CRAFT AND PEOPLE

AGENTS OF SKILLED LABOUR IN THE ARCHAEOLOGICAL RECORD

INTERNATIONAL CONFERENCE
BRITISH MUSEUM, LONDON
1ST AND 2ND NOVEMBER 2012

PROGRAMME

1. November 2012, British Museum

Stevenson Lecture Theatre

9:00h Registration opens
9:15–9:20h Welcome: *Marion Uckelmann & Ben Roberts*
9:20–9:40h Introduction: *Sara Strack*

OBJECT AND CRAFT

(Session 1)

9:40–10:05h *Ann Brysbaert and Melissa Vetters* (University of Leicester/University of Heidelberg/Athens)
Buried, wasted, half-done and left-over:
in search of the artisans among their 'rubbish'

10:05–10:30h *Barbara Armbruster* (Toulouse University)
Functional analogies as approaches to metal technology understanding ancient craftspeople and workshops by iconography, ethnoarchaeology and experimental archaeology

10:30–10:55h *Kate Verkooijen* (University of Exeter)
Bronze Age Faience in Britain: Experiments in making faience objects using British natural materials and firing them in charcoal furnaces

10:55–11:20h *Georg Nightingale* (Salzburg University)
Crafts and terminology of crafts in Mycenaean Greece

11:20–11:40h coffee break

(Session 2)

11.40–12.05h *Andrew Appleby and Michael Lucas* (indepenendent/Willamette University)
Orkney's grooved ware secrets

12:05–12:30h *Simona Todaro* (Catania University)
Forming vases at Prepalatial and Protopalatial Phaistos. Layering and its potential for understanding the chaîne opératoire of ceramic manufacture

12:30–12:55h *Carolin Jauss* (Free University of Berlin)
Cooking techniques and the role of cooks in an early urban society

13:00–14:00h lunch break
(**we move over to BP lecture theatre**)

poster session
(posters can be viewed from now until conference ends)

BP Lecture Theatre

(Session 3)

14:00–14:25h *Deborah Olausson* (Lund University)
Knapping skill and the question of craft specialization in Late Neolithic southern Scandinavia

14:25–14.50h *Jo Sofaer* (University of Southampton)
Creativity and Craft: Inspiration from the Bronze Age

14:50–15:15h *Cristiano Iaia et al.* (La Tuscia University)
Experimental Approaches to Tools and Technical Skills of the Bronze Age Smiths in the Terramare Area (Northern Italy)

15:15–15:40h *Giovanni Leonardi and Silvia Rossi et al.* (Padova University)
The "workshop-houses" of Vicenza foothills during the Late Iron Age: the case study of Montebello Vicentino (Vicenza, Italy)

15:40–16:00h coffee break

(Session 4)

16:00–16:25h *Paul van Pelt* (University of Cambridge)
Craft Production and Artisan Collaboration in New Kingdom Egypt: Skeuomorphic Vessels and the Importance of Cross-Artefact Analysis

16:25–16:50h *Chris Hayward* (Edinburgh University)
Revealing the Ancient Greek Stone Mason from Literary, Epigraphic and Archaeological Evidence

16:50–17:15h *Luis Berrocal and Gregorio Manglano* (Autonomous University of Madrid)
A skilled labour with ethnical significance? Craft-productions of "Verracos" sculptures from Spanish Iron Age

2. November 2012, British Museum

IMAGES OF CRAFTSPEOPLE

BP Lecture Theatre

(Session 5)

9:00–9:25h *Daniela Arroyo Barrantes* (University of Cambridge)
The portrait of the potter and craftmaking in the Ancient Near East

9:25–9:50h *Eleni Hasaki* (University of Arizona)
Decoding the Penteskouphia Imagery:
The Penteskouphia Pinakes and Potters at Work in Ancient Greece

9:50–10:15h coffee break

SOCIETY AND CRAFTSPEOPLE

(Session 6)

10:15–10:40h *Daniel Sahlén / Michael Charlton* (University of Glasgow/ University College London)
Waste and expertise: assessing skilled production from metallurgical residues

10:40–11:05h *Maikel Kuijpers* (University of Cambridge)
Reappraising chaîne opératoire; adding new theory to an old method

11:05–11:30h *Anne Lehoërrf* (Lille University)
Metal craftsman of Bronze Age society. His role in war

11:30–11:55h *Brian Dolan* (University College Dublin)
Iron, performance and the social role of ironworkers in Iron Age Ireland

12:00–12:45h lunch break

12:45–14:30h poster session
practiced skills and workshops (to be announced)

(Session 7)

14:30–14:55h *Sophie Bergerbrant* (Norwegian University, Trondheim)
Making Bronze Age Textiles

14:55–15:20h *Joanne Cutler* (University College London)
Arachne's web:
women, weaving and networks of knowledge in the Bronze Age southern Aegean

15:20–15:40h coffee break

(Session 8)

15:40–16:05h *Richard Darah* (Archaeological Consultant, Norwich)
The reconstruction of the Dover Boat:
What it tells about Bronze Age Craft Skills

16:05–16:30h *Rob Lee* (University of Southampton)
Tools of the Craft: Woodcrafting influences on tool morphology and targeted technical change during the Late Bronze Age in Southern England

16:30–17:25h final open discussion

ABSTRACTS

Papers (in order of appearance)

Buried, wasted, half-done and left-over: in search of the artisans among their 'rubbish'

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Melissa Vetters (University of Leicester, School of Museum Studies and School of Archaeology and Ancient History, United Kingdom) mv95@leicester.ac.uk

Considerations of space are fundamental in archaeological research because we study space, in relation to time, in order to contextualize our findings and imbue them with meaning. Most often, however, space, together with time, is seen simply as a neutral backdrop for human interaction. Considering space as an active component in the building of social networks is only useful if we understand that the neutrality of space is an illusion in our minds. Inhabited spaces, instead, are imbued with memories, sensory and skilled experiences, emotions, and filled with matter and materials.
Since spaces are created by materials, construction techniques, and people, it is therefore absolutely critical to reveal active links between space and time, on the one hand, in discussions of technologies and activities (past and present), on the other, in order to imbue these activities and technologies with their most complete set of interconnected meanings.
Our paper aims to critically review current fashions in studying ancient technologies in archaeological contexts with the aim of focussing on social networks and technological transfers in specific workshop contexts in Late Bronze Age Tiryns. From this site several workshop contexts spanning a chronological sequence with overlaps from the mid 13th century BCE to the 12th century BCE have been studied.
Our holistic approach in comparative work will build on an updated version of a workshop model published 25 years ago and now applied to the finds, installations and architectural complexes, representing, materially, the totality of these technological and social interacting networks.

KEYWORDS**:** social diagrams and theoretical (workshop) models, *chaînes opératoires* and cross-craft interaction, Tiryns Late Bronze Age workshops, architectural layout and spaces, networks and contextualisation

Functional analogies as approaches to metal technology – understanding ancient craftspeople and workshops by iconography, ethnoarchaeology and experimental archaeology

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This paper deals with ancient technology of fine metal working, more precisely with functional analogies as approaches to understand craftspeople, manufacturing techniques, workshops, tools and their handling along with the "*chaines opératoires*". Several sources of information from different analogies will be discussed to explain the multifaceted methodology applied in archaeometallurgical research. Iconographic information on metal technology is present on different supports such as carved stone reliefs, sculpture, wall paintings, vase paintings, paper paintings or drawings in book or chronicles. Ancient literary sources from antiquity up to the medieval period give detailed descriptions on techniques, tool handling and chemical receipts. Ethnographic data are directly available from field work in traditional workshops, and indirectly by ancient chronicles, historic descriptions, and ethnographic films. Traditional tools, workshops and metal objects are also accessible through exhibitions and ethnographic museum collections. Experimental archaeology provides a means to test ideas on tool handling, technical processes, "chaines opératoires", and the time and power investment in the manufacture of metal items.
Finally, combining information from functional analogies with the direct study of the archaeological artefacts, metal objects as well as metal working tools, by macro- and microscopy allows approving conclusions on the paper's topic. The paper also aims in presenting several case studies from the Later Prehistory up to the Viking Age, which benefit from this interdisciplinary approach to ancient metal work.

KEYWORDS Metal technology; iconography; ethnoarchaeology; experimental archaeology; archaeometallurgy

Bronze Age Faience in Britain:
Experiments in making faience obejcts using British natural materials and firing them in charcoal furnaces

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Faience is a vitreous material which has received a lot of attention due to its key role in questions of trade and exchange across Bronze Age Europe. The main investigative approach in Britain has been analysis of the excavated artefacts (Newton and Renfrew: 1970; Sheridan, Eremin and Shortland: 2005). Elsewhere, much experimental work has been done, essentially focusing on replicating Egyptian material (Vandiver: 1983; Nicholson and Peltenburg: 2000; Tite *et al.*, 1983;1986;2007). Debate on the Bronze Age faience found in Britain has been dominated by discussion of whether it was imported or locally produced (Harding: 2000; Sheridan and Shortland: 2004). Very little work has been done on which kinds of local materials this would entail in a British context. Similarly, the majority of firing of experimental artefacts has been in electric kilns - with the notable exception of Eccleston (2008) in Armana. Such apparatus was not only (obviously) unavailable in the Bronze Age but also produces a completely different kind of kiln atmosphere (oxidising) as opposed to the atmosphere (reducing) produced by a charcoal furnace. These two types of kiln require completely different firing regimes.
This paper presents the experimental work of the author and her colleagues in attempting to a) produce faience using available British materials and b) successfully fire faience in reducing-atmosphere charcoal furnaces. The first has given some very good results which are the basis for the next round of research. The second has been perfected and can be reliably repeated as required. The less successful results of experimental firings during the research have been found to match some published Bronze Age faience artefacts in appearance. Using the insights produced so far from this research some conclusions can be drawn about the skills, experience and practice of British Bronze Age faience makers and the objects they produced.

KEYWORDS: faience, furnaces, Bronze-Age, experimental

Crafts and terminology of crafts in Mycenaean Greece

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There seems to be an imbalance between a highly specialized terminology of crafts and craftsmen in the Late Bronze Age texts of Mycenaean Greece and the interpretation of the archaeological remains of workshop areas. The varieties of materials found in such workshop contexts led to an interpretation of several crafts working with different materials in the same workshop at the same time, or even of one craftsman working in several crafts. The craft terminology of the text, on the other hand, distinguishes craftsmen by e.g. stating the material they are working with, or, as e.g. in the case of the bronze-workers, with even more specialized terminology for craftsmen producing special objects only. The Mycenaean bureaucrats feel that it is possible and necessary to distinguish crafts-men in such a way. This paper will try to present both sets of evidence and to find ways to reconcile both. The production and working of vitreous materials (glass, faience, and frit) and related crafts will be used as a test case.

KEYWORDS: glass, faience, Linear B, craft terminology, workshops

Orkney's grooved ware secrets

Andrew Appleby (potter, Orkney, United Kingdom) fursbreck@btinternet.com
Michael Lucas (Willamette University, Washington, USA)

The Orkney clay used by our late Neolithic Orkney potters here is about the worst clay you can find! Yet, masterpieces, revolutionary designs and decorations were being produced… HOW DID THEY DO IT?

For nearly ten years, OPPRA (Orkney Prehistoric Pottery Associates) have been working on just this.

From the 1st July this year a further programme of practical research will take place from Fursbreck Pottery. We will be using the terrible clay from two deposits local to Skara Brae. Michael Lucas from Willamette University will work with us to produce several large vessels. These will be fired in the spoil heaps of The Ness of Brodgar Excavations (Courtesy of ORCA) to try to replicate again midden heap firings.

Apart from further groundbreaking work into the actual technologies employed by these skilled and knowledgeable potters, we will also test a discovery from the 2011 season of excavations at The Ness site. This was a huge pot, lying on its side with signs of intense burning within. Was this an oven? We can only try to find out. We shall bury one, create a fire inside and attempt to 'cook our own goose.'

I wish to show some of the intriguing methods and ingredients the Neolithic potters of Orkney employed to achieve success. Some were far in advance of their time in relation to later Classical skills. I want to explain why these attributes developed here and not elsewhere until seemingly much later.

Time will be of the essence in this presentation. The talk will be concise and to the point. For this reason there will be a display of pottery, shards and artefacts for further explanation.

For a taster of what we have been achieving, please go to www.applepot.co.uk and click on 'Neolithic'

Forming vases at Prepalatial and Protopalatial Phaistos.
Layering and its potential for understanding the *chaîne opératoire* of ceramic manufacture

Simona Todaro (Catania University, Italy) svtodaro@unict.it

Following the results of several analytical studies conducted at the end of the '90s on Kamares ware and on the use of the potter's wheel in Minoan Crete, pottery specialists started to acknowledge that the appearance of the palaces did not coincide with major changes in pottery technology, especially in terms of paste recipes and forming technique, and certainly did not involve the immediate adoption of the wheel-thrown technique at the expense of the coil-building technique. In fact, several scholars now believe that most of the vases used in the First Palaces, although previously considered to be wheel-thrown, were indeed wheel-coiled, i.e. coil-built and wheel finished, and that the wheel-thrown technique was adopted only for small vases produced in a limited range of wares.
Study of the pottery produced at Phaistos between the EM IIA and MM IIB periods has confirmed that wheel-throwing was adopted gradually at the site, and only by some potters that at the beginning of MM II used it to throw 'off the hump' small vases which other potters continued to produce in the previous tradition. It has also led to the substantial revision of our understanding of the *chaîne opératoire* of the traditional way of making pottery at the site, the origin of which dates back to the EM IIA period, if not already to the FN period.
This paper will focus on this long-lasting tradition of making pottery and will clarify that, contrary to what was previously assumed, it was not based on coil-building but rather on 'layering', a peculiar forming technique that consisted in joining together multiple layers of clay, of similar or different texture, and that it was so embedded in the cultural of the local potters that it survived the introduction of the wheel-thrown technique.

KEYWORDS: Crete, Phaistos, Early and Middle Bronze Age, technological habitus, chaîne opératoire

Cooking techniques and the role of cooks in an early urban society

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Cooking, as a domestic practice within households or in institutional contexts, has not been given as much attention in archaeological research as have other practices that are usually classified as skilled labour or crafts. This is very much in contrast to the ubiquity and relevance of cooking in daily life, as well as its role in economic contexts, e.g. in form of secondary milk products. Although cooked products are only rarely preserved in the archaeological record, tools used for cooking, namely pots, are available to infer cooking techniques. Using a practice-oriented approach, this poster aims at building a bridge between material culture, gestures, actions, and people, consequently investigating the functional and social dimensions of cooking practices. The chronological focus is on the later Uruk period (the second half of the 4th millennium BCE) during which vast regions of western Asia appear to be highly unified by homogeneous material culture, urban development, and comparable processes toward state formation. The poster will explore to what extent it is possible to infer gestures performed with cooking vessels and consequently cooking techniques and specific skills necessary to coordinate heating source, pots and ingredients. The study is based on the combination of an experiment with replicated vessels on an open fire and detailed analysis of techno-morphological characteristics and use wear – mainly sooting – on vessels from early urban sites and villages in southern Mesopotamia and southwest Iran.

Knapping skill and the question of craft specialization in Late Neolithic southern Scandinavia

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The quality of the workmanship on Late Neolithic flint daggers can differ greatly from dagger to dagger. Some are extraordinarily beautiful, but there are also large numbers of ugly and mediocre daggers lining museum shelves. Such differences are most commonly ascribed to variations in skill levels among their makers. But what, exactly, do we mean by varied skill levels? Are the most skillfully made daggers the products of craft specialists?

Skill is a tricky field for archaeologists to investigate, since most definitions rely on observing performance. Nevertheless, there are at least two avenues of approach archaeologists can use. One is a subjective evaluation based on aesthetic qualities, whereby we equate aesthetically pleasing crafted objects with skillful craft performance. The second avenue of approach for flint objects involves using contemporary knappers' observations about desired outcomes of knapping actions. Following this reasoning, the number and severity of knapping errors should be related to skill in performance.

I present the results of an investigation of Late Neolithic flint daggers using these approaches. Results confirmed the original impressions regarding varying quality of workmanship. Also, there were some interesting patterns when observations were broken down by dagger type.

Following this, I examine the proposal that craft specialists were responsible for the most skillfully-made daggers. After looking at production volumes and possible secret knowledge or esoteric tools which might indicate specialists, I conclude that evidence for craft specialists is weak. Who made the best daggers? My suggestion is individuals with particular talent and interest in knapping who enjoyed pushing flintknapping as far as it would go. However, I would not call them craft specialists, even though what they made certainly was special.

KEYWORDS: flint daggers, flintknapping, craft specialists, skill, talent

Creativity and Craft: Inspiration from the Bronze Age

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The HERA-funded project Creativity and Craft Production in Middle and Late Bronze Age Europe (CinBA) has been exploring the ways that Bronze Age objects can act as inspiration for contemporary makers. In collaboration with the Crafts Council, CinBA developed a Live Project and an on-going Maker Engagement Project.Within the Live Project over 150 students following contemporary crafts courses at 5 UK universities had contact with CinBA. The work of 14 selected students is displayed in an on-line exhibition (http://cinba.net/exhibition/). In the Maker Engagement Project (http://cinba.net/me/), CinBA is closely following 6 selected makers over the course of a year through their interaction with archaeologists, museum and site visits, object handling sessions, seminars and discussion days to trace the ways that contemporary creativity can be stimulated through an engagement with these. Makers have been contributing practice-based research responses to Bronze Age material through which the inherent creativity of Bronze Age craft can be more imaginatively explored. This paper draws upon a rich data set of maker interviews, maker's statements, blogs, feedback forms, and new contemporary craft objects to discuss some initial outcomes from this inter-disciplinary dialogue and the role that the contemporary craft maker can play in archaeological enquiry, beyond the standard models of reconstruction or reproduction of prehistoric craft.

Experimental Approaches to Tools and Technical Skills of the Bronze Age Smiths in the Terramare Area (Northern Italy)

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This paper is a step of the project "Smiths in Bronze Age Europe" carried out by the Museo Civico Archeologico Etnologico di Modena within the frame of the OPENARC project, supported by the EU with the aim of fostering cooperation and exchange of good practices among Archaeological Open Air Museums in Europe. Focus of the research is the Bronze Age technology, with particular regard to the Terramare culture which developed in southern Po Plain (Northern Italy) during the Middle-Recent Bronze Age (ca 1650-1150 BC). Two skilled craftsmen (M. & M. Binggeli from Switzerland), working together with a team of archaeologists, geologists and archaeometallurgists under the scientific coordination of A. Cardarelli (La Sapienza University of Rome) and the direction of I. Pulini (Museo Civico Archeologico Etnologico di Modena) are undertaking the experimental reproduction of bronze items, including weapons, tools and ornaments which are typical of the Terramare culture. Major goal of the investigation is the reconstruction of the bronze age craftsman's knowledge, through the recognition of the actual tools and techniques employed within the **"**operational chain**"**. A special attention will be paid to the manufacture of stone moulds and to the long post-casting procedure of cast objects, that consists in a engaging cold working and annealing of the items in order to shape, refine and make it more effective by hammering. Through the illustration of experimental actions (reproduction of swords and axes) and the available archaeological literature, a simple smith's equipment of percussion tools made up of stone (hammers, anvils, whetstones etc.) will be compared with more sophisticated implements (bronze hammers), that are recognized in a growing archaeological evidence at least from the Recent Bronze Age onwards. This discussion will allow to deal with crucial issues such as the existence of different levels of craftsmanship and skill and the presumable social position of bronze age smiths.

KEYWORDS: Bronze Age metallurgy, stone smithing tools, bronze smithing tools, specialization, levels of craftmanship

The "workshop-houses" of Vicenza foothills during the Late Iron Age: the case study of Montebello Vicentino (Vicenza, Italy)

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This paper aims to a general outline of some characteristics of settlement in Veneto foothills during the Late Iron Age, focusing on the production sites in the Vicenza province. The occupation of this important area – that plays a role of "hub" between plain and mountain areas – is related to the use of mining resources and grazing lands, to the supply of wood and stone and to the control of exchange routes towards northern Alps. Settlements with shared and distinctive features – e.g. Santorso, Trissino, Montebello – are attested here from 6th to 2nd century BC, with the highest number of evidences in 5th and 4th-3rd centuries BC. They are characterized by a particular type of houses partially cut into the bedrock, provided with service structures and an attached workshop for metal or pottery production. Moreover, significant evidences of weaving activities and of horn-bone working were found within spaces clearly used for household activities, next to evidences of food preparation/preservation/cooking – as a "ice house" dug into the rock. The case study chosen for this paper is an archaeological context found in Montebello Vicentino, a site located on a hilltop to control the access to the Lessini and Berici hills and to the overlooking plain. Here, within an area of settlement clearly connoted as a craft district, two specialized "workshop-houses" were found. Inside one of them, the workshop of a potter was discovered, perfectly sealed by an episode of fire and collapse. This finding enables us to reconstruct the potter's workplace, with the special evidences of a raw-clay lump, a stock of temper and some not yet fired vases. The uniqueness of this context is due to a production system that materializes itself in the planning and building of independent workshops, still not known neither in Lessini area nor in the Italian Alps (Reti cultural aspect).

KEYWORDS: workshop-houses, pottery production, foothills settlement, Late Iron Age

Craft Production and Artisan Collaboration in New Kingdom Egypt: Skeuomorphic Vessels and the Importance of Cross-Artefact Analysis (working title)

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Archaeologists typically deal with specific artefacts, but symbolism, values, and interpretations that cross boundaries may be a key to understanding how objects were understood and used. Symbolism of colours, textures, forms, and compositional styles may be the link between social relations, semantics, and artefact variation. In recognition of these observations, this paper studies craft production, consumption patterns, and artisan collaboration in New Kingdom Egypt using skeuomorphic vessels, that is, a vessel which imitates the design of a similar object in another material. If a certain vessel is made in different materials, does one imbue the object with special states (e.g. pottery vs. glass)? Do patterns of context vary between the same shape classes executed in different material which differ in fragility and portability (e.g. according to socioeconomic status)? How were these objects produced and how were the raw materials procured? Second, there is the aspect of decoration to consider. Are there certain links between images and materials? Where does the imagery come from? Is it original material or copied? Does that help to show where an item was made, *e.g.* in a funerary workshop or a workshop attached to a temple or a palace? Are painted vessels mimicking other kinds of materials always less prestigious?

I have compiled a corpus comprising 53 skeuomorphic vessel shapes, each copied in a variety of materials apart from their original medium. Some interesting conclusions are forthcoming from their study. These relate not merely to the identification of workshops or isolated examples of communal craftsmanship, but touch upon some important issues which relate to our view of Egyptian economy and society as a whole. Moreover, conclusions on the importance on context and access to raw materials have broader relevance to the development of production models outside of Egyptology as these have tended to be focussed largely on ceramics (e.g. Peacock 1982; Rice 1987; Costin 1991, 2000; Costin and Hagstrum 1995). Clearly, production in other media introduces their own idiosyncratic variables.

KEYWORDS: Cross-artefact analysis, Skeuomorphic vessels, Craft production modelling, Artisan collaboration, Simulacra.

Revealing the Ancient Greek Stone Mason from Literary, Epigraphic and Archaeological Evidence

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In comparison to the numerous and prominent products of their labours, the ancient Greek stone mason himself is an indistinct figure within the archaeological record, ancient literature and epigraphy. The information provided by these sources is heavily biased towards monumental construction, which at most times was unrepresentative of the work normally carried out by workers in stone. Few sources discussing construction stones or their properties contain significant information of practical day-to-day import for stone workers.

The archaeological record indicates that the mason's usual daily activities would have included, for example, production of stele and more elaborate funerary monuments, the cutting of millstones and the repair or alteration of existing buildings. Literary sources describing events of the 6th to 2nd centuries BC show that masons were essential personnel during military actions between Greek *poleis* and between Greeks and foreign enemies. From building inscriptions we have examples of the processes of work undertaken by, or at least prescribed for, masons engaged in the most prestigious examples of their trade. This reflects additional bias in ancient sources towards the most skilled masons, who could only have represented a fraction of the contemporary artisans working in stone at levels requiring specialist skills and knowledge.

A combination of archaeological, literary and epigraphic evidence reveals to a greater degree the numbers and probable levels of skill of artisans working in different contexts that required the use of quarried and worked stone, whether for fortifications, major building programmes, or the construction of domestic and agricultural structures.

The present work seeks to identify more clearly who the ancient Greek stone mason was, his place in society, his level of literacy and numeracy, how he acquired and transferred his skills and how these specialist skills were engaged among the various ordinary and extraordinary events of his times.

KEYWORDS: Stone mason, written sources, archaeology, craft skills.

A skilled labour with ethnical significance?
Craft-productions of "Verracos" sculptures from Spanish Iron Age

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The stone's craft productions were one of the most important skilled labours between the communities of the Late Iron Age in Western Spain. Great walls with stone masonry and big animal sculptures, made in granite, were the most characteristic productions of these peoples, called the "Vettones" according to Roman and Greek classical writers.
These animal sculptures are known as "verracos" and are representations of male boars and bulls. Some investigations have interpreted them as a technical borrowing from Iberian people, who lived in Mediterranean Spain from Vth Century B.C. forward. But the sculptures are not found at their original contexts and that fact avoids sure knowledge on the chronology and functions, although dates from IIIrd Century B.C. and afterwards are usually accepted as meanings related to the protection of cattle, crossing-passes, and main resources for the communities. These interpretations came from the study of the finding landscapes, usually located around an oppidum, supposed not too long from the original use's contexts, in view of the weight and size of these big sculptures. But quick historical and ethnographical approaches shown that many of them were removed at Medieval and Modern times and, also, others never were moved from first locations, so they are part of the bed rock. This paper proposes the use of macro-wear analysis for identifying different production chains in the making of these sculptures. This allows us defend the presence of itinerant craftsmen, authors of sculptures in blocks or slabs from quarries and in the same bed rock, but also the existence of true factories, places where the figures were shaped through standardized process. And so the authors propose the relationship between the ethnical and communal values of the first verracos and later roles as funerary monuments at Roman time, with individual meanings, for the second productions. These differences ought to have produced main significances on the craftsmen social positions.

KEYWORDS: Iron Age; Hispanoceltic; Sculptures; Granite; Verracos

The portrait of the potter and craftmaking in the Ancient Near East

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The Ancient Near East is the place of the first emergence of craft and labour specialization. The permanent incorporation in society of craftpeople such as potters, weavers, jewellers and scribes, together with other specialized figures such as priests and government officers, developed in close relationship with the rise of complex societies and urban life in the 4th millennium B.C.
However, there is only rare evidence of the image and the role of Mesopotamian crafters and their products in the archaeological record. Although their labour might have been integrated into large organized communities from the late prehistoric times, their occasional representation on non-perishable visual supports remains exclusive of the literate period.
This paper seeks to explore the archaeological portrait of potters and other craft producers in the Near East, with particular interest to images from sealing impressions and reliefs of the Late Uruk period in the 4th millennium and during the 3rd millennium B.C. Furthermore, textual evidence will be used to illustrate their pot-making techniques, labour and product ownership as well as their status in society.

KEYWORDS: Near East, sealing impressions, potter, craft specialization, Uruk

Decoding the Penteskouphia Imagery:
The Penteskouphia Pinakes and Potters at Work in Ancient Greece

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The Penteskouphia terracotta pinakes constitute an unusual assemblage from Archaic Corinth in terms of their complicated recovery, their large number (over 1100 examples) and their unique visual documentation of most phases of pottery production from clay collection to kiln firing. Every survey of Greek pottery or art prominently features some of these scenes. This presentation focuses on the Penteskouphia scenes of potters at work (ca. 100 pinakes), soon to be published for the first time in their entirety, and their contribution to the understanding of the technology and organization of pottery production in ancient Greece. The pinakes carry great depictions of potters' kilns and wheels, and it is possible that some served as preliminary sketches, apprentice pieces, kiln test pieces, in addition to being votives. From practice pieces to prayers, the Penteskouphia pinakes clearly fulfilled a wide range of functions within the Corinthian workshops. The iconographic data from Penteskouphia is further corroborated with archaeological, ethnographic, and experimental data on the Greek potters' technological choices regarding kiln and wheel design throughout antiquity. The visual compendium of potters at work from ancient Penteskouphia finds an unexpected parallel in the British Museum, namely a series of 19th century Chinese watercolours which document the various stages of porcelain manufacture.

Waste and expertise:
assessing skilled production from metallurgical residues

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Assessments of skill are routinely found in archaeology and art history discussions in reference to observations concerning: 1) the degree of time and difficulty required to make an artefact or artwork, or 2) the degree of standardization attained for some class of artefacts. Recent research, especially in the area of lithic analysis, has reframed skill as a theme central to theoretical studies of craft learning and production processes. Skill is redefined as a combination of social and individual learning put into practice. It is the capacity to turn a cognitive template into a physical reality. The conformity of artefacts to designs is determined by material constraints and skill level.

Analyses of materials from manufacturing activities can shed significant light on skill and its broader implications. An investigation of skilled production refocuses attention away from morphologies and elaborations on finished artefacts toward variation in technological recipes and practice. Slag, ore, fuels, and ceramics are the dominant material remains indicating metallurgical production in the archaeological record. These materials are used to reconstruct technology but also provide a means of observing and measuring variability in the repeated handling of resources and the preparation of materials.

In this paper, we demonstrate how variation within technical recipes can be examined to illuminate skilled production in metallurgical contexts across space and time. An analysis of skill in bronze casting in Scotland raises new questions concerning the organisation of production and the nature of specialist knowledge. Analyses of iron making in Wales reveal new details on the relationships between craft learning, economics, and the development of skill. These studies highlight the function of skill in the local expression of technological traditions and help clarify our understanding of the craftsperson as a social agent.

KEYWORDS: Metallurgy, skill, production, residues, craft

Reappraising *chaîne opératoire;* adding new theory to an old method

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Chaîne opératoire is a well-known methodology to follow the steps taken in manufacturing. This powerful analytical method is capable of ordering the *available* data on the techniques used in the manufacturing of an object. Nonetheless, some issues remain unexplored. Firstly, a *chaîne opératoire* does not explain *how* the used techniques come about and become part of the craftsperson's identity. Secondly, it rarely accounts for skill and especially the variation in skill. Thirdly, although a *chaine opératoire* is capable to bridge the gap between object and producer, it is less useful in bridging the gap between objects and people / society as it is in need of a theoretical framework to do so. In this paper I wish to discuss some possible solutions to these issues.

I intent to explore how the sensual relations between material and actor might have influenced the craft of metalworking and the choices made, and use these to form *perceptive categories* that explain the techniques used. Following, the variation in the application of these techniques (*viz.* skill) is shown by a case study of Early Bronze Age axes. In order to understand this variation, and link it to people and societal structures, I will propose the use of 'craft theory'; a theory taken from the emerging discourse on craftsmanship. This theory specifically tries to understand the societal group of craftspeople instead of identifying power structures or hierarchies on the basis of the social value of skill. At least for the Bronze Age such a change in perspective highlights the often forgotten group of common craftspeople.

KEYWORDS: chaîne opératoire, craft theory, Early Bronze Age, metalworking, axes

Metal craftsman of Bronze Age society. His role in war

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Warfare is a fashionable theme in archaeology today. Social approaches abound; the birth of forms of combat, the emergence of a social class focussed on the warrior and so on. This theme is today though pertinent to the Neolithic, but for a long time it was reserved for the metal ages. The concept of war is based on archaeological evidence and its interpretation; the existence of metal weapons in the context of graves and hoards as a sign of a warrior elite.
In these scenarios, one group is often overlooked; the bronzeworkers. Yet without them, nothing would be possible…This paper attempts to present their role in the development of new metal weaponry in the 2nd Millennium BC; their products and the technical challenges they imply. What skills did the bronzeworker need to work in the service of such warlike objectives? How did the different metal products relate, including those where weapons did not play an important role? How, then, should we understand the bronzesmith, a key player in Bronze Age societies that seem to attach such importance to arms? This paper will present the results of a comparative study of weapons from several European regions, based largely on laboratory analysis.

Iron, performance and the social role of ironworkers in Iron Age Ireland

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This paper will discuss the role of ironworkers, both smiths and smelters, within Iron Age society in Ireland. The organisation of production (ore extraction, smelting, smithing) in the midlands of Ireland suggests the development of a small-scale iron industry by c. 500 BC. A clear distinction between places in the landscape associated with smithing and smelting suggests a high degree of control over what was probably a rare, valuable and metaphorically rich metal. Smelting was undertaken in isolation, possibly in secret, away from other archaeologically visible activities and the iron blooms produced were never worked on smelting sites. Smithing, in contrast, was undertaken exclusively in archaeologically distinctive areas associated with communal activity, large enclosures and burial monuments. The production of finished objects, in contrast to the production of iron itself, was performed in full view of society.
It will be argued that ironworkers in the Irish Iron Age, particularly skilled smiths, may have also, or even primarily, been ritual specialists operating within a nomadic, pastoral society. The control of arcane knowledge and of a rare and symbolically rich metal produced from ore found in bogs where so many other materials were deposited and sacrificed would have been a source of social power, status and identity. Permanent, identifiable settlements are rare, if not non-existent, in the Irish Iron Age and thus the performance of 'skilled crafting' at important communal sites would have provided rare opportunities to demonstrate skills and knowledge, forge identities and gain influence. The close association of smithing with ritual sites and burial monuments, as well as later, historical, associations between smiths and a smith-god: Gobniu suggest the people involved in iron-craft may also have been intermediaries between gods and men.

KEYWORDS: iron, society, smith, smelter, status

Making Bronze Age Textiles

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The identity and status of textile makers, and organization behind textile production, have seldom been discussed in prehistoric archaeology. Based on historical models the general assumption seems to be that households created its own cloth. How well does this correspond with the role of crafts and craftspeople in other prehistoric periods? This paper will discuss the organization of textile production in the Bronze Age, from the raw material to the finished cloth. The discussion will be based on the remains of textile tools, sheep bones, flax seed as well as the actual textiles found in settlements and burials from the Bronze Age. Earlier and contemporary (with Bronze Age Europe) written sources will be included in order to examine the investment of time which would have been involved in production. The claims made by these texts will be compared with results from experimental archaeology. This paper will also consider the people involved in textile production. Was textile production widely understood, falling into the realm of general knowledge, or was it a prized specialist skill? Were many people involved in the craft, or few? This paper will draw on theoretical concepts to explore the organization, co-operation, and networks relevant to the field of textile production, as well as actual archaeological material. It aims to contributing to a more complex picture of everyday life in the Bronze Age.

KEYWORDS: Bronze Age, textiles, organization, craft production

Arachne's web:
women, weaving and networks of knowledge in the Bronze Age southern Aegean

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The appearance of loom weights at a number of southern Aegean sites in the Middle and early Late Bronze Age is indicative of the adoption of a new weaving technology: the use of the warp-weighted loom. The specific type of loom weight (discoid) recovered is a Cretan form, and this evidence of Cretan influence is also seen in a wider range of material culture features at these settlements during this period.
Weaving is a complex skill that requires contact between novice and expert practitioner over an extended period of time; the introduction of a new weaving technology therefore raises the question of how the necessary technical knowledge and know-how was transferred from one individual/community to another. The archaeological indicators of this new technological practice, the loom weights themselves, are objects that very rarely travel, except with their owners; the presence of loom weights manufactured from non-local ceramic fabrics at some of the southern Aegean sites can therefore provide a window into the patterns of mobility through which the new technology is likely to have spread. Both in the Bronze Age and subsequent archaic and classical Greek worlds, weaving was closely associated with women. Loom weights thus constitute archaeological markers for the craftswomen who used them, and this paper will explore the insight they can offer into female networks of teaching, learning and craft practice in the second millennium BC.

KEYWORDS: mobility, networks, skill, women, weaving

The reconstruction of the Dover Boat: What it tells about Bronze Age Craft Skills

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The reconstruction at half scale of the 3500 year old Dover Boat raised a large number of questions about the skills needed to construct the original boat. These range from the skills required to select and cut down large trees without damaging the timber to the method of packing the seams with moss so that the boat was watertight. The set of craft skills that I want to hi light in this paper are those needed to select the timbers, fell them and shape up the timbers from the round and form the boat shape. These processes suggest an interrelated set of skills. We have the original timbers of the boat preserved in Dover Museum and it is clear from the tree ring evidence that none of these timbers start as straight edged timbers and they had to be carved into complex shapes that could be bent together to form a boat shape. These are not intuitive shapes and would require the builders to have great skill to both remember the shapes of the timbers and to reproduce them accurately enough for them to form the boat shape. This work requires accurate bronze axe and adze work. As well as the ability to form the boat shape by bending, moving the timbers and holding them in their relative positions. (Each of these finished timbers at half scale each could be moved by two people in the full scale, timbers would have weighed eight times as much in their finished form.) So one aspect of the craft skills required would be the movement and offering up of exceptionally large timbers. A conclusion from this reconstruction is that these boat builders would have relied on a complex set of craft skills, and the ability to solve problems during the process of construction.

KEYWORDS: Bronze Tools, Timber shaping, moving

Tools of the Craft: Woodcrafting influences on tool morphology and targeted technical change during the Late Bronze Age in Southern England

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Examination of the technical morphology of Late Bronze Age tools offers significant potential as a means of analysing targeted changes to tool production and craft processes. Through a consideration of the relationship between woodcrafting and tool design it is possible to explore the role of woodcrafters in facilitating innovation and technical change to bronze tool forms, changes which themselves further engendered technological expansion.

The research presented in this paper argues for *targeted technical change* in the deliberate modification of tool forms such as socketed axes, gouges, and chisels, development of tools utilising serrated teeth, and changes to alloy compositions, in order to facilitate new crafting possibilities. It draws upon a series of analytical and conceptual contexts focused on woodcrafting in order to illustrate these changes and their significance to the understanding of socio-technological relationships during the Late Bronze Age.

By combining study of technical morphologies and the understanding of craft processes it is possible to consider potential communication processes and the importance of knowledge transfer between craftspeople working with wood and metal. The model developed in this research provides a new way of considering both the physical data set available in the form of bronze tools and wooden remains, and the significance of the socio-technical role of woodcrafters, as facilitators of technological change during the Late Bronze Age of Southern England.

KEYWORDS: wood crafting, metalworking, morphologies, communication, skills

ABSTRACTS

Posters (authors in alphabetical order)

Raphaël Angevin (conservateur du patrimoine, Ministère de la culture, France; raphael.angevin@culture.gouv.fr)

A workshop in the City. Lithic industry, craft specialization and the urban fact in Mesopotamia during the IIIrd millenium BC

In the Near-East, craft specialization is a notion commonly invoked to characterize the emergence of the first complex societies of the Bronze Age. Too often, however, this concept appears poorly defined and some technical approaches re-main on the margins of the most successful ideas on the subject. If metal or ceramic technology have been largely invested by recent studies, lithic industries were rarely mobilized to participate in the development of this theoretical framework. On a millennium scale, the apprehension of technological and socioeconomic changes that affect mesopotamian societies indeed impose to include our approach in the perception of a "long duration" which is usually revealed by archaeological sources. Nevertheless, in urban background, the lithic productions of Proto-urban and Early Dynastic periods rather show significant technical solutions in the short-term: from well-documented examples, this poster hopes to offer a new reflection on the unity and variability of mesopotamian productions, considering more precisely the question of their systemic organization. Through the diversity of their contexts, the assemblages of Mari (Syria), Kish, Uruk, Ur and Larsa (Iraq) show a sharp dichotomy between elaborated productions, hypertrophied in their organization and their implementation, and simplified productions, optimizing local resources to reflect a "relaxation" of technical constraints related to major lithic projects. They also reveal a technical geography of the city, whose evolutions seem to accompany the progressive structuring of space. In this point of view, the specialized workshops appear to participate to the "urban fabric": the high evolutionary sensibility of chipped-stone industries reflects the success of some sophisticated productions and, incidentally, the progressive social complexification in the densely urbanized areas, in favor of a powerful cultural acceleration phenomenon.

Aurélie Aubignac (University of Montpellier, France, aureliepleaux@hotmail.fr)

Funerary craft and production in the early Iron Age in Crete

Although it seems difficult to identify the status of the dead as craftspeople through artefacts deposited in tombs, these objects question us about the feature of the craftspeople. Indeed, the best representation of the feature of the craftspeople is their production.
The early Iron Age – also called in the past "Dark Ages", was considered by some archaeologists as a break and a collapse of political, economic and cultural structures. Nethertheless, during this period, there were great oriental and continental contacts and influences in the island of Crete.
The aim of this paper is to prove how the artefacts discovered in graves can we help us to understand the feature of the craftspeople in the early Iron Age in Crete. In the past, an identification of some workshops of Late Minoan III C funerary larnakes was made by M. Tsipopoulou and L. Vagnetti. So we question us about the existence of funerary craft and production during the early Iron Age. How did objects found in the graves inform us about the production of craftspeople? Did it exist objects, forms or decoration specialised in funerary contexts? Did the artefacts prove the existence of a funerary specialised production or specialised

workshop in funerary field? In this perspective, we study the funerary receptacles which contained cremations and inhumations, the funerary stelai and the different singular artefacts discovered in graves in order to give the feature of the craftspeople and the society in early Iron Age in Crete.

Ruth Ayllon, Sergi Calzada (both CEIPAC, Universitat de Barcelona, Spain), and Charo Rovira (The British Museum, London, United Kingdom, charo.rovira@googlemail.com)

Producing for Rome: personal names in the graffiti on Dressel 20 amphorae

Graffiti on Dressel 20 type amphorae are part of complex epigraphic system that includes also stamps and *tituli picti*. Each of these elements has a very specific role within the production – distribution process. Graffiti and stamps are related to the production of the amphorae while *tituli picti* are related to the distribution of the product and are mainly a fiscal control.
This type of amphorae was produced between the first and third centuries AD in the Roman province of Baetica. They were destined to transport olive oil from this province to Rome and the frontiers in Britain and Germany as part of the network of foodstuff supply to the army.
In particular graffiti reflect the organisation of the workshop and can be divided in groups following the information they provide: numerals, dates and names of the workers. Their closest parallel in the Roman period are the quarry marks that also reflect the organisation of workshops.
But who were the men behind the production of such an indispensable container for Rome? In this paper we would like to study the names that appear in these graffiti but not only with the aim of understanding the organisation of the workshop but to see which the social relationships within the workshop were. We will analyse the type of names they used to identify themselves within the workshops, *nomen* or *cognomina* and will compare them with other types of epigraphy like the stamps and *tituli picti* that are foundin the same amphorae and monumental epigraphy of the Baetica province. We will also face the question of the existence of travelling groups of workmen along the kilns on the Guadalquivir River, the main area of amphora production, a question previously asked but never studied in depth before.

Gilda Bartoloni ("Sapienza" University of Rome, gilda.bartoloni@uniroma1.it) and Orlando Cerasuolo (Italian Archaeological School at Athens, orlando.cerasuolo@gmail.com)

The Balanced Skill. To Build Arches and Vaults in Early Etruria.

The first utilization of arches and vaults in architecture can be referred to Ancient Near East (Mesopotamia, Assyria and Egypt) as early as the 4th millennium BC, while in the classical Mediterranean world it begins only around 4th-3rd centuries BC. This hiatus led some scholars to consider arches as a "re-invention", developed in Greece, Rome or Etruria. Recent discoveries in Etruria, as the paper will show, reveal new evidence crucial for the debate around the arched-based architecture development in the West.
Despite the earlier chronology derivable from literary sources (e.g. Seneca *Epistol.* 90,32), Greek and south Italian archaeological evidence date from 4th century BC; vaults can be found in gates (e.g. Cassope, Oiniadai, Velia, Paestum), tombs (Vergina) or other buildings (Corinth, Olimpia, Pergamon).
In Rome, the first examples of vaults date back to the 6th century BC (Palatine), when the Etruscan kings ruled in Rome, while several others belong to the 4th century (Meta Sudans, S. Omobono). Some of the colonies founded by the Romans, after the conquest of Etruria, present gates (Cosa, Falerii Novi), as well as the Roman Perugia and Volterra.

In Etruria the first vaulted buildings could be referred to 4th-3rd centuries BC (Cerveteri, Orvieto, Cortona) but a few earlier experimental buildings appear significant. The earliest example of advanced building techniques has been discovered in Populonia (8th century). Afterwards, buildings with key-briks has been found in Veii (including the recent discovery of a cistern at Piazza d'Armi), Tarquinia and Orvieto, far ahead the Roman evidence and showing the expertise of Etruscan craftsmen.
Etruscan society shows deep links with the primary civilizations of the Mediterranean. Eastern craftsmen seem to have worked in the Etruscan towns. These long range connections could explain the early Etruscan development of vault systems, which could have be considered as models by the Republican Roman architects.

Medha Bhatt Ganguly (independent researcher, Kerala, India; medhabhatt@yahoo.com)
Voyage of a Bead: The role of Gender Socialisation in the Craft of Bead-work Textiles

My great great grandmother tucked a butchki (a small drawstring bag heavily embellished withglass beads containing betel-nut and nut cracker) in her skirt, as she dressed up for herwedding.The research paper focusses on the origin of bead-work in the late mediaeval period in thecontext the ancient maritime trade and antiquities found in the archaeological sites in theSaurashtra region of Gujarat. The paper follows the journey of the bead from the factories ofMurano, Italy to its bonding with the fabric through time, tradition and culture. Some of theearliest dowry textiles in bead-work include a collection of bridal accessories, home furnishingsand animal trappings. It aims to study and analyse the significance of skills, traditionallyacquired by young girls belonging to the Kathi, Ahir, Khadak and Bharwad tribes of Saurashtrathereby preserving the cultural identity of the tribe.
The author's study of museum artefacts and literary references, related to the Indo-Roman tradeexchanges provides a detailed analysis of techniques and patterns. It assists in determining reexistingand co-existing artistic traditions and local visual stimuli of that period. Author'sethnographic study of the tribes throws light on the origins, lineage, migration and settlement patterns.
Field studies by the author have revealed significant insights into the social learning process thatimbibes young girls into understanding various aspects of their culture.The research unfolds the expressive role of young girls in the socialization process through oraland artistic traditions of myths, rituals and textiles. She is an instrument and symbol of culturalidentity. Considering the tradition of early marriages, the creation of dowry textiles has keysignificance in the construction of gender identities. Study of kinship practises highlight artisandefined stylistic differences and the effects of knowledge transfer from parents, family, peers andsociety.

Clément Bellamy (LAHM, Université Rennes 2, France, clement.bellamy@hotmail.fr) and Mathilde Villette (LAHM, UMR6566, Université Rennes 2, France / Università degli Studi della Basilicata, Potenza, Italia, mathildevillette@hotmail.com)
Greek and/or Indigenous potters at Incoronata (Southern Italy)? Questionings about a pottery production from a greek-indigenous ceramic workshop in the VIIth century BC.

Recentexcavations and researchesin the siteof Incoronata, Southern Italy, have revealedthe presence of structuresrelated toceramic productionduring theVIIth century BC.Thepottery fromIncoronata,in particular Greek pottery so-called colonial, was alreadywell-known andwell studied, in regards with the richhistoriographyon the subject. Butthe latest findingsinIncoronataallowed us to clarifyandcomplicate theproblem, e.g. in the identificationofindigenouspottery productionat the same time, and more especiallythe

recognition, on the field, of the geminate activity ofthiscraft area, mainly with the great number of "*rejets de cuisson*" of Greek *and* Indigenous potteryin the samestratigraphical contexts.
Thesearchaeological realitieshave naturally led us to askquestions: Greek people andIndigenous peopledid they worktogether, joinly, on this hill? Indigenous craftspeoplehave theymadeGreek vases, and *viceversa*; how can it be seen onthe vase? Did they usethe sameproduction structures, ordid they have different spaces? In addition to thedata already collected, can we expectto recognizein the archaeological recordsome elementscapable to discriminatethe Indigenous productionfrom theGreek one, or either recognizethe identityof the craftsmen?
We seethat forsuch a complex and recent issue, there might be more questions than answers. However, we shall attempt to presentand contextualizethe archaeological data from the Incoronata, from production structures to finished products, butalsothe dataavailablein this regionin particular, and theMediterraneanVIIth century in general.

Eleanor Blakelock (British Museum,London, United Kingdom,
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Manufacture and Life Cycle of an Iron Knife

This poster reconstructs the manufacture of the knife, the steps taken by the blacksmith and the decisions made. In this research the chaîne opértoire, sequence of processes, for an iron knife was constructed which can be applied to other iron artefacts. The metallographic analysis of early medieval knives has revealed a clear sequence to the manufacture of an iron knife. At each stage the blacksmith would have to make a number of decisions based on the intended use of the knife, but also the cost of production. The ability of the smith should also be taken into account, as well as the location and cultural influences.
The first step the blacksmith constructing the knife would make is to select an iron alloy. This was shown to be heavily influenced by the properties of the metal; for example steels could be heat-treated and were harder than ferritic and phosphoric iron. Availability of the iron was another consideration. Ferritic iron and high-quality, high carbon steels tended to be used by the more specialised urban smiths, suggesting that these may have been more easily accessible to these urban smiths, or perhaps more costly. Once chosen the next step in the process is to weld these alloys together to create high quality tools. This was influenced again by knife intended use, cost and/or availability of steel and the ability of the smith. After the iron alloys had been welded together the next step in the process was to shape the knife. Only once the knife has been shaped can it be heat-treated. This would bring the best out of the steels used to manufacture the knife, resulting in a very hard cutting edge. Each stage of the process will be examined using metallographic evidence.

Katarina Botwid (Lund University, Sweden, Katarina.Botwid@ark.lu.se)
Time and Effort – an artisanal perspective on ceramics in Scandinavian Roman Iron Age

The question of craftspeople and their role in prehistory has been discussed in many different ways and fromdifferent theoretical perspectives. This paper will discuss the question from an artisanal perspective concerning archaeological ceramics from Roman Iron Age in Scandinavia. Presenting an interdiciplinary research project between ceramic art and archaeology this contribution will be at the breakingpoint between different views and perspectives.
Certain forms of practical artisanal knowledge and practical levels of skill are defined within the concept of "tacit knowledge". I use and widen these definitions to interpret ceramic artefacts based on my own tacit knowledge as an educated professional ceramist and archaeologist.

Examples of ways in which knowledge of artisanal skill can contribute to archaeological interpretation will be presented.

Sue Bridgford (Consultant in Archaeology and Archaeometallurgy; London, United Kingdom, sdbridgford@hotmail.com)

Bronze swords – born in the foundry of conservatism?

We know little of the producers of the weapons which loom large in the evidence left from the British Late Bronze Age. Their work places are ephemeral, their homes unidentifiable and their graves apparently non-existent. What we have in abundance are their products and it is in the 'reading' of these artefacts that we have our best chance to understand the mindset of their makers.
In this poster I aim to explore the evidence, from a number of sites, provided both by the moulds they used and the weapons they made with a view to shedding some light on how the metal workers of that time saw their role in society.

Ilaria Caloi (Research Fellow, University of Venice, Italy; icaloi@yahoo.it)

Breaking with tradition: throwing off the hump at Protopalatial Phaistos

Recent work on the ceramic production in Middle Bronze Age Crete has demonstrated that at Phaistos, Southern Crete, is attested a long tradition from Prepalatial to Protopalatial times, showing that the fabric and the manufacturing traditions, such as the use of the layering techniques, do not change from Prepalatial to the beginning of the Protopalatial period, but they go on until MM II.
In this paper will be examined the introduction at Phaistos of a new forming technique, that is throwing off the hump, able to break with the long manufacturing tradition of the site, which instead comprised hand-building and wheel-fashioning techniques.
The study I have recently undertaken on technology of Protopalatial ceramic from Phaistos allowed me to affirm that a new forming technique was introduced only in MM IIA, when appear some vases which are entirely manufactured through the use of the wheel-throwing technique. Most of these vases which, from a macroscopic view, are thrown off the hump, are plain conical cups and small vessels belonging to a new MM IIA class of pottery defined Polychrome on Buff reserved surface Ware. They are well attested in two ceramic deposits of the main palatial building of Phaistos, namely the bench deposit of Room IL and the dump of *Bastione* II. Since in these homogeneous ceramic deposits are attested different ways of manufacturing vases, it is likely that the technique of throwing off the hump is prerogative of few potters able to be competitive with other more traditional potters. It will be argued that the introduction of a new and innovative technological technique is strongly associated with a series of changes attested in the Phaistian site, likely attributed to a new change in function of the palatial centre.

Annalisa Costa (Independent researcher; annalisa.costa@gmail.com), Fabio Cavulli (fabio.cavulli@lett.unitn.it), and Annaluisa Pedrotti (both Università degli Studi di Trento, Italy; annaluisa.pedrotti@lett.unitn.it)

Firing pits at Lugo di Grezzana: evidence of craft activity?

At the early Neolithic site of Lugo di Grezzana (Vr), Northern Italy, which relates to Fiorano culture (5300–4900 cal BC) several firing pits have been found and recently studied. The

hypothesis of their function as pits used to fire pottery has been tested with the help of experimental archaeology. Through the results and observations achieved it has been possible to compare the traces obtained with those of archaeological record in order to rebuild the steps that could lead to their formation. The experiments also allowed us to understand if similar fire structures can be related to the pottery production of the site.

Marianna Dági (Museum of Fine Arts, Budapest, Hungary, mariann@szepmuveszeti.hu)
The 'Sedes' Goldsmith.The Attribution of a Late Classical – Early Hellenistic Jewellery Group

A diadem, a necklace with Heracles knots, a lion's-head hoop earring, bow-shaped fibulae, a bud-shaped pendant and a finger ring with engraved decoration: these spectacular pieces were placed as grave gifts in tomb Γ at Sedes, not far from Thessaloniki. The tomb, which dates to the last quarter of the 4th century BC, was excavated in 1938. The finds are in the Archaeological Museum of Thessaloniki. My paper will introduce the attribution of this gold jewellery to a single goldsmith, based on comparative technical analysis using a microscope.
There are two ways to attribute ancient gold jewellery. In my earlier research, based on pieces of the same type, I formulated a hypothesis whereby purely technical details might serve as attribution marks of goldsmiths.[1] By the study of the Sedes jewellery, it seems that this hypothesis can be corroborated also in the case of jewellery of different types.
Comparative technical analysis of pieces of a single type makes it possible to distinguish relatively easily between the features of the type and those technical details characteristic of a hand or a place of production. In the case of jewellery of different types, identification of common features which can be interpreted as marks of the same hand or workshop is a more complex task. I have found several technical features and characteristic imperfections (the uneven quality of the filigree wires; the inaccurate cutting of the sheets and the unprecise joining of the elements; a special joining method of the two halves of the figural elements; problems with the soldering; and concealment of technical mistakes by using patches) which make it possible to ascribe almost all the pieces from Sedes to a single artist. The paper illustrates the usefulness of the comparative method of technical analysis to the attribution of ancient jewellery.

Sarah K. Doherty (Cardiff University, United Kingdom, DohertySK@cardiff.ac.uk)
Investigating Ancient and Modern Egyptian Pottery Workshop Production

This poster will consider the scale of pottery workshop production in Ancient Egypt through comparison of ethnographic pottery studies, representations of ancient workshops, archaeological remains and the author's own experiments with replicating Egyptian pottery.
According to Peacock (1977) when pottery production is at a household level, it is often made by women, whereas when it occurs in a workshop production, it is under the jurisdiction of men, especially when the potter's wheel is used. In ancient Egypt, this is supported by known representations of potters in funerary models and tomb scenes where men are only depicted

[1] See:'Training the Eye. Technical Details as Clues in the Attribution of Ancient Jewellery', *Bulletin du Musée Hongrois des Beaux-Arts* 105 (2006), 41-72. and 'Do Deatils of Technique Have a Role in the Attribution of Ancient Greek Jewellery?', in *Archaeometallurgy in Europe 2007,* 2nd International Conference, Aquileia, Italy 17-21 June, 2007, Selected Papers, Milano 2009, 387-396. Both are available on szepmuveszeti.academia.edu/MariannaDági/Papers/1181480 and on szepmuveszeti.academia.edu/MariannaDági/Papers/1168807.

using the potter's wheel, whereas both men and women are depicted manufacturing handbuilt pottery. This paper will endeavour to ascertain why this was so. Today, modern potteries operate largely in rural isolation, often as an agglomeration of smaller workshop units which collaborate during communal kiln firings. Can this model be applied to ancient workshops? Peacock (1977) suggests that rural potteries tend to produce only a small number of specially produced wares, whereas urban potteries will produce many. However this may not necessarily be true for either ancient or modern potteries, as ethnographic studies have noted (Nicholson, 1995, p. 294).
Ceramic-based studies have suggested that differences in the shape of the same type of pot advocate different workshops employed contrasting manufacturing techniques or even individual specialist potters (Wodzińska, 2009, p. 227). It is often cited that only when the potter's wheel was employed that a form of "standardisation" of production took place e.g. Wood (1990, p. 16). However, the use of the wheel may not necessarily lend itself to standardisation, particularly if the potter is still learning their craft.
This poster aims to provide insights on modern and ancient pottery production based on the author's ethnographic work at the pottery of el-Nazla in the Faiyoum.

Emilie Dubreucq (Université Toulouse-Le Mirail, France; emiliedubreucq@yahoo.fr)
Crafts products and metal craftsmen during Ha D-LTA1 period (600-450 BC) in west Hallstattian territories

For lack of representation in the funeral world or in the written and iconographic sources, the apprehension of the metal craftsmen, in particular during the Later Prehistory is essentially summit through the study of their productions: by taking into account the diversity of these and the degree of technological know-how necessary for their realizations.
Bringing an additional point of view, the study of archaeological structures connected to the manufacturing of these metal items, the tool equipment and the produced waste, has to allow to obtain a global vision of the organization of the work in workshops and to illustrate the everyday life of the craftsman. Introduced especially by Bronze Age specialists, these research topics were not really exploited for the end of the first one and the beginning of the second Iron Age.
Yet the characterization of the structures of productions connected to metalworking seems to us an essential theme for the end of hallstattian period, when a phenomenon of concentration of goods starts, particularly visible in the funeral world.
It comes along, on settlement, with the reoccupation of the hillfort and with their suburbs, secondarily fortified, considered as the place of residence of aristocracies but also as centers of craft productions. At the same time, from a technical point of view, it is the period which also sees the development of the iron metallurgy with an increase of the quantities of this metal, which spreads little by little in more diversified domains by of society than during its formation when it was reserved then almost exclusively for the domain of the weapons.
We suggest within the framework of this colloquium to present some significant examples of the products, the tools and the workshops known for the end of the first Iron Age. This paper intends to show how these metal craftsmen out actors and essential pillars of the economic development, taking advantage of exchanges, technological and network transfers of circulation between the oriental regions and the west Hallstatt culture and the Mediterranean regions.

E. Giovanna Fregni (University of Sheffield, United Kingdom; Prp08egf@sheffield.ac.uk)
Minimum Tools Required: A system for organising the metalsmith's workshop

A problem facing archaeologists is that there is little evidence for actual metalworking in Britain and only a fraction of the tools necessary to make metal objectshave been recovered.
In order to understand what would constitute a suite of materials and tools necessary for a Bronze Age metal workshop, an inventory was made of known metalworking tools from the archaeological record. This was cross-referenced to the tools and materials used in modern workshops, ethnographic literature, and experimental work. This catalogue, along with an understanding of the chaîne opératoire for creating metal objects, provide the components for establishing a system that will yield a clearer image of the organisation of the metalsmith's workshop.
Using a system such as the Minimum Tools Required provides a means to assess assemblages and will aid in understanding the kind and the number of tools and materials that were a necessary part of the workshop. An assemblage of a suite of tools could indicate the types of metal objects being made, or they could represent a specific task, such as casting or sheet metal work. In addition this system, combined with experimental work, is useful for the recognition of the tools that are missing in the archaeological record, thus providing a more complete understanding the organisation of the metalsmith's craft in antiquity.

Julie Hruby (Dartmouth College, Hanover, United States of America, Julie_Hruby@berea.edu)
How Many? Quantifying Potters at the Palace of Nestor and in Messenia

Ceramics production is frequently used as a case study for examining the role of the palaces in Mycenaean craft production. The paucity of references to potters in the tablets and the absence of a Late Helladic IIIB kiln at the Palace of Nestor at Pylos are interpreted as evidence for palatial disinterest in pottery production. The contrast between this disinterest and the obvious abundance of pottery from the palace is widely considered to be puzzling.
One potential explanation, provided by Galaty and Parkinson, Halstead, and Whitelaw, is that pottery was a craft practiced primarily outside the palatial sector. A reevaluation of both the textual and the material evidence demonstrates that the palace was a voracious consumer of ceramic artifacts from a limited number of producers.
Indeed, a single, named producer probably dominated the palace's assemblage. Among collapse-era palatial finewares, the paste composition and inclusions are consistent, the producer's motor habits are consistent, the producer's fingerprints are consistent, and the total number of vessels is within the range produced annually by some modern folk potters. Furthermore, we should not expect a kiln to be situated on the Ano Englianos ridge adjacent to the palace, where the risk of accidental building fires was high and fuel supplies were distant.
That the palace employed relatively few potters, however, does not necessarily indicate that the vast majority of potters worked outside the palatial system. Indeed, previous estimates of the number of potters working in the Messenia region are far too high, based on the assumption that average households had ceramic breakage rates comparable to those of elite households. Ethnographic examples of breakage rates imply rates of consumption that would support relatively few full-time potters in the region. Hence, we risk overestimating the number and importance of ceramicists, relative to other craftsmen.

Stella Katsarou (Ephorate of Palaeoanthropology-Spelaeology, Athens, Greece; stella@stellakatsarou.gr)
Crafting identities by fingernail designs on Greek Neolithic pot surfaces

The aim of this paper is to associate pottery craftsmanship and personhood drawing evidence from the record of Greek Middle Neolithic handmade wares decorated with fingernail impressions.
Handmade pottery is created by close engagement with the craftsman's body, fingers, palms and hands randomly or deliberately leaving prints on the clay surface and thus rendering every single pot to a momentum of craftsmanship. More than that though, fingernail patterns on Greek Neolithic clay vessels with special reference to the record from the major cave site of Theopetra, central Greek mainland, attest to such a vast variety of fingernail designs in terms of size, density, curvature, depth of impression, symmetry, syntax, orientation and position on vessel body, that this usual decorative practice is expanding the handmade vessel's singularity to the status of a personalized artefact.
Scholarship has so far cited fingernail patterning under the field of 'decoration', thus limiting its perception to stylistic categorisations and normative ideologies on technical skill and pottery manufacturing process. Our closer look though at the variability of Middle Neolithic fingernail design syntax from Theopetra cave signifies pottery craftsmanship with agency and interaction between the craftsman and the manufactured vessel. It is seen through the perspectives of personhood and individuality, also involving various sub-identities such as the sex and the age of the potter, as well as the number of potters participating in the decoration of each vessel. Thus through the potters' immediate somatic involvement with the soft clay, the craftsmanship of nail-impressed patterns primarily acquires a perspective of eventuality, each crafted pot being perceived as a narrative of some individual or even collective performance of biography at a certain place and time in the cave, and probably enriched with further human qualities such as amusement, experimentation or apprenticeship.

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Learning to be Skilled: the development of skilled flintknappers in the Palaeolithic

The Leverhulme funded *Learning to Be Human Project*, led by Professor Bruce Bradley, is looking into how humans can develop skill in Lower and Middle Palaeolithic flintknapping technologies. This project has taken place over 2 years and has tracked the development of a group of 16 volunteers as they are taught how to flake rocks, make handaxes and shape levallois cores. This long term project has allowed for a more thorough understanding of the learning process and, it is hoped, will advance our understanding of the individuals who practiced this craft. A series of aptitude tests has given indications of the areas of ability that are necessary for achieving a high level of skill in these different technologies. These have been taken alongside analysis of personal practice sessions, teaching by expert knappers and regular skill assessments to build up a picture of the means by which people most easily learn to make stone tools and what this can tell us about the necessary cognitive and behavioural abilities of the hominid species that made them. The long term nature of the project has allowed an unprecedented level of data to be gathered and throughout new methodological approaches to the assessment of skill in flintknapping have been developed which, it is hoped, will advance the study of craft skill and allow a more scientific approach to the subject, increasing our understanding of craft learning and ability in prehistoric periods.

Hedvig Landenius Enegren (SAXO Institute, University of Copenhagen, Denmark, hedvigenegren@gmail.com)
Textile Tools as Agents in Iron Age South Italy

Material Culture Studies investigates the relationship between human beings and 'things'. Agency theory more directly focuses on the communication of people as actors but also on artefacts as having agency, in their material being in the world and through their visual expression.
The paper explores craft production and in particular, textile tools such as spindle whorls and loom weights, and interprets them as agents in a distinct cultural setting: Iron Age South Italy, in a period that sees Greek and Phoenician settlers arriving in the area. I am interested in the resulting dynamics between these new arriving peoples and the indigenous population and how this shows in textile craft production.
Textiles only very rarely survive in archaeological contexts due to their perishable nature. However, recent experimental archaeology focused on ancient tool technology has made it possible to assess, within a range, the type of fabrics produced. This opens up new possibilities to explore textile manufacture at any given site. In a wider perspective, tools can be used to investigate intra- and inter-site variability as well as socio-cultural dynamics between newcomers and indigenous populations. Moreover, the paper interprets textile tools as visual markers. For instance, what forces lie behind the continuous use of decorative elements on, for example, spindle whorls at a site? What dynamics are at work when decorations appear in places far apart from each other? I apply agency theory as a methodological tool in the understanding of these complex issues.

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The "potter's house" in Montebello Vicentino (Vicenza, Italia)

In the Late Iron Age settlement of Montebello Vicentino (Vicenza), extremely significant evidences of craft activities, particularly of pottery production, were found. The structure defined as "potter's house", found within an area of settlement connoted as a craft district dedicated to various activities, can be interpreted as a proper workshop-house. The workshop is connected to the first set up of the house and gives evidences of the potter's workplace sealed by an episode of fire and collapse: from raw materials to raw vessels ready to be put into the kiln, all the single steps of the production chain has been here identified. The workplace was endowed with a fireplace and a draining duct cut into the basalt bedrock to let water merge outside the house into a well. After the fire and collapse episod, the arrangement of the house changes and its only function seems to be a properly domestic one. We hereby present a preliminary report of the ongoing research project, focused on one of the most interesting pottery production contest of Northern Italy.

Heidi Luik (Tallinn University, Estonia, heidi.luik@tlu.ee)
Craftspeople in Late Bronze Age fortified settlements in the eastern Baltic region: bone and antler working

The Late Bronze Age (about 1100–500 BC) was the time when fortified settlements first appeared as part of the settlement pattern in the eastern Baltic region, indicating important social changes that took place here in these times. These fortified settlements were centres of authority, as well as of trade and crafts. The most important craft probably was bronze casting, witnessed by numerous clay moulds and their fragments found from such settlements. Pottery making was also of great importance, lots of fragments of both coarse-grained and fine-grained ceramic vessels have been found.

Bone and antler artefacts are numerous also. Although simple *ad hoc* tools are represented among them, a certain standardization of selected material and shape is characteristic to many bone tool types of discussed period. Such standardization probably refers to some degree of organization and control in bone and antler working. Probably these objects were produced at least by semi-professional craftspeople. Some foreign bronze artefacts, e.g. decorative pins and double buttons, have been replicated in more easily available local materials – bone and antler. Some of these imitations are carved very skilfully, requiring certain skills and experience of their producer. Imitations made in other substances have been regarded to be characteristic of periods when important social changes took place in the society. Presumably a new social rank has been arisen whose needs such replicated artefacts met and thereof craftspeople with necessary skills became needful also.

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The craft of *Cervus elaphus* antler processing in the South-East European Eneolithic: the settlement of Vităneşti (Teleorman County, Romania)

The exploitation system of the animal resources by a human community is based on a series of technical sub-systems, that always registers the same succession of stages: acquisition, transformation and consume. They refer to applying of an ensemble of modifications made to the raw material, then to the products obtained from it. The regrouping of all the elements resulted after an operational sequence, their analysis concerning the acquisition of raw materials, the technological processes from which they resulted and the utilization means, do not constitute only an archaeological study method, but it also play a crucial role in the understanding of the material conditions of the human life at the Prehistory level.
The study was made on an ensemble of artifacts from the settlement of Vităneşti (Romania), processed in antler of *Cervus elaphus*, in different stages of transformation, from finished objects, to consumed debitage waste, witch determined us to try the reconstruction of the managing modalities of this raw material, of the used processing techniques and of the activities developed with the help of antler tools. Starting from this archaeological ensemble we wondered if we are able to identify a certain specialization (craft?) of some people or if the entire human group manufactured his tools according to the momentary needs? What the specialty literature names "the knowledge chain" organizes after two plans. The first one includes the entire group's specific knowledge. If the microscopic studies allow us today to understand the interaction between the materials in contact, the Prehistoric groups knew, due to the practice, these properties and controlled them very well. The second plan – the theoretical one – is that of the specialized knowledge. All the human groups are characterized by the specialization of certain persons and, thus, by the control of knowledge by a small group of individuals. At archaeological level, these aspects are very hard to be discerned but they might be essential for the understanding of the specialized activities' role ≈ the craft production in the economy of Prehistoric communities.

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Tracing the work of sculptors in the Iberian necropolis of Cigarralejo (Mula, Murcia)

Iberian sculpture is one of the most significant expressions of Spanish Iron Age, and its works are a perspective into the ideological justification of an aristocratic substrate in strongly hierarchical

society. The hypothesis of this poster is that applying the concept of *chaîne opératoire*, as defined by A. Leroi-Gourhan, the study of Iberian sculpture will achieve significant results towards understanding the production process, the characterization of artists, artisans and possible workshops, recognition of skills and resources, and their possible relation to other Mediterranean areas. Operational chain starts before the manufacture, at the moment in which they are conceived and made possible due to historical circumstances and the existence of practical conditions which make them deliverables. Ideology, politics, economy and society are intertwined in the process of manufacture and use of the sculptures. Some important *oppida* count with a certain size workshops led by highly skilled craftsmen who probably exported its production, another possibility is skilled craftsmen traveling from one place to another, offering their services to local chiefs. Through the study of a particular example, the remains of monuments in the *necropolis* of Cigarralejo (V – IV B.C.), we offer an overview of the work process of the funerary sculpture.

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Household textile activity as part of a craft productive system: archaeological data from the Ionic Arc (Southern Italy).

Historical sources and studies conducted the 1980's have established the importance of Taranto wools for the city and its territory from at least the IV century B.C.
But, is it possible that this model can be used for the other cities of the Ionic arc (Metaponto and Herakleia) and their respective territories?
The new studies, systematically conducted on loom weights coming from the western quarter of the Castle Hill of Herakleia and on some sites of Metaponto and Herakleia territories seem to confirm what is emerging from the study of literary sources. The evidence suggests an amazing continuity up until and including the II century B.C., a period in which the cities lost their political independence and were fully under Roman control. This research adds to the archaeological data that tests the truthfulness of Leonida of Taranto on the formalities of the women wool workmanship in the house, by investigating looms attested by groups of discoid circular loom weights with two holes inside the houses. Besides the partially published and constantly updated data for the town of Herakleia, new elements are emerging for two sites in Metaponto territory: Masseria Durante and San Biagio alla Venella. Data from these two sites are of different types and both contribute to complete the textile production along the Ionic Arc framework, contributing to clarify productive formalities both of fabrics and of the same loom weights.
Were the realized products really as appreciated as the sources seem to declare?
Using the methodology pioneered by the Centre of Textile Research (University of Copenhagen) it is possible to reconstruct cloth fabric from the typology and dimensions of loom weights. *Herakleia* weights facilitated the production of a high quality fabric, created with fine yarn, for which a wool of elevated quality, such as the fine Taranto wools, was necessary.

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Crafts for the wine: from the vineyard to the amphora.

The aim of this work is to show the craftsmanship activity in the Protohistory of the Iberian Peninsula from the perspective of the object (or, in this case, the product) it's being created, and the synergy of a conjunction of craftsmen and craftsmanship activities testified by their productions, in this case, the wine.

In this poster, we will look onto wine's production chain, to show how many crafts are implied in winemaking, looking at them as the synergy of multiple craftsmanship implied in winemaking process, from tillage tools to produce and harvest grapes to transformation (wineries, strainers…) and packing activities (barrels, amphorae or wineskins manufacturing).

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Carving and polishing techniques of Fatimid rock crystale wers(10–12th cent. AD)

The art of Fatimid Egypt in the 10th–12th centuries C.E. is well known for luxury and prestige arts, and particularly for the production of rock crystal vessels. The techniques used in carving rock crystal are here re-considered following the appearance in 2008 of a new ewer – the Edmund de Unger ewer – which at first sight seemed to belong to a famous group of 6 to 8 rock crystal ewers carved in Fatimid Egypt in circa 1000 C.E. The best criteria for determining whether or not the de Unger ewer is indeed a member of this group, or even a modern fake or forgery, were the identification and comparison of the carving techniques used in the Fatimid period.

To this end, a corpus of 15 artefacts was analysed. The manufacturing traces (mainly from the polishing and carving process) were recorded and observed.

Reconstructing the techniques of production required the collaboration of archaeologists, art historians and tribologists (tribology includes the study of friction, lubrication and wear), as well as the development of a non-destructive method of analysis. Silicone impressions of the traces of manufacture were taken directly from the surfaces of the objects. These impressions were analysed in the Laboratoire de Tribologie et Dynamique des Systèmes (Lyon) to obtain a detailed topography of those surfaces and of the traces of manufacture. Then, these surfaces were measured and characterised by using specific roughness parameters.

We were able to identify the techniques and the tool kit used by Fatimid craftsmen for the carving and polishing process, which employed a bow lathe. While the attribution of the de Unger ewer to the Fatimid group was established, other artefacts may have been identified as forgeries. We have also determined the existence of a few specialised workshops, based in Egypt, devoted to this luxury production.

Keywords
Stone craftsmanship, Fatimid Rock crystal, Tribology, non destructive analyses, Method

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Soapstone moulds in southern Scandinavia during the late Bronze Age – Origin – Use – Distribution

When we discuss bronze artisans and if they were specialists or part time specialist we need to study all aspects of the craft itself. One of the aspects of the bronze casting craft in Scandinavia that needs to be studied further is the soapstone moulds from primarily the late Bronze Age. This study can be used as one of the bases for the discussions around full-time/part-time

specialists and mass production. The study can also be used as one of the bases for a discussion about transport routes for both material and ideas in Scandinavia during the late Bronze Age.
Most researchers agree that soapstone has been used in the Scandinavian Bronze Age to manufacture various types of moulds. The same consensus does not apply regarding the source of the soapstone and the use of the moulds. In discussion it is often argued that the stone comes from Norway, where there are deposits of high quality soapstone, but there are also deposits of high quality soapstone along the Swedish west coast where most of the soapstone moulds have been found. There has also been a discussion about whether soapstone moulds primarily has been used for casting the wax model used for casting with *cire perdu*-technique.
I will present the result of a project run by the archaeological department at Lund University in cooperation the department of Geology at Lund University. The goal of the project is to determine the provenance of soapstone used in the soapstone moulds and also to determine whether soapstone moulds from the Bronze Age have been used to cast bronze or if they have been used for other types of castings such as casting wax models.

Heide W. Nørgaard (Aarhus University, Denmark, farkhw@hum.au.dk)
Itinerant Craftsman in the Nordic Bronze Age – the exchange of craftspeople as a tool to strengthen alliances

For the last century, the distribution of metal artefacts and the organization of metalcrafting has been a topic of hot debate. Childe´s metalworking theories are critically examined in comparison to new theories about the origin and organization of metalcraft in terms of Bronze Agee material. Documents from the Mari archive open new doors into research of itinerant craftsman in the Nordic Bronze Age from 1500 to 1100 BC. Childe's ideas about socially mobile, highly specialized full-time craftsmen cannot be maintained in northern Europe. How would a subsistence craftsman; i.e. one who is seasonally a full-time specialist fit into the Bronze Age pattern? One could also project the phenomenon of 'specialist exchange' into Bronze Age society as well. The Principe of specialists, who could be requested and loaned out under the law of reciprocity is the leading thought while thinking about itinerant craftspeople in the Nordic Bronze Age. And in a society which demonstrates international exchange alliances, and the intensive production and distribution of copper (monopolised by a small segment of the population), as is the case in the Nordic Bronze Age, such a model of specialist mobility might be possible. The exchange of specialist craftsmen between equal alliance partners can be seen as an "act of politeness" and might form part of a "much more general and enduring contract" (Mauss 1990). But how can we detect the movement of elite-attached specialists in societies without written sources? This might be possible only through intensive investigation of crafting traces and formal characteristics on the objects themselves.Ornamental details reveal the different interests of different communities and the dissemination of their style as an area of influence. Individual markers of handicraft together with regional ornamentation can prove the mobility of a craftsman.

Heide W. Nørgaard (Aarhus University, Denmark, farkhw@hum.au.dk)
The Bronze Age Smith as Individual

During 1550-1100 BC magnificent decorated bronze objects appear in grave and hoard finds in Northwest Europe. While investigating similarities in the decorative elements of bronze objects belonging to the female gender, it is possible to find traces of the production process. These distinctive features can help to identify workshops through the identification of the producer. Similar distinctive traces can lead to the workshops sphere of influence.

Sometimes these traces have the ability to give much more information than just indicate the crafting process of the object. Errors occur in commonly used forging techniques may contain references to the producer. Individual steps can be reconstructed by means of small changes on the object. Even personal preferences or individual crafting techniques can be seen by the contemplation of an object.
Due to simple physical rules that are dictated by the material itself, the interpretation of working steps made in our modern world can be transferred to the Bronze Age. All these mentioned indicators can reveal the individual behind the object. The Bronze Age metalworker leaves traces that are still detectable today and that, without the help of extraordinary technological devices. An intensive observation of the material culture might be enough to see hand action, skill, and creativity of the person who crafted the material culture of past communities.This ongoing PhD-project, within the Marie-Curie training network Forging Identities, can contribute to new insights on collective and individual identities in northwest Europe during the middle Bronze Age.

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Potters in Tiryns from the Mycenaean Palace to the Geometric cemetery – Tracing shifts and traditions in organisation, technology and customer demands

So far, only two Late Bronze Age kilns are known in Tiryns and are situated within the citadel walls. Risk of fire in the habitation area, logistic problems in the transport of clay, water, fuel and pottery would have been disadvantages in this location, but ultimately did not seem to have been of major concern. Although a palatial date for the kiln on the Middle Citadel is arguable, a hypothetical link between pottery production and the palace on the Upper Citadel could explain this location. The kiln on the Lower Citadel was the first installed immediately after the conflagration of the palace and settlement in Tiryns around 1200 BC pointing to a high demand of new vessels. This kiln's construction shows clear evidence of the pyrotechnological skills of materials and techniques in, for instance, the selection of different material compositions for exterior or interior elements of the kiln.
During recent excavations in the Lower Town of Tiryns a Late Geometric workshop for decorated pottery was discovered. On the basis of production debris and at least two different types of kilns the specialisation and variation within one kiln site will be analysed.
NAA-data show that more or less the same clay sources and recipes were used for fine table ware from the Mycenaean until Protogeometric period. Further scientific analysis on the Late Geometric pottery, wasters, kiln fragments and samples of possible clay sources are planned in the course of this project.
Beside technological aspects the organisation of production from the raw material sources to the firing process will be analysed with respect to changes in the socio-political and economical environment. It will be discussed to what extend craft traditions depend on the local political and social system.

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Crafts with an aftertaste? Approaching the study of ancient skills using micro-debris in dental calculus

Dental calculus, a mineralized biofilm formed on teeth, is a very common 'deposit' found on archaeological skeletons. Research in progress, conducted on a large number of dental calculus samples recovered from skeletons from the Bronze Age to the Medieval times in England and Germany, is showing that a variety of 'dust' particles are preserved in the calculus. Making pottery, as well as working plants and wool from 'fibres' to 'textile', wood for tools, and other activities, produce microscopic particles that are often inhaled during the crafting process of the items. Trapping debris in its matrix while forming, dental calculus can preserve in some cases evidence of specific activities in situ on the individuals performing them. This paper addresses the potential and limitations of the use of non-dietary micro-debris trapped in the calculus (combined with other osteoarchaeological evidence) to explore and give visibility to the links existing between people, crafts, social status, gender and health in past populations.

Franco Rossi (Boston University, United States of America, frossi@bu.edu)
Material Traces of a Maya Scribe

A recently discovered mural within a small structure at the Maya site of Xultun, Guatemala bears traces of continuous use during its existence—with evidence of painted and incised images and hieroglyphic texts being both added to and elaborated upon the mural's surface at different times.
The mural itself depicts a figure that I believe was one of its creators intimately engaged with—infact, literally painting—the ancient city's ruler, in a startling display of non-royal self-portraiture. The continuous use-life of this room strongly suggests it to have been part of a residence of one (or, as the various "hands" visible in the glyphic writings imply, several) scribe(s) living and working at the mural complex, called 10K, during the Late Classic period (AD 600-900). My research deals not only with the implications of the mural itself, its portraiture, and its writings but also with the material remains left by the 10K group's ancient inhabitants within the surrounding complex.
Carved ceramic sherds, worked bone, stone chisels, and bark beaters—all Maya scribal products or implements found onsite—suggest a scribal residence, perhaps even a scribal school. These material remains of the crafting and multi-crafting associated with mural producing Maya scribes hold the key to elucidating the social role of those individuals working within the mural room, and they also feed into broader historical discussions—alongside the art and writings of the mural itself—regarding these crafts people's role in knowledge transmission, and how their use of hieroglyphs and portraiture in non-royal art was indicative of an emerging public literacy during the Terminal Classic transition.

Daniel Sahlén (University of Glasgow/National Museums Scotland, sahlen.d@gmail.com)
Production as activity – non-ferrous casting activities at Birnie, north-east Scotland in the Late Bronze Age and the Roman Iron Age

The nature of non-ferrous production activities has rarely been discussed in detail, following the lack of evidence. Most discussions have been focused on materials from spectacular sites, for example Gussage All Saints in Dorset, while the evidence from smaller sites have rarely been discuss beyond the excavation report. The reconstruction of production and organisation has instead often been drawn from evidence of the distribution of the final products. This has meant that the focus has been shifted away from the activity to economic models. In contrast, the

current work argues that the evidence of non-ferrous production is well represented in the archaeological record. But this production cannot be linked to the centralised production model, but rather various production contexts ranging from small to large scale production activities.
It is the purpose of this poster to discuss the evidence of casting production in late prehistoric Scotland, materials from the site of Birnie in north-east Scotland will be presented as a case study. The poster will look at the type of materials present and the distribution of production debris and individual artefacts. We are fortunate to have well documented sources of non-ferrous production at several recent excavated sites in Scotland, and at Birnie both in the Late Bronze Age and the Roman Iron Age. This makes it possible to compare the evidence from different sites and periods, highlighting the context and organisation of production.

Kristen Seaman (Kennesaw State University, United States of America, kseaman1@kennesaw.edu)
The Anxiety of Social Status among Greek Artists and Craftsmen

Today, many art historians and archaeologists believe that Greek artists generally were poor, uneducated, and oblivious to the concept of "Art," owing to the understandable late 20th-century reaction against lingering Romantic notions of masterpieces and artistic genius. The time has come, though, for us to study Greek artists and craftsmen within their historical contexts and to question whether all of them were as humble and unschooled as we often think. Therefore, in this poster, I examine the artistic, literary, and epigraphical evidence that speaks to the social status of Greek artists and craftsmen. I discover two distinct groups. The artists in the first group came from élite families, received superior educations, and were well-paid for their artworks and designs. For these élite artists, art practice had been part of their educations since childhood: first in their study of the liberal arts and later in their attendance at specialized – and costly – art institutes. Writing art-critical treatises, often about their own works, they also were self-consciously artistic, and they were celebrities. These educated painters and sculptors were the main creative forces behind the increasingly sophisticated art produced in the Classical and Hellenistic periods. The second group of craftsmen, however, consisted of manual laborers and slaves. I find that the shared physicality of both groups' work led to an anxiety about confusing artists with craftsmen, which, I argue, manifested itself in both literature and art: in, for example, exhortations to prohibit non-élite children from studying art at school; visual clues that indicated the high (and low) status of art-makers who were depicted in vase-painting; signatures on artworks; explicit comparisons between famous artists and humble craftsmen; and anecdotes about artists' interactions with kings and other élite members of Greek society.

Ilaria Tirloni (University of Rennes 2, France, carloilaria@tiscali.it
Crafts in the rite

Is it possible to detect traces of crafts in the ritual contexts? This paper wants to investigate the ritual contexts in Southern Italy between the Final Bronze Age and the Early Iron Age, analyzing several archaeological data which could be linked to crafts people's sphere. For the male activity, iron and bronze objects like knifes could be considered cultural instruments, but could also be referred to the agricultural activity (sickles) or fishery. Furthermore, hammers and elements for metalwork were found in several cultural places and hoards, in Sicily and Southern Italy, and the attention is drawn to Rocavecchia and Ischia, with moulds and tools.
For the potter's activity we haven't as much elements as in Greece, where the pinakes of Penteskouphia attest the presence of artisans' worshipper; however the study of all the pottery

production tools will be conducted through the analysis of the archaeological and written sources.
On the female side, women activity of the first Iron Age is easier to see, with weaving instruments, like loom weights and splinde-whorles, but the interpretation is not accepted by all.
Thus, studying all the archaeological data from Lipari, Bitalemi, the metallic hoards of Sicily and Southern Italy, Leuca and Rocavecchia, we try to define the presence of craftsmen and their social and economic role.