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SCOTTISH ARCHAEOLOGICAL FORUM

The Experience of Technology

An inter-disciplinary two day conference at the Queen Margaret Union,
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Abstracts

Session 1: A Question of Taste?

Consuming Technologies: a comparison of culinary technologies and sensory experience in early medieval Ireland and western Britain.

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This paper will consider the how the technologies we *actively* chose to consume, through shaping our sensory experiences, contribute towards the development and maintenance of regional identities.

Sensory experience is arguably at its greatest during the consumption of a meal. While we can take pleasure from our favourite foods, we can equally experience disgust at the flavour, texture or smell of a particular meal, or physical pain if consumed when too hot. Our bodily experience of food - both in terms of the



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preparation and consumption of a meal - is reliant upon the technologies employed in their preparation.

During the early medieval period the use of ceramic cooking pots throughout Ireland and western Britain was highly regional. Those areas which do not appear to have used ceramic cooking pots have generally been dismissed as having used 'organic alternatives'. However, it is obvious that such vessels could not have been used in the same manner as their ceramic cooking pot equivalent - a wooden or leather vessel cannot be placed directly in the fire in the manner of a ceramic vessel. Therefore, during the preparation of a meal, regional differences in culinary technology clearly evoked different behavioural practices and bodily experiences in terms of sight, sound, touch, taste and smell.

By comparing the technologies used in the production, preparation and consumption of food across the study area, this paper will consider the regional variations in experience which must have existed, the potential for such differences to evoke the social emotions in the context of inter-regional movement, and the influence of colonial agents on both technology and experience.

Hot Stuff: Embodied Engagements at Burnt Mound Sites in Shetland.

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Until recently the study of burnt mounds has focussed its attention on finding a definitive output for the technologies involved in their creation. This paper aims to overcome the objectification of these sites by exploring them, not as a number of potential outcomes, but as a series of interlinking and transformative processes, through which people, places and things combine.

Following on from the work of writers such as Ingold (2000, 2007), this study focuses centrally on the concept of *habitus* (as defined by Bourdieu, 1977), and recognises the need for the creation of a practise-based interpretation of these sites and their technologies. In particular it is argued that a detail understanding of the materials encountered in these processes, and the affordances which they offer those who encounter them is key to understanding these sites.



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By outlining some of the insights and experiences gained through a series of experimental firings at the reconstructed hearth and tank in Bressay, Shetland, I hope to illustrate how an embodied approach to hot stone technology can transform how we perceive burnt mound sites and their value in understanding life in Bronze Age societies.

Modifying Material: social biographies of Roman material culture

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Local integration of Roman material culture has long been the subject of study in northern Britain. Much previous research, however, adopts a strongly Romanocentric stance, proposing the presence of Roman objects as evidentiary support for the Romanisation of recipients. This paper develops a more balanced approach by conducting a detailed modern reassessment of physical and metaphysical modifying practices manifest in the manipulation of Roman artefacts recovered from non-Roman contexts in southern Scotland to determine how these objects functioned in their new social contexts.

Session 2: Theorising Technology

Multiple materialities, meaningful relations and lithic iterations

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Materiality matters in the imbrication of individual experience and technological practice. The focus of this paper lies with our engagement with the relational properties of lithic technology and how we build strategies in our analytical practices to explore the interactions and iterative encounters inherent in stonecraft. Of interest is the saliency of ontological concerns, skill, personhood and emergent identities that can be documented by approaches that consider the relational fusion within a given technological encounter. Chipped stone creates fantastic opportunities to expose, fragment and ultimately to (re)constitute such relations. Constructs such as multiple authorship are recast to explore how we gain archaeological purchase on



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such technologies of alterity. Consideration will also be given to how we explore the articulation of self, the social and the cosmological in our engagements with lithic technologies. A number of examples drawn primarily from NW European Mesolithic and Neolithic assemblages will be used to illustrate the prospects and challenges inherent in such a project.

The Relationship between the Design Technology and the Manufacturing Technology of the Scandinavian Bronze-Age Lurs

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This paper examines the manufacturing and design technology of the late Bronze age Scandinavian bronze lurs and is based upon data collected by myself. The lurs are large, visually-imposing musical instruments made around 750BC, over a period of time which cannot be quantified.

The playable lurs make an imposing sound and would create an impressive auditory experience for those sharing a ritual act in which they participated. In addition to this, they project above the heads of the players, providing them with a haptic experience as their bell discs hang high above all the participants.

My studies have identified a sequence of technological stages based upon the instruments' design technology and this has been correlated with the manufacturing technology employed and their archaeological sequencing by other workers.

The stages of development appear to suggest a high level of abstract understanding in the progressive refinement of design although this can only be detected because of progressive refinements in the manufacturing technology.

At some stage, the design technology and the manufacturing technology became disassociated and, although still remaining within the hands of one individual, the caster, they are expressed as disparate elements in the finished pieces. The instruments became objects which appear to have developed a life outside the auditory or visual worlds which they inhabited, one based upon technological exuberance and skill.



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While the changes which took place enhanced the instruments' capabilities as sound tools from a modern perspective, one would have to project a present-day understanding of the structure of standing waves within the tubes of lip-reed instruments onto the bronze-age smith in order to explain this development as being acoustically driven.

In a similar way, at some stage, the refinement in dimensional regularity of the tubes is greater than can be perceived by eye alone and one might also be tempted to suggest that our present-day metrology-driven manufacturing practices were preceded by the late bronze-age foundry worker.

Might musical experience have driven ancient technological innovation? Some striking musical moments in ancient technology, from human origins to the lyres and harps of medieval Britain and Ireland.

Dr Graeme Lawson

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Some years ago the American philosopher Stephen Pinker ruffled feathers when he argued that in an evolutionary sense the musical aptitudes of modern humans might be no more than 'auditory cheesecake', a happy by-product of more important capacities for language and speech which (he surmised) had long since evolved amongst their hominin and hominid forbears. The feathers belonged to British and Irish music archaeologists and musicologists who had already begun to cherish an altogether different scenario: one in which, to the contrary, our ancestors' musical capacities, vocal, auditory and gestural, might have pre-dated - perhaps by many epochs - their acquisition of complex language and speech, thus attributing music with the pivotal role instead.

In culture-historical studies as well as in palaeontology, such ideas have been rather against the run of play. Archaeology and palaeoanthropology have often seemed reluctant to treat music so seriously, despite the growing weight of archaeological evidence. This paper seeks to widen the continuing debate by considering whether students of technology too may have overlooked its potential, as a driving force behind processes of major technological change. It introduces three (among many) archaeological examples from the British Isles and elsewhere in which music seems to take far more than mere opportunistic advantage of new technologies; for it is precisely in relation to music that we see some of these technologies finding their



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most sophisticated and technically demanding expression. Clearly, this represents major investment, and carries with it serious implications for the power, prestige and practical value which ancient people attached to their musical experiences. It suggests in turn that archaeological science would benefit from renewed investment in our growing material evidence for music, dance and related behaviours: from the harps of Finlaggan Castle and Castle Sween to the pipes, trumpets and lyres of the Iron Age and beyond.

Technology and the Buddha

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This paper will consider the notion that it is embodied technology that inscribes and creates a meaningful Mesolithic landscape, suggesting that the hunter-gatherer, technology and landscape are indivisible.

The notion that landscape as a construct may be understood as technology will be drawn from a critical review of current landscape approaches in Mesolithic studies, and readings of the philosophy of Gilles Deleuze which serve to enhance our understanding of technology as part of the embodied enchainment of being.

Late Bronze Age Horns - Presentation and Performance

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A presentation by Ancient Music Ireland featuring the Kirkcudbrightshire Side-Blown Late Bronze Age Horn and it's context to contemporary and similar instrumental traditions in modernity.

Presentation

- The Scottish fragment with its distinctive Side-Blown mouthpiece.
- Contemporary complete Northern Irish examples which can be played today.
- Reproductions of a pair of horns from North Antrim played to express the variety of the colour of their voices.



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- A World map of locations of Side-Blown Horns, ancient and modern will demonstrate the rarity of Side-Blown Horns. Examples of instruments of these locations are discussed and exhibited.
- Dr. Peter Holmes will be invited to give a brief summary of the manufacturing technique involved in the making of a Scottish Side-Blown Late Bronze Age Horn.
- The presentation culminates with a duet performance on a pair of Late Bronze Age Horn reproductions by.
- The presentation includes a selection of slides for projection.

Session 3: Taskscapes: Experiencing Metalworking

Meanings from metals?: Experiencing bronze and iron in the British Iron Age

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In recent years as archaeologists have begun to deconstruct a rigid 'materials based' three age system, an increased interest in materiality has led them to explore the role these same materials play in shaping experience. Researchers working on the Bronze and Iron Age respectively have begun to explore the social and symbolic importance of these two metals, but work on their relationship in the Iron Age when both were in common use has scarcely begun.

Iron and bronze have distinct physical properties which situate them differently in time and space, constraining and inspiring human actions. Ethnographic studies show that within a given society different metals can have distinct symbolic and metaphorical values, in part engendered through the technology of their production and the manner of their use. This paper explores the potential for comparative materialities of metals and metalworking in the British Iron Age, using examples from the archaeological record to explore the ways in which Iron Age peoples may have experienced these two metals, their distinct places within Iron Age cosmologies and some of the implications for our understanding of Iron Age material culture and technology.



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The Social Dimensions of Bronze Technology in Ancient China

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One of the major cultural characteristics of the Chinese Bronze Age (18th-5th centuries BCE) is the production and use of thousands of ritual bronze vessels. Considerable work has been carried out on the casting technology employed in the manufacturing of these bronze vessels. Little research has, however, been undertaken on the social dimensions of the bronze technology involved. This paper is intended to offer some preliminary observations on a number of issues regarding the social dimensions of bronze technology during the Shang and Zhou dynasties in ancient China. It will first highlight the role of local cultural and ritual traditions in shaping the trajectories of early bronze technology in two regions: Northwest China and the Central Plain of China. Then, it will examine the development of bronze technology during the Shang and Zhou dynasties in the Central Plain, in order to understand the driving forces behind innovations in bronze technology there. Finally, it will focus on the development of bronze technology in the peripheral regions of the Central Plain, and explore the crucial influence of social-cultural factors on the formation of some local bronze traditions. It is suggested that further research on the intersection between the development of bronze technology and its social-cultural context in early China needs to be carried out.

The arrangement of atoms in a confined space: the Forteviot dagger burial

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In 2009, an intact Bronze Age cist was uncovered and excavated as part of the Strathearn Environs and Royal Forteviot (SERF) project. The cist, defined by large sandstone side slabs and a spectacular capstone with enigmatic rock-art motif was inserted into a Neolithic henge monument at Forteviot, Perth and Kinross, Scotland. This was the 43rd Bronze Age dagger burial identified in Scotland, and the circumstance of its discovery means that it will probably be the most intensively studied. Our engagement with wonderful Bronze Age things has been mediated through the microscope and the SEM, and by a team of specialists. In this paper we will reflect on the chemical processes that took place within the confined space of the cist. Our focus will be the entanglement of atoms from a range of different



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materials placed within the cist, including copper alloys, gold, wood, animal hide, flowers, flint, iron ore, and their interaction with the body of the person buried in this grave. Our understanding of this cist has drawn on the fragmentation of the cist assemblage, and the disassembling of the materials we found within. This is a process we feel is worth reflecting on.

Technology as skill, the case of casting moulds from late prehistoric Scotland

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Skill has often been difficult to study from an archaeological perspective, but recent studies focusing on technology and crafts have shown the possibility to use skill as a theoretical notion to define material changes and identifying individual craftworkers. Studies of metalworking ceramics have rarely discussed skill, partly because the distorted and fragmentary nature of these materials; instead the agenda has often been directed towards cultural narratives.

Drawing from theories developed in the study of flint knapping and pottery, the current study wants to explore the possibility to use the concept of skill in the study metalworking ceramics. A series of archaeometric techniques will be used to characterise and compare different ceramic materials. Casting moulds from late prehistoric Scotland are used as an example to show how we can study individual and communal skill even working with a distorted and fragmentary material.

Celtic Craftsmen Revisited: The Context of Craftworking in Early Scottish Monasteries

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In the 1981 SAF volume 'Early Technology in North Britain', William Gillies contributed a paper summarizing the elevated status of the craftsman in early medieval Irish and Welsh written sources. The law codes show that master smiths and builders were part of the *nemed* or privileged class, but the saint's lives and mythological literature also portray them as supernaturally powerful keepers of arcane knowledge. Thirty years later, we have a substantial body of excavated monastic sites from Scotland which contain dedicated workshop zones, including fine metalworking and other industrial activity. Early monasteries were carefully planned



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settlements, and the placement of metalworking areas should provide a way to test the way craftsmen were perceived by these communities. It is argued here that the Scottish evidence requires new theoretical approaches grounded in recent archaeological work on materiality, transformation, and dividuality in the Iron Age, which can in turn impact on our understanding of the historical process of conversion in early medieval Scotland.

Session 4: Embodied Engagements in the North Atlantic

From Mighty Tusk to Riding Knight

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This paper will examine the sparsely documented *chaîne opératoire* of the exploitation of walrus ivory in the Norse period. Although few tools have been identified and there is limited workshop debris or off-cuts, technological practice will be considered through a suggested centre of carving at Trondheim (ancient Nidaros) in Norway. The notion of personhood will serve as an interpretive framework through which to consider whether the walrus was held in special esteem, where the spirit of the creature itself was respected, as is documented for contemporary indigenous Arctic peoples. Or was the ocean giant simply one more resource to be exploited in the rich hunting grounds of the Arctic waters of the North? The mighty walrus, vulnerable and lumbering on land yet graceful and playful in the water was seized as a subsistence food as well as a source of hide ropes and tusks. Hunting may have been opportunistic, but the value of the skins and tusks would have made this a great prize, gained perhaps with only limited personal risk.

The Greenlandic Norse paid part of the Church tithe to Nidaros, the Head of the Bishopric which had spiritual and indeed fiscal responsibility for the Church there in walrus ivory and there it was carved in workshops into elegant and realistic figural gaming pieces which could have graced the gaming boards of the known world. As a high-value export commodity, the walrus tusk was carefully extracted from the mandible and the longest, broadest tusks came from the males, the obvious leaders of the haul-out groups. The claiming of such potent symbols of male prowess - combined



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with the massive oosik (penis bone), may mirror the mindset of the heroic Norse in their daily struggle for life in their hostile environment.

Life at the Far Edge of the Earth: Identity and material culture in medieval Norse Greenland

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As the centuries passed after the initial Viking settlement of Greenland in the late 10th century AD, a combination of deteriorating climate and changing social and economic conditions caused the Norse living there to become more isolated from the rest of Europe. Although periodic contacts with the outside world continued, there is no doubt that the Greenland Norse altered their material culture to fit their changing reality. A distant, proto-historical society located at the edge of the medieval world, objects and materials which formerly had been brought from Norway and the British Isles now had to be sourced and made in Greenland or imported at great personal cost. This paper will discuss the ways in which the Norse Greenlanders manufactured and manipulated their material culture as part of a strategy to place themselves within the larger medieval milieu, as well as examine the identities and social advantages that emerged from such actions.

Dance of the Immaterial Bodies: a comparative study of Western Isles building performances.

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Recent research by this speaker has highlighted how the various Late Norse cultural landscapes of Atlantic Scotland were negotiated by various lime bonded or dry stone Christian chapels of similar bicameral plan form. This paper will return to the Western Isles to further examine how the structural development of the apparently ahistorical 2nd millennium domestic plan form was also implicated in the landscape, and how the short physical biography of these buildings described a pulse of valuable social and cultural negotiation. Ultimately, the apparent juxtaposition between these monumental and ephemeral performances, embodiments in turf, dry-stone and lime which often shared the same settlement population will be explored.



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Engaging with the Visual: Reconstruction as an Interpretive Process in Archaeological Research

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For many years now illustration (digital or otherwise) and the processes of reconstruction have been considered as the „final step“ or accumulation of archaeological practice rather than an integral part of the interpretation process (Sorrell 1981). Morgan (2009, 468) noted that building virtual models of archaeological sites has been perceived as a legitimate mode of representing the past, but that the models produced are usually the end product of a process in which the archaeologists have relatively little engagement. Riedel and Bauer (2008, 141) express concern that such 3D models are used only to show what they term „pretty pictures“, with their full technical capacity reduced to that of mere presentation tools.

My ongoing research critically investigates how archaeological reconstructions are assembled, and how the act of assembling them and the consequential output functions as an interpretative process with a view to better integrating 3D technologies into archaeological research. The immediate problem with an angle of enquiry which focuses on the creation of a reconstruction is that at present the *process* itself is only significant to the sole creator. In this sense I want to question how this process can be digitally preserved and shared by mapping the evolution of any given interpretive dialogue with a site throughout the stages of data *collection* in the field, *creation* of the 3D models and *consumption* of the resulting visualisations by an audience. Considering current issues surrounding the representation of subjectivity in the interpretive decisions made during the reconstruction process, my research utilizes a methodology of 'data transparency' advocated by a handful of practitioners (Ryan 2001, Pletinckx 2008, Hermon and Nikodem 2008), but rarely practically tested. Ultimately developing a sustainable, cognitive methodology for the representation *and* analysis of archaeological remains.

This paper will consider a handful of case studies from previous reconstruction work on the SERF project together with current fieldwork on the Scottish Ten digital documentation project (<http://www.scottishten.org/>).