapes with many lakes such as Lake Flixton, where Star Carr is situated. The peat which subsequently formed in Lake Flixton is famous for yielding outstanding, well-preserved organic artefacts, such as over 200 barbed points and especially the iconic red deer antler frontlets, interpreted as headdresses. Personal adornments have also been discovered at the site, such as amber and shale beads, adding to the picture of a rich and complex culture.

Preservation of plant materials is also excellent, with a large brushwood platform at the lakeshore containing layers of split timbers – the oldest example of systematic carpentry in Europe. The platform could have been used by people to better access the water, or perhaps as a pier to dock canoes or coracles. A paddle was also found at the site. The recent discovery of a habitation structure at Star Carr, known as ‘Britain’s oldest house’, has changed our ideas about mobility in the Mesolithic. It now appears that hunter-gatherer people were periodically more settled than we imagined.

The POSTGLACIAL Project, an ERC-funded project led by Professor Nicky Milner, has excavated new areas at Star Carr and aims to set a new benchmark for the high-resolution analysis of archaeological deposits. One of several spheres of research currently underway within the project is lithic residue analysis. Hundreds of stone tools have been excavated from Star Carr specifically for the purpose of residue analysis, using anti-contamination procedures from the point of collection through analysis.

Researchers have often assigned stone tools to categories such as ‘microblade’, ‘scraper’, or ‘drill’ based on morphology. To a greater or lesser extent, categorisation into artefact types presumes that the function of each tool is known and singularly fixed. However, microscopic use-wear and residue studies have consistently questioned these assumptions, frequently showing that tool use is far more diverse and nuanced than we thought. Thus, these studies provide an important contribution to our knowledge about how hunter-gatherers in Britain made and used stone tools.

The work on lithic residues began with a burial experiment that addressed the question of whether microscopic residues can survive on stone tools at Star Carr, with results forthcoming. To set up the burial experiment, freshly-knapped flint flakes were used on twelve residue types. Antler, bone, goose, squirrel, fish, beef muscle, reeds, hardwood, softwood, potato, unmodified pine resin and red ochre were applied to the flakes, and they were then buried on site and offsite. In order to investigate preservation potential in these burial environments, the utilised flakes were placed in two types of archaeological deposits at Star Carr: slightly acidic clay (pH 6) and very acidic peat (pH 2). As a control, a third set of



Preparing the experimental residues in the BioArCh laboratory, University of York. Fresh cattle bone residue is being added to the flint flake.



Preparing the experiment in unit 2. Flints containing residues being placed in very acidic peat wetland at Star Carr just prior to burial.

utilised flakes were buried in the slightly alkaline unit (pH 8) on the Yorkshire Wolds. Half of the sample was recovered from the burial units after one month, and the other half was recovered after one year, making it possible to form a basic assessment about the rate at which residue diagenesis occurs.

The burial experiment has helped inform expectations as to the preservation of specific residue types. For instance, certain types of residues such as hair, feathers and softwood tissue preserved much better than other residue types. Another major result of the study is that some residue types can be identified microscopically due to the presence of diagnostic structures, but others cannot because they are amorphous and thus ambiguous, without defining characteristics. These ambiguous residues require further analysis by chemical characterisation techniques. Techniques such as gas chromatography mass spectrometry (GC-MS), microscopic Raman spectroscopy (micro-Raman), attenuated total reflectance Fourier transform infrared spectroscopy (ATR-FTIR), and scanning electron microscopy with energy dispersive x-ray spectroscopy (SEM-EDS) can be used to characterise their origin.

Based on the results from the experimental phase of research and a pilot study of the archaeological residues, the approach to identifying archaeological residues now involves multiple techniques. This multi-technique approach was adopted because several archaeological residues presented a mismatch between visual identification and the expected chemical characterisation. Preliminary results have thus highlighted a methodological hurdle in microscopic residue analysis. When identifying ambiguous residues which lack diagnostic morphological traits, visual identification is inadequate and can be misleading – chemical characterisation is required to understand their nature.

Shannon Croft, PhD candidate, University of York

Postglacial

Notice of the 2016 (for 2015) Annual General Meeting

The AGM will be held on Saturday 4th June 2016 at 4.25pm in Edinburgh University

Agenda

1. Minutes of the Annual General Meeting held at University College Dublin on Saturday 30th May 2015 (papers available from the website or from the Honorary Secretary)
2. President's report
3. Secretary's report
4. Editor's report and R. M. Baguley Award
5. Treasurer's report
6. Report on meetings, study tours and research days
7. Future composition of Council
8. Awards
 - Collections Study Award
 - John and Bryony Coles Award
 - Research Grants (Bob Smith Award and Leslie Grinsell Award)
 - Conference Fund
9. Election of Officers and Members of Council

The meeting will be followed at 5.15pm by the 25th Europa Lecture by Peter Wells at the National Museum of Scotland. The lecture will be followed by a wine reception.

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Notes

1. A member entitled to vote at the meeting may appoint a proxy to attend and, on a poll, vote in his or her stead. A proxy must be a member, other than an institutional member.
2. To be valid, an instrument of proxy (together with any authority under which it is signed or a copy of the authority certified notarily or in some other way approved by Council) must be deposited with the Secretary, The Prehistoric Society, c/o Department of Britain, Europe & Prehistory, The British Museum, Great Russell Street, London WC1B 3DG, by 4.30pm on the 13th May 2016.
3. Forms of proxy may be obtained from the Secretary at the above address.

The Prehistoric Society 2015

This report covers the period of January to December 2015.

Meetings and study tours

The Society has continued to fulfil its commitment to reach a wide range of regional audiences and to promote its aims and objectives through a variety of lectures, conferences and tours throughout Britain. The Society's events continue to represent collaborations with many other archaeological bodies and societies.

In January and March joint lectures were given with the Devon Archaeology Society and Cambridge Antiquarian Society. Andy Jones (Cornwall County Council) talked on the 'The excitement of the ordinary: the context of the Whitehorse cist in relation to the Early Bronze Age' in Exeter. Cyprian Broodbank spoke on 'The making of the Middle Sea: how the Mediterranean world came into being' in Cambridge. In December, a further joint lecture with Cambridge Antiquarian Society was given by Marc Vander Linden, who talked on 'How to become a farmer: new and old data on Neolithisation in the western Balkans' in Cambridge. In October there was a joint lecture with the Norfolk and Norwich Archaeological Society; Mark Knight talked on 'Excavations at Must Farm: new insights' in Norwich.

In October, Sebastian Becker delivered the 14th Sara Champion lecture at the Society of Antiquaries, discussing 'The Evolution of religious branding in later prehistoric Europa: The case of Urnfield and Hallstatt bird imagery'.

This was successfully combined with the presentation of the Society's Undergraduate dissertation prize (see below). For the second year running, our President, Alex Gibson, also made the University of Bradford's weekly Archaeology Guest Lectures open to the Society's membership. The third and final instalment of the Society's springtime People in Prehistory one-day conferences (exploring different scales of analysis used by prehistorians) focused on 'Building communities in prehistory' from the Neolithic to the Iron Age across Britain and Europe. In April a joint conference with the Later Prehistoric Finds Group was held at the British Museum. 'Tales the river tells: later prehistoric finds from in and around the Thames' focused on sites along the Thames foreshore. Reports on the latter two events appeared in *PAST* 80. In November a joint conference with CBA South East was held in Woking on 'Life in the Mesolithic and new perspectives on the Mesolithic-Neolithic transition' (reviewed in this issue of *PAST*).

An impressive range of tours to sites and excavations were offered in 2015. In August members and non-members were offered a Stonehenge tour with special access to the interior of the monument, guided by Heather Sebire. The Grand Days Out 2015 programme included trips to the 'People of the Heath' excavations in Petersfield, Hampshire, in June, led by Stuart Needham (see *PAST* 81). In July there were trips to the Caerau Hillfort excavations, Cardiff, led by Niall Sharples and to excavations at Marden henge in the Vale of Pewsey, led by Jim Leary. A tour of the excavations at West Kennet, Wiltshire, was led by Joshua Pollard in August,

while the exceptional discoveries at Must Farm were visited in October and December.

Europa Prize

Professor Friedrich Lüth (German Archaeological Institute) was the 2015 recipient of the Europa Prize. This year's Europa was based around the theme 'The origins of monumentality', and was held at University College Dublin on 29–31 May 2015. For the eighth year, the Europa Lecture was preceded by a day conference of lectures by new researchers. The following day's lectures were delivered by speakers invited by the Europa prize winner and the President of the Society. The Society's AGM followed (see below) and the day culminated in the presentation of the Europa award to Prof Lüth and his Europa lecture, 'Early monumentality and the role of fisherman societies'. A review of the event appeared in *PAST* 81. The weekend closed with a guided field trip to the iconic monuments of the Boyne Valley, including Newgrange, Knowth and Dowth. At Knowth delegates were treated to a guided tour by Prof George Eogan.

Research Grants

Research grants were awarded to P. Bickle (University of York) for research into Linearbandkeramik burials; A. Dolfini (University of Newcastle) for studying Italian halberds; G. Naumov (Euro Balkan University, Skopje) for a survey of tells in Pelagonia (see this issue of *PAST*); P. Skoglund (University of Gothenburg) and R. Bradley (University of Reading) for investigating Swedish rock art; J. Wexler (The British Museum) for research on Sicilian landscapes (Lampedusa); and B. Padros Vindrola for research on prehistoric pottery. The John and Bryony Coles Award went to B. Padros Vindrola for fieldwork in Romania, the Bob Smith Prize to J. Wexler, and the James Dyer Prize to G. Naumov. The Leslie Grinsell Prize was not awarded this year as there were no appropriate submissions. The SUERC Award went to E. Barkham (Blandford Museum Archaeology Club) for Bryanston School Beaker pits (two dates) and S. Timberlake (University of Cambridge) for Hafren Forest Bronze Age copper mines (one date), with some stipulations applicable to both. Both projects are represented in this issue of *PAST*. Awards for the conference fund were made to S. Croft to attend the 'Association of Archaeological Wear and Residues' conference and J. Walker to attend the 'Society of American Archaeologists' conference.

The Annual General Meeting for 2014/15

The AGM was held at 4.40pm on 30th May 2015 in the Moore Auditorium, O'Brien Centre for Science, University College Dublin, after the 24th Europa Conference and immediately before the Europa Lecture.

The President reported on a very busy, yet successful year, providing details of the Society's core activities, publications, lectures, conferences and excursions. He noted that the members had given permission to amend the articles of association in order to streamline the executive and define roles more clearly; after four years this was now complete. The President then thanked all Council and members who had

assisted with a range of events during the year. Warm thanks were offered to retiring Officers and Council members: Joanna Brück, Frances Griffith, Joshua Pollard and Heather Sebire. Reports were also given by the Secretary, Managing Editor and Treasurer. The following officers and members of Council were then elected:

President	Dr Alex Gibson
Vice-President	Dr Nicki Milner
Treasurer	Dr Clare Randall
Secretary	Dr Neil Wilkin
Managing Editor/Editor of PPS	Dr Julie Gardner
Editor, Prehistoric Society Research Papers Series	Dr Mike Allen
Editor PAST	Dr Daniela Hofmann
Book Reviews Editor	Ms Jacqueline Nowakowski
Meetings Secretary	Dr Marcus Brittain
Conservation Co-Ordinator	Dr Jane Siddell
Council	Dr Laura Bassell Ms Pippa Bradley Dr Jody Joy

The Baguley Award

The Baguley Award was presented to Duncan Garrow, John Meadows, Christopher Evans and Jonathan Tabor for 'Dating the dead: a high-resolution radiocarbon chronology of burial within an Early Bronze Age barrow cemetery at Over, Cambridgeshire' in Volume 80 of the *Proceedings*.

Undergraduate Dissertation Prize

As in previous years, each University department was invited to submit only one dissertation for the Society's Undergraduate Dissertation Prize. The winner was Sam Nicholson (Reading University) for his dissertation on 'The MIS 5e (Eemian) Pluvial period in Yemen: greening of the desert and opportunity for an early *Homo sapiens* dispersal'. The three runners-up were: Lisa-Elen Meyering (Durham University); Constantine Antoniadis (Birkbeck College London); and Matt Lester (University of Sheffield). Full details can be found in this issue of *PAST*. The awards were made after the Sara Champion lecture on the 28th October 2015, at the Society of Antiquaries.

Publications

During 2015, the Society published Volume 81 of the *Proceedings of the Prehistoric Society*, which contained 16 refereed papers on topics spanning the Neolithic to the Iron Age in Britain, Ireland, Europe and Oceania. As usual, three editions of *PAST*, the Society's newsletter, were published during the year.

Advocacy

The Society continued its active role in advocacy: opposing the proposed cuts to archaeological services in Torbay Museums; threats to Iron Age field systems at Eye in Suffolk; the significant decline in archaeological expertise within local Government planning departments; and protecting Old

Oswestry Hill Fort from intrusive housing development. The Society also canvassed opinion and issued an open letter in response to concerns that some museums had introduced charging for research access to collections. The statement was subsequently featured in the Independent newspaper, 'Editor's Choice' in *British Archaeology* and received responses from the Museum Association and the Society of Museum Archaeologists. The Society continued in its attempts to support the inclusion of prehistory in the primary school's National Curriculum by working on including a range of free and trusted teaching resources relating to prehistory and prehistoric sites on the Society website.

Membership and administration

Membership of the Society is healthy and continues to rise. The Society's online and social media presence (on Facebook and Twitter) has also developed considerably in the last year. As ever, the Society would not be able to function without a large number of individuals giving freely of their time and knowledge to organise events and to deliver the results of their fieldwork and research. The Society offers sincere thanks to all those who have helped throughout the year, and especially to its administrator, Tessa Machling.

Prehistoric Society Undergraduate Dissertation Prize 2015

The awards to the winner and three runners-up for the Society's 2015 Undergraduate Dissertation Prize were presented at the Society of Antiquaries after the Sara Champion lecture on the 28th October. The overall winner of the prize was Sam Nicholson (Reading University) for his dissertation on 'The MIS 5e (Eemian) Pluvial period in Yemen: greening of the desert and opportunity for an early *Homo sapiens* dispersal'. Sam received three years' free membership of the Society, his choice of one of the Society's in print monographs, a cheque for £100, and the opportunity to submit an abridged version of his dissertation for publication in the *Proceedings*. The three runners-up, each receiving a current copy of the *Proceedings*, were Lisa-Elen Meyering (Durham) for her dissertation on 'Nordic Bronze Age ship iconography: the establishment of a "maritime biography of naval agents" through Scandinavian petroglyphs'; Constantine Antoniadis (Birkbeck College London) 'Were Neanderthal populations in western Europe socially/behaviourally different to Neanderthals of the Near East?'; and Matt Lester (Sheffield) 'Cast your vote: an investigation into the production methods of Late Bronze Age hoards of southern Britain'.



The winner and runners-up are awarded their prizes. From left to right: Constantine Antoniadis, Lisa-Elen Meyering, Matt Lester, Sam Nicholson and the President.

Prehistoric Society Undergraduate Dissertation Prize 2016

The Prehistoric Society invites submissions for the 2016 undergraduate dissertation prize. The award celebrates the dissertation that has made the greatest contribution to the study of prehistory in any part of the world. The Prize is open to students from any University in Britain and Ireland. Each Department is invited to submit one dissertation by a candidate who completes her or his degree during the 2015/6 academic year. The judges will assess entries on the basis of the quality of work, the originality of the approach and the degree to which the research advances our understanding of prehistory.

The winner will receive three years' free membership of the Society, the choice of one of the Society's in-print monographs and £100. Three runners-up will be awarded a current copy of

the *Proceedings of the Prehistoric Society*. An abridged version of the successful dissertation will be considered for publication in the *Proceedings*. The Prize will be presented prior to the Sara Champion lecture on the 26th of October 2016.

This prestigious prize represents an excellent opportunity for outstanding young scholars to have their work publicly recognised, in the magnificent setting of the Society of Antiquaries, Burlington House in Piccadilly. Entries for the current academic year are to be sent as PDF documents by the host Department to Professor Bob Chapman at r.w.chapman@reading.ac.uk, by **Friday 22nd July**. Entries can only be accepted if accompanied by the email address, postal address and contact phone number **both** for the candidates **and** for their supervisors.

The 14th Sara Champion Memorial Lecture, October 2015

The occurrence of birds in the archaeological record may be limited, but their significance to prehistoric communities is gaining in recognition, and this was therefore a welcome and timely subject for the 14th Sara Champion Lecture by Dr Sebastian Becker of the University of Cambridge. In ‘The evolution of religious branding in later prehistoric Europa: The case of Urnfield and Hallstatt bird imagery’, Dr Becker identified a particular iconographic form of bird imagery – perhaps waterfowl – that is consistently depicted on a range of metalwork items from the Late Bronze Age to the Early Iron Age across central, east and south-east Europe. Such motifs – often presented as two symmetrically mirrored wavy ‘S’ lines – find their representational origins in Early and Middle Bronze Age motifs, particularly clay vessels, but only appear on metalwork in the first half of the second millennium cal BC. Dr Becker argued that this particular

repertoire of icons and bird motifs could have presented a visual cue to religious understandings, conveying different expressive roles for different metal objects. During the Urnfield period such codification appeared on sword hilts in particular and in a way that could be visually secretive, perhaps thereby reifying connections between warriors across Europe. The use of established Urnfield designs continued into the Hallstatt period, but in contrast to their earlier guarded presentation the motifs were exhibited for public display on items such as vessels or wagons, and may have underscored notions of descent and genealogy. Supported with plots of geographic distributions and a thought-provoking theoretical grounding, this change from secret to public display provided an innovative and memorable lecture which showed the crucial contribution that a study of imagery can make to the reconstruction of prehistoric societies.

Marcus Brittain

Conference report

‘Life in the Mesolithic: Recent Mesolithic discoveries in the South East and new perspectives on the Mesolithic/Neolithic transition’

On 14th November 2015, CBA South East in partnership with the Prehistoric Society and Surrey County Archaeological Unit held this conference, presenting a new picture of Mesolithic society formed from the extensive new data acquired over the last two decades.

The morning session concentrated on recent discoveries and how they can inform future research. Martin Bell emphasised the opportunities provided by environmental evidence to re-examine previously known Mesolithic sites to determine settlement and chronologies. Phil Jones presented results from Bletchingley, Surrey. The site is overlooked by the North Downs and sits on clay and sand geologies on a watershed between streams running east to the Medway and west to the Mole. It was suggested that this was a strategic choice when following migratory herds. Gary Momber reported on the submerged landscape of Bouldner Cliff in the Solent, where wood with tool marks and evidence for tangential splitting were found and interpreted as a possible boat building site. Gary suggested that the loss of land may have driven adaptation and the emergence of trade to continue earlier links. While no post-excavation results were available from the work on the Bexhill relief road scheme, Mike Donnelly was able to present a number of Mesolithic scatters estimated to comprise at least 230,000 lithic artefacts. This site with its huge Late Mesolithic assemblage again shows the value of wetland areas for research.

The afternoon session moved the focus to discussion of the Mesolithic–Neolithic transition and what different areas of research could add to the knowledge of this period. Fraser Sturt reviewed the progress of the Stepping Stones project and



Wayne Weller is showcasing Mesolithic assemblages excavated from sites in Surrey by the Surrey County Archaeological Unit. Photo by Anne Sassin Allen.

suggested that it was time to discuss whether ¹⁴C dates from mainland sites are representative or skew our understanding of a period when islands could be used as stepping stones across the seas. A current research project on caves and springs in south-west England was presented by Caroline Rosen on behalf of Jodie Lewis. This area is rich in cave and spring sites often associated with depositional practices during the Mesolithic. Some practices in these places suggest a persistence of ritual activities during a ‘messy’ mix of traditions as Neolithic groups moved around the South West. Rick Schulting discussed the prevalence of skull trauma. There are few Mesolithic skulls to study, but across Europe skulls exhibit evidence for healed fractures rather than fatal blows. In contrast, during the Neolithic a number of skulls exhibit the marks of blunt force injuries inflicted at the time of death; although small, this percentage is higher than the

expected average, suggesting an undercurrent of violence. The final paper, given by Don Henson, was an overview of the history of presenting the Mesolithic. Until recently, the Mesolithic was seen as a dull, academic specialism. However, many newsworthy discoveries now ensure that an engaging story can be told.

The emphasis of all speakers was on the importance of environmental analysis, geology and landscape for peopling the Mesolithic in a way that enhances public appreciation of the period.

Rose Hooker, Secretary CBA South East

The 2nd Neolithic and Early Bronze Age Research Student Symposium, Newcastle University



The 2nd Neolithic and Early Bronze Age Research Student Symposium was held at Newcastle University on the 21st November 2015. Following from last year's successful event, which was kindly sponsored by The Prehistoric Society, the symposium aimed to provide an opportunity for postgraduate, independent and early career researchers to present their research on aspects of the Neolithic and Early Bronze Age. The conference was supported by the School of History, Classics and Archaeology at Newcastle, and generous contributions from BAR Publishing and Beta Analytic. Delegates attended from across Britain and Ireland. The day conference was preceded by a keynote lecture on the 20th November by Dr Chris Fowler (Newcastle University) on powerful events and ontologies in Neolithic and Bronze Age Britain and Ireland, followed by a wine reception.

On Saturday 21st the first session included new research on the minilithic monuments of Exmoor National Park (Doug Mitcham, Leicester University), the landscape setting of the stone rows of Connemara (Marcus Byrne, National University Ireland, Galway), the current issues with terminology and the study of henge monuments (Lucy Cummings, Newcastle University), mortuary structures showing evidence of contact between Britain and the Northern Funnel Beaker Culture (Mareike Ahlers, Newcastle University) and a critical review of the megalithic roller hypothesis (Barnabas Harris, University College London).

The second session centred on technologies and included papers on stone procurement at flint mines and axe quarries (Peter Topping, Newcastle University), experimental research into the use of flaked stone bars and stone ard points in Ork-

ney (Robert Leedham, Reading University), and a case study from Cyprus into the use of experimental archaeometallurgy (Marco Romeo Pitone, Newcastle University).

The third and final session of the day was focused on ceramics and included presentations on feasting and identity in the Hebrides (Mike Copper, Bradford University), recent results of a contextual analysis of accessory cups (Claire Copper, Bradford University), contemporary craft approaches to the Neolithic use of gabbroic clay in Cornwall (Helen Marton, Falmouth University), and regionally informed perspectives on beakers as pots rather than a conceptual category (Owain Mason, Edinburgh University).

New to this year's symposium was a poster display, including contributions on the design and use of causewayed enclosures (Cameron Straughan, Newcastle University), colour representation in Neolithic monuments of Atlantic Europe (Penelope Foreman, Bournemouth University), the use of polished flint discoidal knives (Melissa Metzger, Bradford University), the Neolithic stone axe factory at Graig Lwyd, and the analysis of Neolithic and Bronze Age hafted stone tools (both by Amber Roy, Newcastle University).

The symposium succeeded in creating a relaxed and supportive atmosphere for those giving their first academic paper, as well as a stimulating day of new research for the audience. The positive feedback and the continued interest in this event highlight the importance of a conference for new and current research on the Neolithic and Early Bronze Age period in Britain, and the event will hopefully grow over the coming years.

*Lucy Cummings and Mareike Ahlers
(Newcastle University)*

The SHARE with Schools outreach initiative

SHARE with Schools is an initiative co-ordinated by a team of postgraduates and delivered by student volunteers from the School of History, Archaeology and Religion (SHARE) at Cardiff University. We aim to showcase higher education as an attainable goal, in particular to pupils who might not necessarily have thought of it as an option before. All the schools within the scheme have catchments with significant levels of deprivation. We have been running for the past four years, during which time we have developed strong links with our partner schools.

We develop and deliver workshops and toolkits, mainly aimed at Key Stage 3 (with the exception of a Sixth Form workshop), for secondary schools in Cardiff and the wider area, as well as hosting return visits at the university to give pupils a taster of university life. Workshops to date have included subject material such as the Romans in Wales, World War One, Museum Curatorship, Medieval Society and Life in the Nineteenth Century.

This year we developed a new workshop with the aim to include more prehistoric elements, as well as introducing pupils to the more scientific aspects of archaeology. Unlike England, Wales has not yet included prehistory in its secondary curriculum and as such it is difficult to take related material into schools. Visits are often limited to curriculum-related subjects in order for teaching staff to justify the time. In order to fit most closely with the curriculum, the workshop was approached from the STEM (Science, Technology, Engineering and Maths) point of view, but with a generally prehistoric focus.

The workshop aims to introduce the process of archaeological interpretation through scientific analysis. In particular, we have focused on the use of isotopes to identify an individual's geographical origin and dietary references and how this is particularly important in prehistoric archaeology. The material is approached in a Cluedo-esque way. Each group of pupils is presented with a box containing a deconstructed 'burial' of an individual. These individuals, though predominantly fictional, are based loosely on known archaeological evidence (one of our burials bears significant similarities to the Amesbury Archer and others try to incorporate known sites and fictional burials). Five of the six burials are prehistoric in origin. Pupils must reconstruct their 'burial' and gather clues

about the individual in order to identify them: where did they come from? Have they travelled during their lifetime? What did they eat? What were they buried with? How were they buried? Pupils must combine scientific evidence with artefact identification and basic interpretation skills in order to identify their individual. The activities within the workshop include drawing an archaeological plan, basic map work and plotting values on a graph.

Pupils are required to approach 'specialists' (SHARE with Schools student volunteers) who guide them through each activity, supplying necessary clues in the form of isotopic values and relevant crib sheets. At the end of the exercise, the groups are presented with a set of character cards and they must choose who they believe their individual to be from a line-up of six characters.

The workshop presents a very simplified version of archaeological evidence; the point of the exercise is not for the pupils to understand the exact science behind the techniques, but rather to see that there is a way of applying seemingly abstract scientific principles learnt in the classroom to other areas of interest (in this particular case the fact that isotopes are clues to past activity rather than just 'atoms with the same amount of protons, but different amounts of neutrons', as the pupils are trained to regurgitate). The idea is also to show pupils that the boundaries between disciplines are not clear-cut and to encourage them to embrace the idea of interdisciplinarity, while also broadening their awareness of earlier human history.

We delivered the workshop once in full last year along with a slim-line version during one of the schools' return visits to the university. It received encouraging feedback and has become a popular choice with our affiliated schools for this year's visits, which have begun at the end of February. It is also hoped that we can continue to include more prehistoric elements in our future workshops, despite curriculum restrictions.

Overall, SHARE with Schools visited seven schools last year. 31 workshops were delivered by 29 undergraduate volunteers reaching approximately 775 pupils between the ages of 11 and 14. We also hosted three return visits during which 88 pupils took part in a variety of short workshops, received tours of our conservation labs and listened to taster



Left: A SHARE with Schools student volunteer talks to year 7 pupils during an archaeology workshop. Right: Resources for SHARE with Schools' 'Archaeological Science' workshop.

lectures from our staff members. We are looking forward to continuing this success going into our fifth year of schools engagement and to welcoming and training up the next intake of SHARE with Schools volunteers.

You can follow and engage with SHARE with Schools on Twitter @SHAREwithSchool and also keep up to date with our progress via our blog: <https://sharewithschools.wordpress.com/>.

Rhiannon Philp, Cardiff University

Evidence for a Beaker Settlement at Bryanston, Dorset

Bryanston School is located north-west of Blandford Forum in Dorset. Excavation by the Blandford Archaeology group in summer 2014 discovered three Beaker pits on the north side of a chalk plateau, which drops steeply down to the river Stour whilst sloping more gently into a dry valley to the south. The pits were initially identified from a geophysical survey and revealed a collection of Beaker pottery, animal bone, worked and burnt flint and some carbonised plant material. They were excavated and half of each pit was removed as a sample for charred plant remains.

The pits are about 1 m in diameter, very shallow and less than 1 m apart. Pits 4 and 6 have a single fill, but pit 5 had three layers with a later recut.

Pottery

A moderate assemblage of 51 sherds representing a minimum of 23 vessels is characteristic of the middle to late Beaker period. It included examples of incised line patterns, comb impressions and fingernail indentations (rusticated). Some of the comb impressions had been filled with a white chalky paste, as further enhancement of the decoration. Significantly, the sherds showed considerable edge weathering, suggesting a delay before their incorporation into the pits. Two vessels are represented by several conjoining sherds, which may indicate they were moved in one event.

Animal remains

The condition of the bone (like the pottery) was highly fragmented and weathered. The uniformly poor condition of the bone supports the idea of it lying on the surface or in a midden before being incorporated into the fill. In total, 101 pieces of bone were recovered, with all but one bone located in the largest middle pit (pit 5), mostly its middle and upper layers. The re-cut in this pit also contained some bone fragments.



Sampling the three pits.

The species identified were all domestic livestock, with no wild species noted. Most bones were of sheep (or goat) and none were burnt. Pig was represented by two fragments with identifiable butchery marks. A single piece of long bone, probably cattle, shows a helical fracture typical for marrow extraction. This assemblage composition is characteristic for the Beaker period.

Flint

An assemblage of 347 flints was recovered, of which a large proportion were waste flakes. The blade frequency is very low but the proportion of scrapers and other retouched flakes is high. The flake scars on the cores were quite large, which may suggest a local source of the flint. The concentration of scrapers suggests domestic activity, possibly processing of animal skins. The presence of characteristic thumbnail scrapers in the assemblage is again highly typical of Beaker assemblages. Overall, the presence of hammer stones, flake cores and chips in all the pits is good evidence that flint was worked and tools produced on site.

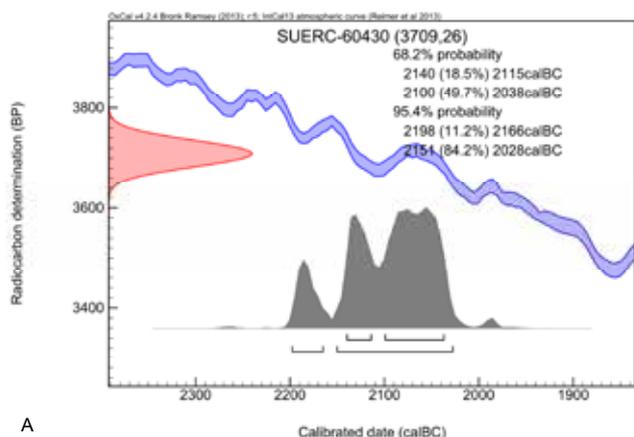
Plant remains

Half of each pit was processed by flotation. Charred plant remains were sparse and poorly preserved, but each pit



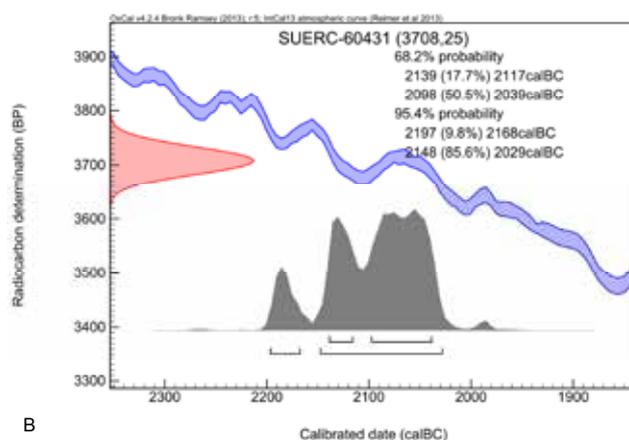
Examples of pottery: A) incised lines B) rusticated C) tooth comb pattern with infill

Calibration Plot



A

Calibration Plot



B

Calibration plots of the two ^{14}C -dates obtained on charred hazelnut shell. A: pit 4, B: pit 5.

contained either a hulled or partially hulled wheat grain. Hazelnut shell fragments were recovered from all pits and three unidentified charred fragments, possibly remains of tubers, were also found. These few charred hulled wheat grains indicate the presence of this cereal at the site, but cannot be taken as evidence for local cultivation. The hazelnuts could have been collected locally and roasted to improve their flavour and digestibility.

The flots from each of the pits also produced similar assemblages of wood charcoal with oak, hazel, hawthorn and ash. The quantities varied, with oak dominating in pit 4, and a more mixed assemblage with a larger proportion of ash in pit 5. The charcoal probably originated from domestic fires and species composition reflects collection strategies from local woodland resources. Insect tunnels in some fragments suggest that the wood was dead for some time prior to burning – either due to deliberate seasoning or the collection of dead wood from the forest floor.

Environment

The snail assemblage from the pits suggests that the site was established in an open grassland environment, indicating that the woodland was a little distance from the site. The grassland was dry and grazed or trampled. There was no evidence of disturbed ground to indicate tillage.

Dating

One of the aims of the project was to determine whether the pits were in use contemporaneously at the generational (25 years) scale, or whether they covered a more extended period of time (such as centuries). This is significant for understanding and interpreting the nature and character of the Beaker activity here. Samples from dumps of short-lived material (charred hazelnut shell fragments) from two of the pits were submitted for ^{14}C dating, generously supported by a Prehistoric Society grant. The ^{14}C dating was carried out by SUERC (samples 60430 and 60431, GU37584) and interestingly the results are statistically indistinguishable at the 95% confidence limit and

indicate that the contents of both pits date to 2200–2020 cal BC (pit 5: 3709±26 BP; pit 4: 3708±25 BP). This indicates that the pits could indeed be contemporary, perhaps being excavated within a single generation.

Discussion

The artefacts are very domestic in nature and similar to those found locally at Down Farm on Cranborne Chase and at Middle Farm near Dorchester, Dorset. They represent the accumulation of waste that a typical Beaker occupation site might produce. Artefacts were not selected and deliberately incorporated into the pits, but have ended up there after being thrown away in a midden or after lying around on the surface for a period of time. The weathered nature of the pottery and bone strongly support this idea. Insect burrows in the charcoal suggest that the wood had been lying on the forest floor and may have been collected rather than stored, indicating that activity at the site could have been transitory rather than representing permanent settlement. Perhaps a midden needed to be removed and the pits were a convenient place to put the contents, or perhaps after they had been used for some other purpose they were filled in with rubbish to produce a level surface. There is no evidence for the pits' primary use, but it is possible they were used for storing plant material or water.

Whilst the assemblage from the pits is small, the site as a whole can be characterised as domestic, showing evidence for wider production and consumption practice. The finds from the pits thus represent a useful, although limited, addition to the understanding of domestic activity from the Beaker period in central southern Britain.

Acknowledgements

Many thanks to Julian Richards, Mike Allen, Clare Randall, Ros Cleal and Dana Challinor for their guidance and support with the project, to members of the Blandford Archaeology Group for volunteering at the excavation and to the Prehistoric Society for their generous grant for the ^{14}C dates.

Edrys Lupprian, Blandford Archaeology Group

Turkey's first evil eye? The manufacture and use of blue beads in the Neolithic

Blue is a rare colour in archaeological assemblages of the Neolithic period so the recovery of a large number of bright blue beads from a variety of contexts at the Neolithic settlement of Barcın Höyük in north-west Turkey was surprising. The beads, of several different forms and almost all of which are blue on the outside but white in the middle, raised a whole variety of questions – how were they made? Where were they made? How were they used? Were they meant to be imitations of precious turquoise? Were they part of a very early long-distance exchange network? The manufacture of these beads and the possible attempt to replicate natural materials such as turquoise suggest that value was attached both to the products and their specific colour.

After researching the use of blue in ornaments of the Neolithic period it became clear that there was a more widespread appearance of similar beads at Turkish and Near Eastern sites such as Tell el Kerkh, Domuztepe, Köşk Höyük, Aktopraklık, Çatalhöyük, Canhasan and Yumuktepe during a broadly similar time period starting about 6400 cal BC. We decided to use the unusually large assemblage from Barcın Höyük to explore the technological and social significance of these beads, primarily through the use of scientific analyses. The study of the beads also provides a starting point for a wider exploration of the significance of the colour blue in the Neolithic and subsequent periods. In exploring the materials with which blue is associated and the social role of the colour we are ultimately asking if the roots of the blue evil eye beads that are so familiar in many societies today lie as far back as the Neolithic period.

Barcın Höyük (excavated jointly by the Netherlands Institute in Turkey and Koç University, Istanbul) is one of the earliest sites of the western Anatolian Neolithic (6600–6000 cal BC) and has a bead assemblage of more than 600 artefacts, over 40% of which are blue in colour. In addition to the unusual material, the forms of the blue beads at the site differ considerably from the general bead typology. By sampling and analysing the beads from Barcın Höyük and searching for further evidence of their manufacture and use at other Neolithic and Chalcolithic sites across Turkey we are gradually finding answers to our many questions.



Blue beads from the site of Barcın Höyük in north-western Turkey.

Finding ways to understand blue beads

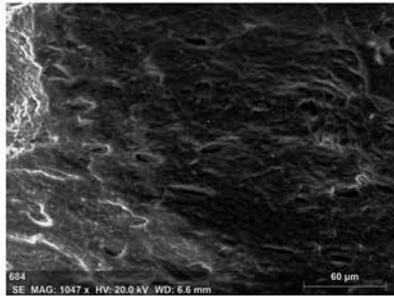
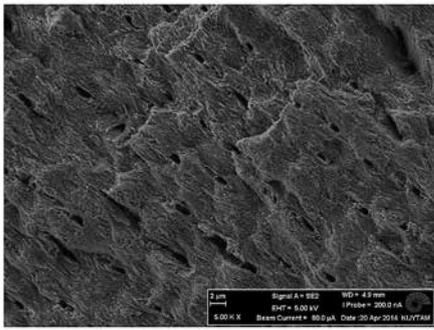
This is not the first attempt to understand the technology of early blue beads; a team working on the materials from Tell el Kerkh in Syria have been seeking both scientific and experimental methods to investigate their beads. We have taken up a similar challenge, but with a wide remit to understand both the science and the social significance of the beads across a wide geographical area.

The first investigations of sample beads focused on the processes through which they were made and their colour changed. A series of tests and experiments were conducted to achieve this end, which included methods such as Scanning Electron Microscopy (SEM), Elemental Analyses (EDX), Infra-Red Spectroscopy (FTIR) and some experimental laboratory research to try to replicate the colouring process.

Scanning Electron Microscopy revealed that the beads had organic-looking surfaces, with textures similar to ancient bone and teeth. The Elemental analyses results revealed the beads to be rich in calcium and phosphorus (found in teeth and bone), as well as manganese. This result ties in well with prior research carried out on paleontological bones and a material called odontolite, which turn blue when heated. Previous research proves that manganese causes the blue colour change in these materials.

Tests with FTIR show that the beads are made of apatite, the characteristic material of bone, ivory and tooth. However it is not possible to differentiate between these three possible materials based solely on FTIR. Experiments were subsequently carried out with bone, tooth and fossils to see if turquoise colour can be achieved under laboratory conditions. Using an experimental methodology suggested by the Tell el Kerkh team, a blue colour was achieved with Neolithic animal bone from the Barcın Höyük excavations, which had first been kept in the solution for nearly 5 days, and then in the oven for 18 hours at 550° C. In fossils, ancient teeth and modern bone, we got green or dark blue tints, but not a colour change.

Although it cannot yet be established whether the material is bone, tooth, tusk or fossil bone or tooth, it is now clear that Barcın Höyük beads were subject to a chemical process. Identification of manganese shows that one process involved is covering the bead with something that includes manganese. However, the beads that were turned blue using a combination of heating and a chemical solution became very fragile, even putting them in plastic bags caused several breakages. It is still not clear why manganese alone does not achieve the desired colour change, nor is it clear whether heating was used in the process as, although it helps in the production of blue colour, it weakens the apatite matrix. We intend to consider where the necessary materials might have been obtained and how people in the Neolithic could have made the solutions necessary to produce the beads.



SEM images of the inside of a bead (top) and a piece of bone (bottom).



Interior of blue bead (left) and example of experimental production of blue colour (right).

Ongoing research

While our analyses and experiments are still ongoing, so far we have expanded our knowledge of the possible materials used to make blue beads and begun to discover the extent of their use. It is now clear that these artefacts spread across a geographical region stretching from the eastern Aegean at least as far as Syria and, regardless of cultural affiliations, were in broadly contemporary use at sites across the whole area. We also now know that the forms of the beads, which consist of a number of distinct types, were similar at all the sites and do not necessarily relate to the rest of the ornament assemblages there. This suggests to us that there might be a common place of procurement/production or a widespread trend in bead production and use that runs parallel to other ornament-related practices. We are currently continuing with research into bead technology, as well as continuing to build our artefact database and carrying out ethnographic research into the meaning and use of beads in societies both ancient and modern.

Acknowledgements

We would like to thank Hadi Özbal for his valuable guidance and help with scientific information, designing and carrying out the experiments. We would also like to thank Rana Özbal and Fokke Gerritsen for allowing us to work with their excavation material and Barış Yağcı for SEM and EDX analyses. Initial work on this project was funded by a Research Grant from the Prehistoric Society and the continuation of the project has been funded by the Society of Antiquaries of London.

Emma L. Baysal (Trakya University, Turkey) and Ayşe Bursalı (Koç University, Turkey)

Survey of prehistoric tell sites in Pelagonia

Pelagonia is the biggest valley in the Republic of Macedonia. It is surrounded by several mountains, creating an isolated landscape which had a significant effect on the identity of communities inhabiting this natural enclosure. The first settlements were established in the Early Neolithic and mainly consisted of tell sites built above flat alluvial terrain. Due to the enclosed environment, the first agricultural communities in Pelagonia developed a distinct identity manifested mainly in specific and unique white painted vessels, anthropomorphic house models, figurines and house-like tablets. The material culture from this region is strikingly different from that of any other Neolithic society in the Republic of Macedonia and remained unchanged until the Late Neolithic, when new features from western Turkey influenced pottery production and the household in general.

Regarding the specific character of the first farming settlements in Pelagonia, the project 'Early Neolithic tells in Pelagonia' focused on several aspects of these artificial mounds, such as their positions, patterns, chronology and environment.

The first stage of the project concerned GIS mapping of the prehistoric sites in central Pelagonia, including the determination of their exact locations and mutual spatial relationship. The survey was carried out for 93 sites, of which 54 were previously entirely unknown. This boosts the total number of tell sites in Pelagonia to approximately 120, which currently is the highest quantity and density of Neolithic settlements in the Republic of Macedonia. This indicates that Pelagonia was a dynamic region, where settlements were established often close to fertile soil and wetlands. In some parts there is a pattern of a bigger tell with five to ten smaller ones established in its vicinity, such as at Mogila, Optičari, Egri, Ribarci, Gneotino, Dobromiri etc. According to the measurements taken on each tell, there are three main size groups, with the largest tells approximately 7000 m², medium-sized ones 2000 m² and the smallest roughly 700 m².

Besides their size and height, the GIS mapping of the tell sites showed that their location was closely related to the landscape. Most of the tells were positioned around

Map of Pelagonia indicating the area where 93 prehistoric sites were surveyed.

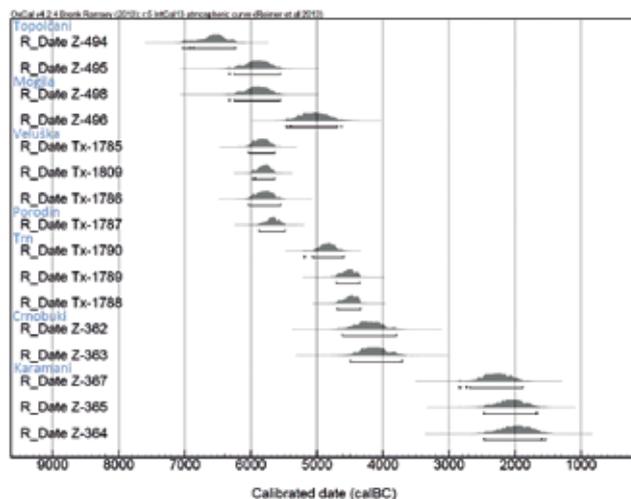


the marshy lakes which were drained in the 1950s. These wetlands were created by the Crna Reka river, which flows through Pelagonia, as well as by underground water sources fed by melting snow from the surrounding high mountains. The soil in the vicinity of the wetlands was much more fertile, but also the marshes themselves were providers of various categories of food, clay, animals, vegetation etc. Therefore, the Early Neolithic settlement patterns indicate an intentional selection of space for the first villages around these water basins and close to the Crna Reka river.

It remains unclear whether the abundance of Neolithic villages in particular areas was a synchronic process or whether some of the tells were occupied later than the others. Consequently, the research project included the calibration of available radiocarbon dates to determine the exact time when these settlements were occupied. Although these dates are based on samples taken in the 1970s, still they give a first chronological insight into the time frame of several

prehistoric sites in Pelagonia. It is evident that the tells at Mogila, Topolčani, Velušina and Porodin were established around 6000 cal BC, although there is a slightly earlier date from Topolčani which does not fit the proposed model. In any case, new samples are necessary to provide a more precise dating of Pelagonian sites and incorporate them into the current chronology of the Neolithic Balkans.

In the earlier stages of the project, a small-scale palaeoenvironmental survey was performed in collaboration with the University of South Bohemia and Charles University. Drill cores taken around the tells at Mogila and Dobromiri provided samples for pollen analysis and estimation of settlement areas. The results indicate an occupied area much larger than the visible outline of the tells. This should be further excavated to understand the spatial organization within Neolithic settlements. The palaeoenvironmental analysis confirmed a high quantity of pollen and a dynamic wetland environment, which opens new directions for multidisciplinary research in Pelagonia. Although the recent survey provided exceptionally significant new data for the first agricultural communities in the Republic of Macedonia, further research is necessary to gain a more thorough understanding of the landscape and the societies inhabiting Pelagonia in the Early Neolithic.



Calibrated dates for selected prehistoric sites in Pelagonia.

Acknowledgements

I would like to thank Slobodan Stojkoski and Gjore Milevski for their assistance during the survey of archaeological sites in the central part of Pelagonia, as well as Jaromir Beneš, Petr Pokorný and Adela Pokorná for the archaeobotanical research and promising results. My gratitude also goes to the Prehistoric Society, who awarded me the James Dyers prize and significantly supported the project on Neolithic tells in Pelagonia.

Goce Naumov, Museum of Macedonia, Skopje

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