EXARC JOURNAL 2020/2
18 Articles | Open Access

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Unreviewed Mixed Matters Article:

Conference Review: 2nd Experimental Archaeology Student Symposium

Persistent Identifier: https://exarc.net/ark:/88735/10496

EXARC Journal Issue 2020/2 | **Publication Date:** 2020-05-25

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The Department of Archaeology at the University of Sheffield hosted the 2nd Experimental Archaeology Student Symposium (EAStS) between the 28th February and 1st March 2020, following on from the first successful meeting held in Newcastle in October 2018. The Symposium hosted nine papers on a variety of different experimental reconstructions of material production and processes. A discussion panel was undertaken considering the

future of experimental archaeology and what its purpose should be in this fast changing world with its diverse problems. The meeting also included an experimental day, during which attendees joined in smelting copper ore, casting bronze objects and working copper into broaches, led by Copper Smith and Experimental Archaeologist Sian Evans.

> “Although it may seem bleak, the mantra that challenging times inspire creative thinking rings true – an opportunity to conceptualise the future of archaeological practice, its current shortcomings, and what it offers in the year 2020. What then can be said for the changing role of experimental archaeology?

The conference organisers from this year and the first meeting were delighted to see the attendance figures double from about 20 in its first year to over 40 for this meeting. It was great to see a variety of students presenting and attending including Undergraduates, Masters, Doctor of Philosophy (PhD) and Post Graduate Research students, from institutes across the United Kingdom and Ireland. The EAStS will continue to be hosted every other year, to alternate with the Experimental Archaeology Conference organised by EXARC, which will next be hosted in Exeter in 2021. Liverpool won the vote to host the next EAStS which will be held in 2022, with the exciting invite to visit their experimental reconstructed cave and new experimental centre as part of the meeting.

The papers presented showcased experimental campaigns carried out as part of PhD research, Masters and Undergraduate dissertations, as well as practicals for experimental modules. The symposium provided a platform for students to present undergoing research and to get feedback from the experimental community. The three sessions were grouped into common themes and chaired by post-graduate students from the Sheffield Archaeomaterials Group (SAM).

Experimental Open Day

The experimental open day was held at Ecclesall Woodland Centre, where the Archaeology Department at the University of Sheffield have an experimental archaeology space and run courses as part of the centres’ woodland craft series. The morning session ran an experiment looking at loading methods of a crucible for malachite smelting. A method of layering crushed ore with charcoal within the crucible was tested. This saw good results, with prills and a cake of copper being produced within the crucible.

The afternoon session allowed participants to get more hands on, melting and casting bronze into clay moulds, as well as copper working their own broach to take away as a gift from the conference. The day was also an opportunity to try out SAM’s newly made bellows, which worked almost too well, melting the tuyere, reducing the air flow into the hearth, during the casting in the afternoon. The experimental open day created an opportunity for SAM to share

experience and good practice, but also created an environment to discuss projects and grow friendships.

The EAStS was a great success, not only allowing students a platform to present their work, it was also a way to introduce students from different institutions to each other and to grow and build on old partnerships and forge new ones. SAM are looking forward to expanding these relationships over the coming years and meeting up again at next year's EAC and then at EAStS in 2022.

EAStS 2020 programme

Session 1: Re-constructing Iron Age production: chaired by Matt Lester

Paper 1: Nicholas S. Baillie, Mark J. Brownett, Mallory P. Goodine, Amy-Eva I. Nuttall, Isidora Perez Miranda, Fang-Yi Su, Annlin Wu, Ashley Tuck, Dexuan Liu, Lenore Thompson, Matt Lester, Yvette A. Marks (The University of Sheffield):
Experimental iron smelting in a bowl hearth

This paper presented an experimental campaign and metallographic analysis, which looked to investigate whether it is possible to smelt iron in a bowl hearth. This programme of experimental work expanded on previous theoretical and experimental work done on iron smelting in a bowl hearth. The hearth built for this experiment was a different design to that from previous experiments, with the air input positioned at the top of the hearth rather than the bottom. The analysis of the material produced showed the conditions in the hearth were reducing and a small amount of iron was produced. It was felt that with more experience and slight alterations to the set up, a higher yield of iron could be achieved.

Paper 2: Ele Montanari (Newcastle University)
Unwinding the Beads: Experiments in Iron Age Bead Production and Use

This paper presented an experimental campaign of glass bead production in a purpose built experimental glass kiln. It was explained that production of glass beads is often overlooked, as Iron Age glass beads from Iberian and Italian contexts, are mostly retrieved from female and child burials, and have been traditionally interpreted as items of personal ornamentation. Therefore, their intrinsic symbolic properties and their production processes have been overlooked, with previous research mostly focusing on typology. The purpose of this experiment was to investigate the way these beads were produced, as this can provide us with clues to their importance in relation to the construction of identities in ancient societies. Some beads may have been treated as heirlooms and therefore passed down from generation to generation, whereas other specimens might have been crafted exclusively for burial. The making of the beads, on the other hand, could have occurred on different scales, but the structures related to their production are extremely ephemeral in the archaeological

record. A second experiment looking at the use wear analysis was presented, illustrating the methods and partial results obtained from this experiment. The benefits of this research into use-wear analysis of replica beads, was explained, including traces of prolonged use over time on archaeological specimens

Paper 3: Jennifer Beamer (University of Leicester)
Making Prehistoric Cloth: Experimental Archaeology and Experiential Results

Stylistic typologies dominate the way textile tools are interpreted for Iron Age Britain. Though this analysis may be useful for relating multiple categories of artifacts across time and space, it does not produce adequate data for understanding tool function or technological variability. To understand how Iron Age people produced cloth with warp-weighted loom technology, we must also understand how textile tools may have related to each other. The chaîne opératoire of textile production is complex and its interpretation cannot be understood in simple terms. Because there are so few preserved textiles from this prehistoric period, what can be learned of textile production must be investigated through the tools from a functional perspective. This paper presented the authors study, including analysis of loom weights, spindle whorls, long-handled combs, and needles. The range of their functional characteristics, was the primary focus of her study. It was discussed that although this research has revealed important information about the life history of the respective objects, a functional analysis is still restricted in how it can answer certain questions.

Session 2: An appetite for Experimental Archaeology – chaired by Patrick Cropper

Paper 1: Stacey Astill (Liverpool University)
The Brew Must Go On: Comparative analysis of the efficiencies and weaknesses of blower stoves developed by Allied prisoners of war in Europe during the Second World War

This paper presented a historical background for the blower stoves from Allied prisoners of war (POW) in Europe during the Second World War. It was explained how the importance of 'brewing up' in POW camps should not be underestimated. During captivity rations were poor, as was the quality of the tea and coffee. The British Red Cross supplied food parcels containing lifesaving sustenance, treats, and equipment to make hot drinks. It was however, uncommon for prisoners to be supplied with cooking facilities and a solution had to be created to allow them to brew up (and cook) as and when required. Drawings of the blowers came from sources such as Wartime Log diaries and memoir literature. A campaign of experimental archaeology aimed at recreating four different versions of the blower stoves using materials available to POW, was presented. This campaign of experiments showed that the creation of these blowers, were no simple feat of engineering, especially if you did not have an engineering background. It demonstrated that there would be variety in the design based on the experience of the maker. The experiments showed that it was possible to create

blower stoves out of the resources available to the prisoners and they would be able to brew up!

Paper 2: Jessica Cousen and Christopher Lance (The University of York).
Experiment on aceramic boiling

This paper presented a series of experiments investigating the feasibility of using deer hide as a container to cook food over a wood fire. The experiments presented, took part over a three days and sought to establish the use-life of a single deer hide when heated over direct fire. The findings of this research presented, suggest that hide is incredibly durable and can be reused multiple times; however, the durability of the hide owing in part to its thickness, make boiling water within it almost impossible. Thus, an impetus for stone boiling was also suggested.

Paper 3: Lara Comis (University College Dublin)
Building bridges: mixed methodologies in experimental archaeology

The field of experimental archaeology is characterized by a high level of fragmentation. Methodological discrepancies can be observed at all levels. The polarization between "scientific" and "humanistic" approaches (Comis 2019 - EAC 11, Trento), implies a methodological quagmire in which real communication or sharing is absent. Moreover, the lack of clear theoretical frameworks determines the impossibility of a real academic debate. To summarize, quantitative and qualitative approaches are not integrated. This paper presented an application of mixed methodologies from the social sciences to experimental archaeology research. Even if the "scientific" approach is discarded by "humanistic" approaches, it cannot be denied that material aspects must be investigated through the hard sciences and their protocols. It is nonetheless true that "humanistic" aspects are indeed present in experimental archaeology research, and yet a proper way to address them has not been really acknowledged. An interdisciplinary methodology and overall theoretical framework was presented as a possible solution to this issue.

Session 3: Reconstructing Ancient Technologies of materials – chaired by Lenore Thompson

Paper 1: Victoria A.L. Lucas (Newcastle University)
Why Recycle Glass? The Answer is Clear! Experimental glass recycling in a wood-fired glassworking furnace

A number of ‘recycling indicators’, thought to relate to changes in chemical composition of glass with recycling have been widely employed in the identification of past recycling. Chemical analysis of Roman and Early Medieval glasses has suggested that the practice of recycling was an important part of the glassworking process at many points across the period, and reliance upon recycled cullet in place of ‘fresh’ glass seems to have become

particularly prevalent by the mid-Saxon period in England. A small number of authors have sought to experimentally replicate recycling in order to better understand this important and widespread practice. However, recycling experiments to date have exclusively relied upon work carried out under laboratory conditions, using modern gas or electric fired furnaces. In addition much of this work has focused on mixing of compositions, rather than the effects of repeated remelting. This has led to a number of assumptions about the effects of recycling glass that may not be applicable to the practice in antiquity. This paper presented the preliminary results of, the author's first experimental campaign to test assumptions about how we can recognise past glass recycling, and the effects of long term recycling on glass, using period appropriate fuel (wood) and furnace structure. The methodology comprised of an approach combining experimental archaeology, chemical analysis, and expert craftsperson knowledge; to produce a picture of recycling that will deepen understanding of the links between craftsperson experience, chemical composition, technological practice, and object biography.

Paper 2: Bangcheng Tang, Yvette A. Marks, Dr Roger Doonan (The University of Sheffield).
Assessing the Recipe Traditions of Bronze Age Mould Production in China

In the Bronze Age of China, bronze artefacts were mainly vessels, symbolizing social power by their quantity, volume, type and decoration. The exquisiteness of Chinese bronzes is often attributed to a smith's excellent casting technique and mastery of the alloy composition, while the importance of moulds for the production of bronzes has been overlooked. An experimental campaign assessing the effects of different recipes of moulds on the process of mould making and bronze casting was carried out. This paper presented the results from the experimental campaign and discussed how the ingredients added to the clay of the mould recipe affected the clarity of the surface of the cast artefact. It was concluded that high-quality moulds are the basis of producing exquisite bronzes. The mould recipe and alloy composition are the core technologies of bronze production in the Bronze Age of China.

Paper 3: Wing-in Ho (University of Oxford), Patrick Quinn (University College London).
Clay-mixing in the Production of Ceramics: An Ethnographic, Experimental and Archaeological Investigation

Analytical studies on the craft technology of archaeological ceramics have speculated about the intentional mixing of multiple sources of clay based on the presence of certain textural features seen in thin section under the microscope. However, their resemblance to natural heterogeneity caused by sedimentation and bioturbation means that positively identifying clay mixing in all but the most obvious of cases has so far been difficult. This paper presents a series of experiments and an analytical programme, which has attempted to address this issue. The experiments comprised of mixing compositionally different sources of clay in a controlled way, using methods reported in ethnographic studies of traditional pottery

production, including the blending of two moist clay sources, two dry sources and moist and dry clay. These paste mixtures were fired, made in to thin sections and examined in detail alongside naturally heterogeneous clay collected in the field, both in its raw state and after homogenisation. The results presented showed how detailed visual analysis of the thin sections revealed the presence of laminations, clay lumps and lenses in both unmixed naturally heterogeneous clay samples and intentionally mixed pastes, thus confirming the suspicions of previous workers. Nonetheless, certain characteristics, including their shape, distribution and rate of occurrence, differed between the mixes. These are potentially useful for the identification of deliberate clay-mixing, and also the interpretation of the methods applied by ancient potters. It was discussed how their findings have been used to re-examine archaeological ceramic thin sections containing possible evidence for clay mixing, as well as the use of naturally heterogeneous clay that has been poorly homogenised.

Discussion Panel: Experimental archaeology in the 2020s: New directions, challenges, and opportunities

Panel chair and introduction: Nicholas Groat
Panel members; Maureen Page, Butser Ancient Farm; Jason Hall, The University of Liverpool and Yvette A. Marks, The University of Sheffield.

Archaeology is in a transformative stage: the frequent citing of declining student numbers, dwindling public interest, economic uncertainty, and increasing pressure to monetise research all paint a somewhat depressing future. Although it may seem bleak, the mantra that challenging times inspire creative thinking rings true – an opportunity to conceptualise the future of archaeological practice, its current shortcomings, and what it offers in the year 2020. What then can be said for the changing role of experimental archaeology? This panel discussion examined the role that experimental archaeology can have in the year 2020 and beyond.

The panel discussed what experimental archaeology is considered to be in 2020 and what is its role outside of academia. The paper 'Experimental Archaeology: Who Does It, What Is the Use?' by Roeland Paardekooper (2019) https://exarc.net/issue-2019-1/ea/experimental-archaeology-who-does-it-..., was discussed, highlighting how different institutions, museums and groups use experimental archaeology for different purposes. It was agreed by the panel and conference participants that all the different purposes of experimental archaeology are important and valuable, whether it is a scientific test, testing a theory of reconstruction, to look at use wear, for school education or for public engagement (and many more). They are all very important branches of experimental archaeology with different purposes and valuable interactions with participants and can only be achieved by the physical reconstruction of something. However what was considered, was that the current down fall of all these different methods, is sharing the experiment. It was also agreed, that this could be done in many different ways, such as by publishing the work in a journal, writing a blog, or

sharing on social media. We can reach more audiences and learn more by sharing what we do. It was discussed that at this moment, with so much going on in the world, this is the time experimental archaeology can help contribute ideas, or offer innovative and resourceful solutions to problems. Our call to action was to ask all participants to share their research more.

Keywords review
conference
experimental archaeology

Country United Kingdom

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Gallery Image

FIG 1. OPENING OF EASTS 2020. PHOTO BY YVETTE A. MARKS

FIG 2. COPPER SMELTING AT EASTS 2020 EXPERIMENTAL OPEN DAY. PHOTO BY YVETTE A. MARKS

FIG 3. COPPER BROACH MADE BY AN EASTS PARTICIPANT. PHOTO BY YVETTE A. MARKS