Paper titles and abstracts

Ferran Antolín
Laboratori d'Arqueobotanica, Universitat Autonoma de Barcelona

Inferring taphonomical history of grain assemblages: an experimental approach

Abstract: Grain assemblages are relatively common in archaeological sites. They are reported to have a good potential of information on agricultural and gathering practices. Nevertheless, limitations on our knowledge of their taphonomical history are serious drawbacks in our final interpretations. What temperatures were the assemblage exposed to? Did all the taxa have the same possibilities of surviving? Is the assemblage really in situ? How has it been affected by post-depositional processes? An experimental plan to answer most of these questions will be presented along with the results of the first experiments.

Martin Bell
Department of Archaeology, University of Reading

Experimental earthworks and the formation of the archaeological record

Abstract: This paper will look at the history of experimental earthworks and the contribution they have made in the past and can make in the future to developing a better understanding of how the archaeological record forms and changes over time. The origins of experimental earthworks research in the nineteenth century empirical tradition of Darwin and others is noted. The key results at the 50 year stage of the British Association linear experimental earthworks established from 1960 at Overton, Wiltshire and Wareham, Dorset will be reviewed. Complementary to this are the series of four Octagonal Earthworks set up by P.J. Reynolds at Wroughton, Fishbourne and two sites at Butser from 1986–1991. Three of these sites were the subject of small scale excavation between 2006 and 2008 and a further earthwork at St Fagans was excavated in 2009. It will be argued that octagonal earthworks and other existing experiments have considerable value, providing contexts in which we can address problems and use techniques unforeseen at the time of the original experimental design.
In this way they comprise a type of ‘natural experiment’ of known date and thus age, and at least partly known environmental conditions and history. In such situations change over time to ditches, buried soils and contained biological evidence can be investigated. Making the most of the opportunities provided by these and other experimental contexts (e.g. hut reconstructions) would be achieved by greater partnership between experimental sites and university-based researchers with access to the appropriate analytical facilities. This would also help to increase the amount of scientific research at experimental sites to the benefit of their important educational and outreach role. The paper develops themes previously outlined in Bell et al. (1996) and Bell (2009).


Silje Bentsen
School of Geography, Archaeology and Environmental Studies, University of the Witwatersrand

On probes and samples: an experimental framework for Middle Stone Age pyrotechnology

Abstract: A series of fire experiments was conducted to examine the technological aspects of fire use in the African Middle Stone Age. The methodological approach included the use of a thermometer with two probes in some experiments and four in others, making it possible to measure temperatures in, under and by the fire. This recording of temperatures helped identify important variables, for example, how different types of wood influence temperature in and below fires. The experimental fires were excavated in the same manner as the archaeological samples from Sibudu Cave, and ash and sediment samples were taken from all layers in the fires. A comparison of pH values showed variation between samples from different depths and also between experimental and archaeological samples. Fire experiments were also designed to identify important variables of ash dumps, including homogeneous sediment and chaotically aligned items.

Alice Choyke¹ & Paul Duffy²
Central European University¹ and University of Michigan²

Time and enhanced value: the use life of bone beads

Abstract: The length of time objects are used is an extremely difficult thing to measure on archaeological objects. Separating and assessing intensity of use, raw material and actual longevity of use presents serious problems. However, as has been pointed out in the literature, objects can become imbued with meaning and value that goes far beyond simple function and their straightforward economic importance in a particular cultural setting (Choyke 2006, 2009). Beads in particular have a fractal quality to them (Fowler 2004: 40–41). Necklaces or pieces of clothing decorated by beads have the potential to be broken up, added to and re-distributed. In the Final Neolithic period in Hungary there is a particular kind of propeller-shaped bead given as grave-goods to women and girls as parts of hair ornaments, bracelets, girdles and necklaces that also included marble, spondylus and dentilium beads. Such ornaments may also have been worn in life but the different degrees of wear on the beads strongly suggest that these particular grave goods were prepared for the moment of the funeral and did not necessarily belong to the deceased during her lifetime. Many beads had been apparently used over long periods by (presumably) related people in the community. Thus, these beads served to connect female members of a particular part of this community and gained value through the passage of time. An experiment is underway in which eight replicas of these propeller-shaped bone beads and
several simple dog canine and round bone beads were strung onto a sinew thong. During the first year trial, we also experimented with different fibres from hemp, leather and sinew. Twisted sinew has proved by far the most durable. This necklace has now been continuously worn for over four years, dismantled only to measure what type and degree of wear has occurred on their surfaces compared to a single bead kept aside for comparison purposes. Although the authors intention is to keep using this necklace continuously for a few more years at least, the results show these beads are actually barely worn after more than four years of continuous wear.

Pascal Flohr
Department of Archaeology, University of Reading

Stable isotope analyses of ancient cereal grains for environmental reconstruction: using experimental archaeology to improve existing methodology

Abstract: Carbon and nitrogen stable isotope analysis of ancient cereal grains is a promising new method to reconstruct the environment and ancient agricultural practices such as irrigation. However, while the main principles underlying the method are well established in modern plant sciences, there are still a number of questions relating to the viability of its application to archaeological samples. This research aims to address these issues and improve the existing methodology through experimental archaeology. In order to investigate the relationship between plant stable isotope ratios, water availability and other environmental variables, isotope analysis is being conducted on experimentally grown cereal crops cultivated at three different sites in Jordan. Wheat, barley and sorghum were grown for three years under different amounts of irrigation, ranging from 0% (rainfall only) to 120% of the plants’ optimum water requirements. Environmental factors, such as rainfall and temperature, were closely monitored. To research the viability of the method for archaeological samples which have been buried for long periods of time and are often charred, experimental charring of grains was carried out and samples buried at sites in Jordan and the United Kingdom. The results of this research and the implications for the use of the method within archaeology will be discussed in this paper.

Jodi Flores
Department of Archaeology, University of Exeter

Experimental archaeology as scientific practice: 1796 to present

Abstract: This paper discusses how experimentation in archaeology rose in popularity as the wider discipline became more systematic and science oriented, and how the popularity of experimental archaeology has fluctuated several times as archaeology tried to find its own place within the realms of the sciences and the humanities. This will be done by analysing primary sources, starting with George Pearson's experiments on the composition of bronze artefacts from 1796 and ending with recent works that discuss the nature of experimentation in archaeology. I will also include the results of current research into the publication rates of actualistic experiments over the previous decades, some of the techniques that they employ (scientific and otherwise), and interviews with archaeologists who employ experimentation in their research. I will aim to discuss how a scientific methodology like experimental archaeology has fared at times when humanistic approaches were more popular within archaeology, how archaeological experiments utilised new scientific techniques and ideas, and how this has affected how experimental archaeology is approached in current archaeology.
Leore Grosman & Gonen Sharon  
The Hebrew University of Jerusalem

Can it be natural? The application of experimental data and 3D scanning to the study of Acheulian bifaces and the accumulation processes of their knapping by-products

Abstract: The results of a study applying 3D scanning and morphological mathematical analysis to a comparative study of Acheulian and experimental flint handaxe assemblages has been demonstrated to be very fruitful (Grosman et al. in press). Results of the current study present additional morphological criteria for the study of handaxes and their knapping by-products in Acheulian assemblages. The experiment involved the rolling of handaxes and basalt cobbles in a barrel, without a human agent, and resulted in distinctive retouch marks on the handaxes. In addition, the rolling produced flakes similar to knapping products. It is our goal to apply 3D analysis together with more traditional archaeological observations to help characterize these products and suggest some morphological criteria that can assist in the study of archaeological flint assemblages that may have been accumulated in high energy environments.

Emma Jenkins, Sameeh Nuimat, Khalil Jamjoum, Ambroise Baker, Sarah Elliott & Fiona Underwood  
School of Applied Sciences, Bournemouth University, CARE International, Jordan, National Centre for Agricultural Research and Extension, Jordan, School of Geography and the Environment, University of Oxford, AFFESS, University of Reading, and School of Biological Sciences, University of Reading

Phytoliths as indicators of past water availability and palaeoeconomic practices

Abstract: It has been proposed that phytoliths from archaeological sites can be indicators of water availability and hence inform about past agricultural practices (Rosen & Weiner 1994; Madella et al. 2009). Rosen and Weiner (1984) found that the number of conjoined phytoliths from cereal husks increased with irrigation while Madella et al. (2009) demonstrated that the ratio of long celled to short celled phytoliths also increased with irrigation. In order to further explore these hypotheses, wheat and barley were experimentally grown from 2005 to 2008 under different irrigation regimes at three crop growing stations in Jordan. Phytoliths from the husks of these experimentally grown plants were extracted using the dry ashing method (Piperno 2006). Results demonstrated that although the number of conjoined cells and the ratio of long celled to short celled forms does increase with irrigation, there were considerable inter-site and inter-year differences suggesting that environmental variables other than water availability affect phytolith uptake and deposition. Furthermore, analytical experiments showed that conjoined phytoliths are subject to change or breakage by external factors, making this methodology problematic to apply to archaeological phytolith assemblages that have an unknown taphonomic history.

Harry Lerner  
Department of Anthropology, Brandon University

Raw material inter- and intra-type variability as a factor in use-wear formation: an experimental example from north-western New Mexico

Abstract: Quantitative approaches to archaeological use-wear analysis have been around for almost fifty years. During this time at least two general truths have come to light: there is an omnipresent need for greater methodological rigor and use-wear formation is a highly complex process that is still poorly understood. Two separate analytical approaches are being used in this study to evaluate different yet related aspects of wear formation. Image analysis is used to assess the horizontal
distribution of wear and GIS is used to measure changes in surface microtopography due to wear formation.

Many kinds of lithic raw materials were used during the Late Archaic of northern New Mexico. Two of the more commonly used ones, Yellow Silicified Wood (YSW) and San Juan Fossiliferous chert (SJF), are used to conduct two series of dry hide scraping experiments designed to measure variations in rates of use-wear formation both within and between raw material types. The first series of experiments demonstrates that YSW accrued wear more quickly and more homogeneously than did SJF. The second reveals that YSW exhibited a greater range of variation in use-wear formation rates than did SJF. These findings have significant implications for how we interpret archaeological wear traces.

Wendy Matthews
Department of Archaeology, University of Reading

**Ethnoarchaeology: a comparison to experimental archaeology and a critical evaluation of its application in Neolithic studies in central Turkey and the Zagros, Iran**

Abstract: The first aim of this paper is to examine the aims, methods and applications of ethnoarchaeology and to compare these to current approaches in experimental archaeology. The second aim is to evaluate the application of ethnoarchaeology in studies of early Neolithic ecology and settlement in the Near East, with particular focus on Çatalhöyük, Turkey and the Zagros, Iran. It will briefly examine new approaches in multi-sited ethnographies.

Dawn Mooney\textsuperscript{1}, Nikola Trbojevic\textsuperscript{2} & Aidan Bell\textsuperscript{2}

University of Aberdeen\textsuperscript{1}, and University of Iceland\textsuperscript{2}

**Firewood in Viking age Iceland: an experimental approach**

Abstract: This paper presents the results of one of the first archaeological experiments to be carried out in Iceland, which aims to clarify the use of birch as firewood in the Viking Age longhouses of Iceland. Although more than a century of academic research on the subject of Landnám deforestation has confirmed that the Icelandic birch woodlands declined significantly after the Viking colonisation of the island around 870 AD, it has failed to offer a detailed account of the deforestation process and particularly to quantify the impacts made on woodlands in order to meet the requirements of households for firewood.

This experiment, carried out in the reconstructed Viking Age house at Eiríksstaðir in western Iceland, demonstrates the amount of wood required for interior heating and cooking facilities, and therefore enables us to postulate the degree of impact on woodlands of the basic needs of early Icelandic households. Furthermore, the results of this experiment have implications for archaeological interpretations of the daily life of Viking Age people and the spatial organisation of Viking Age longhouses.

Roeland Paardekooper
Department of Archaeology, University of Exeter

**Developing scientific approaches in experimental archaeology, any possibility?**

Abstract: The amount of archaeological experiments done and documented is very large and goes through all ages, materials and techniques. Over a period of 150 years, well structured experiments
have given food for thought about performance in the past. Archaeology has learned, experimentation evolves. In the 1960s, one could proudly state to “have built a Stone Age house”, now we know, a (re)construction alone is no experiment. Comparability and repeatability of experiments are important hallmarks of good experimentation — and thus we are able to move beyond “first time” experiments.

Experiments usually do not satisfy scientific purposes only or even if they do, they do not involve archaeology only — it is interdisciplinary and requires looking broader, using more sources. The award of experimentation is that it teaches us methods and techniques by means of which we can better understand the archaeological record.

An experiment nowadays doesn’t come alone anymore. Archaeological experimentation has become part of a toolkit of methods to extract knowledge from the archaeological record concerning objects, behaviour and processes. However, a scientific approach in experimental archaeology, just like in mainstream archaeology, will not provide us with certainties about the past. If done right, experimentation can and will advance archaeological science.

Amy Poole
Department of Archaeology, University of Reading

Chemical analysis of buried soils from experimental earthworks with comparison to archaeological case studies

Abstract: Soils and sediments buried and preserved beneath archaeological monuments are a valuable archaeological and palaeoenvironmental resource. The study of these buried environments can provide information for reconstructing site formation processes. However, the chemical, physical and biological nature of the soil is altered by burial. Studying the soil for both pre- and post-burial change can lead to information on soil formation processes, past land use, burial environment, monument construction and preservation.

The main focus for this research has been three experimental earthwork sites: two octagonal earthworks built by Dr Peter Reynolds between 1986–1991, at Butser Ancient Farm in Hampshire and on the site of Fishbourne Roman Palace in Sussex; and the earthwork bank surrounding the Celtic village at St Fagans National Museum in Cardiff, constructed in 1992. Archaeological sites selected for comparison are: the Scottish Henge sites of Broombend of Crichie, Aberdeenshire and Pullyhour, Caithness, both excavated by Professor Richard Bradley; Silbury Hill in Wiltshire, the focus of a recent research and conservation project by English heritage; and Bartlow Barrow complex in Cambridgeshire, a Romano-British site. These sites provide a variety of different soil types and geological locations within the British Isles.

Soils from each site have been examined using a range of analytical techniques in the hope of answering specific questions about pre- and post-burial change, adding to the knowledge on experimental earthworks and site formation processes in the archaeological record.

David Sim
Department of Archaeology, University of Reading

Reconstruction of ancient armour: a scientific approach

Abstract: This paper deals with the scientific examination of Roman scale armour made of iron. The objective of this research was to determine the microstructure and the defensive index of this type of armour. In order to determine the defensive index of an armour it is necessary to know the precise
material it was made from and this can only be revealed by metallography. The metallography that was conducted on these Roman originals made it possible to reconstruct the armour using modern metal with an almost identical microstructure. This copy was then tested to destruction using laboratory examination and field trials. The macro examination had revealed burrs on the inner face of each scale. This was initially thought to be poor workmanship but reconstruction and subsequent field trials showed that it was in fact a vital element ensuring the flexibility of this type of armour. This paper demonstrates the need for both laboratory testing and field trials in the reconstruction of ancient armour.

Geoff M. Smith
Institute of Archaeology, University College London

The efficiency of wooden projectiles: experimental observations and archaeological implications

Abstract: The recovery of wooden implements from sites such as Clacton and Schöningen have increased interest into how these implements were created and how effective they were. This paper details ongoing experimental research into the role and efficiency of wooden spears as hunting projectiles. The experiments used wooden spears based on the dimensions of archaeological specimens recovered at Schöningen; a professional javelin thrower was used to see how effectively these spears performed as javelins and what type of damage was caused to the carcass and skeleton. This research provides both experimental and archaeological evidence to suggest that wooden implements, like those from Schöningen and Clacton, were used as wooden projectiles. The data from the experiment demonstrated that these implements cause a high level of damage and certainly would have caused massive internal injury. These experiments illustrated the effectiveness and durability of these spears as hunting implements and provide insight regarding the tools, technology and subsistence strategy of Middle/Late Pleistocene hominid populations.

Conference Workshops

Rowena Banerjea
Department of Archaeology, University of Reading

Micromorphology and Experimental Archaeology (Researching Archaeological Formation and Post-depositional Processes using Micromorphology at Experimental Sites)

Abstract: A key advantage of experimental sites for the micromorphologist is to use these sites to understand further the depositional and post-depositional processes that take place in the archaeological record. The aim of this workshop is to pull together micromorphologists and other geoarchaeologists working on archaeological deposits to: a) share the outcomes and experiences of their experimental research; b) observe micromorphological thin-sections from a range of experimental archaeological contexts including experimental hut floors, buried soils and experimental earthworks; and c) discuss research objectives and potential guidelines for experimental centres concerning micromorphological research at these sites.

This 90 minute workshop will be structured as follows:

- Introduction to the theme (5 minutes): Researching archaeological formation and post-depositional processes using micromorphology at experimental sites.
- Short introductory talks (4 x 5 minutes). Theme: Researching archaeological formation and post-depositional processes using micromorphology at experimental sites.

- Microscope time (50 minutes): Cards will be provided for you to indentify your thin-sections and to provide information on the site and key sediment features of interest.

- Discussion (20 minutes): concerning the interactive relationships between micromorphologists (and other integrated analyses) and experimental centres. What are our research objectives? What potential guidelines can we provide for experimental centres concerning micromorphological research (and other integrated analyses) at these sites?

**Bruce Bradley & Ann Oldroyd**  
Department of Archaeology, University of Exeter

**Recording a flaked stone experiment**

Abstract: This session will demonstrate both the replication of lithic technology and appropriate methods and techniques for the recording of a replication experiment (e.g. documentation, bagging, labelling, photography etc). Participants will also have the opportunity to examine equivalent replicated pieces, along with the analytical results associated with those previously made pieces.

**Inés López López-Dóriga**  
Universidad de Cantabria

**Plant-related experiments**

Abstract: This session is specially focused on the presentation and discussion of specific methodologies to investigate the exploitation of vegetable resources by past societies, both through the direct study of botanical remains and indirectly from other kind of materials from archaeological sites (e.g. lithics, metalwork).

There will be 20 minutes per experiment: in the first 10 minutes, the researcher(s) will explain the objectives, methodology and results of the experiment; in the next 10 minutes, the experimental and/or archaeological materials will be displayed and discussed. At the end of the presentations, there will be a short period for questions and discussion.

The programme for this session is:

- **Introduction** (Inés L. López-Dóriga)  
- **Annelou Van Gijn**: Plant fibre processing by means of flint implements  
- **Inés L. López-Dóriga**: Inferences about archaeological formation processes from hazelnut shell cracking and charring  
- **Nattha Chuenwattana**: Sticky or Plain: experimentation on charring effects in the different types of rice grains  
- **Gill Campbell**: Studying plant remains from a burnt down grubenhaus reconstruction at West Stow Anglo-Saxon village: understanding survival, sources and the nature of the assemblages  
- Questions and discussion
Metallurgy

Abstract: This workshop is an open forum for those interested in any aspect of metallurgy and experimental archaeology who wish to share their work with others and/or discuss methodological and practical issues. The session will begin with short research presentations, followed by general discussions.

Conference Posters

Rowena Banerjea$^1$, Alex Brown$^1$, Wendy Matthews$^1$ & Stephen Nortcliff$^2$
Department of Archaeology, University of Reading$^1$ and Department of Geography & Environmental Science, University of Reading$^2$

Life-histories of buildings and site formation processes

Abstract: This poster considers the contribution of geoarchaeological analytical techniques towards understanding the activities and formation process occurring within 'known experimental' sites.

Martin Bell
Department of Archaeology, University of Reading

Experimental earthworks

Abstract: This poster details work on recent excavation of octagonal earthworks at Butser, Wroughton and Fishbourne, which aim to investigate the buried soils, earthwork erosion and ditch sediments at these sites, recording evidence for weather, biological and sedimentation processes.

Katherine Brown
Department of Chemistry, University of Reading

Chemical Analysis of a Reconstructed Hut Floor in the “Celtic” Village at St. Fagans, Wales

Abstract: This investigation into the chemistry of a reconstructed Iron Age Round House floor (the Moel-y-Gaer Roundhouse, St. Fagans, Cardiff) in 2009/10 utilised a range of analytical techniques: X-Ray Florescence, X-Ray Diffraction, and Inductively Coupled Plasma Mass Spectrometry. The aim was to discover whether chemical traces left by activities carried out on site could be identified, with particular reference to: the Phosphorus levels on site; distinguishing between layers observed in a hearth; whether woollen items (stored or excavated) could be detected using Sulphur concentrations and whether lime wash decoration traces could be detected in the soil near the walls.

The tests revealed lower levels of Phosphorus on site (in comparison to the immediate surroundings), almost certainly as a result of pre-excavation conditions. Higher levels of Calcium and Magnesium were detected as a result of the decoration of the hut, while Potassium and Sodium levels clearly
demonstrated the area and layers of the hearth. Sulphur concentrations did appear to be higher in areas where wool was found as a small find, but not in areas where wool had been stored. Possible locations of a quern and two cauldrons were revealed through concentrations of Iron and Copper. This initial work highlights the potential of chemical analysis, both on reconstructed and original sites, to contribute to understanding of the Iron Age.

Danielle Davies
Department of Archaeology, University of Exeter

The science of projectile points: an experimental investigation into the classification of dart and arrow points in prehistoric North America

Abstract: The classification of dart and arrow points in North American archaeology has fuelled considerable debate regarding the application of functional typologies to isolated stone projectiles. Poor preservation of associated shaft components has led such typologies to rely upon dualistic metrical classification parameters, often overlooking the presence of technological diversity within the archaeological record. Investigation into the theoretical approach has, however, highlighted several problems with attempting to derive functional behaviour and active use from analysis of the static object alone.

The study outlined in this poster intends to emphasise the importance of the scientific approach through the active testing of projectile point capabilities. The science of projectile aerodynamics may be used to imply weight as the primary indicator of functional performance, with lighter arrow points used with the bow demonstrating a flatter trajectory than typically heavier dart points used with the atlatl. An archery-based experiment using replicated dart and arrow points from the Southwest allowed this concept to be tested, providing a valuable preliminary report concerning the usefulness of the scientific approach, as well as an assessment of deterministic theoretical approaches that have tended to overlook the possibility of types adopted throughout periods of technological transition, appropriate for use with either weapon.

Pascal Flohr
Department of Archaeology, University of Reading

With: Catherine Douglas, Bill Finlayson, Mohammed Najjar, Nick Pankhurst, Ben Sharp & Dan Wheeler

Building with mud: reconstruction of a WF16 PPNA building

Abstract: Recent excavations at the Pre-Pottery Neolithic A (PPNA) site of WF16 (11,600–10,200 BP), in the south of Jordan have uncovered a number of semi-subterranean elliptical structures consisting of pits lined with pisé walls. One structure had been burnt down and contained evidence regarding how their roofs were made of wood, reeds and mud. Using this information a replica was built to understand better how these buildings were constructed and used, as well as to show the public what a PPNA structure would have looked like. This poster shows the process of reconstruction and presents initial conclusions on the construction process.

We thank the Department of Antiquities of the Hashemite Kingdom of Jordan for permission to excavate at WF16 and for assistance with the excavation. We also thank the Arts & Humanities Research Council for funding the 2008–2010 excavation (AH/E006205/1).
Rob Hosfield, Martin Bell, Wendy Matthews, Alex Brown, Rowena Banerjea & Stephen Nortcliff
Department of Archaeology, University of Reading, and Department of Geography & Environmental Science, University of Reading

Integrating universities, heritage organisations and experimental sites

Abstract: This poster details the results of a workshop, held at Butser Ancient Farm (June 2008), with the objective of developing ways forward for experimental archaeology involving greater cooperation between universities, heritage organisations and experimental sites.

Lisa Snape-Kennedy
Department of Archaeology, University of Reading

Mesolithic Campsites: Experimental Burning of Wood Using Replica Hearths

Abstract: Evidence for Mesolithic occupation in Northeast England mainly exists as distinct concentrations of artefact scatters. No evidence for hearths, distinct burnt layers or charcoal scatters have been found in this region as these are usually found in association with semi-permanent dwellings. A series of experiments were carried out on replica hearths by burning a controlled amount of wood. Each hearth went through increasing burning cycles to test how well charcoal and magnetic susceptibility signatures can be detected and recovered using appropriate excavation and sampling techniques. The results of the experiments have shown that the hearths that went through multiple burning cycles produced a much smaller concentration of charcoal, as it was reburnt in the next burning cycle, but produced a significant magnetic enhancement of the soil. It was seen in all of the hearths that enhancement only penetrated the top three centimetres of each heart, and so, in order for such features to survive in the archaeological record, they would have to be rapidly covered. Finally, small-scale hearths of the type used in this experiment are unlikely to be detected in the archaeological record, as they would need to be on a much larger scale and burnt for a longer period of time in order to be detected by geophysical techniques.

Lisa-Marie Shillito, John Allen, Matthew Almond, Rowena Banerjea & Wendy Matthews
Department of Archaeology, University of York, Department of Archaeology, University of Reading, and Department of Chemistry, University of Reading

Combining the visual and the chemical: a comparison of infra-red spectroscopic and micromorphological observations of experimentally fired clays from Silchester, UK

Abstract: Infra red spectroscopy of archaeological materials is becoming increasingly recognised as a rapid and useful technique. As well as enabling the characterisation of materials such as plasters, pigments and resins for example, FT-IR has been used in studies of ancient pyrotechnology as it is able to distinguish properties of clay which alter at specific temperatures. Petrographic techniques have long been established for estimation of the firing technology and ancient ceramics. This poster aims to compare the two approaches and assess whether visible changes in clay properties are related to detectable chemical alterations under controlled firing experiments. The implications of this for the interpretation of a range of clay materials in thin section will be discussed.
Helen Stokes  
Department of Archaeology, York University

**Experimental burials**

Abstract: As part of the InterArChive investigation into the micromorphological and chemical characteristics of soils around human inhumations, teams from York and Stirling University have began a series of experimental piglet burials. The aim of the burials is to assess the impact of body decay on preservation/decomposition of textiles and food materials and the effects of substances added to the body and relate these processes to micromorphological and chemical signatures within the soil. Four contrasting burial sites have been selected; a bog soil, an alkaline chalky soil, an acidic sandy/gravel soil and an archaeological soil at a Roman site. At each site a control and an embalmed piglet have been buried at a standardised depth. Each animal also had a biodegradable bag containing rough ground cereal grains of wheat, barley and oats stitched into the abdominal cavity, and various artefacts placed around the body. The four piglet internments are still to be excavated and each will be exhumed after it has been buried for 30 months. Once excavated the burials will be sampled for micromorphological and chemical analysis and the results compared to archaeological samples.