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EDITORIAL

Contending with Animal Bones

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This issue has been assembled in order to focus on some of the current directions in animal remains research. Since serious study of ancient animal remains began in the nineteenth century, this field and its specific areas of inquiry have evolved and diversified, and this collection of papers highlights that diversity, by including contributions that address issues from excavation and field recording methods and preservational conditions, to the use of bone for understanding past animal populations, as well as bones as proxy indicators for human activities. This volume is not meant only for the attention of the faunal remains specialist, and only a couple of these papers have actually been contributed by "archaeozoologists". Rather we hope to demonstrate the importance of faunal remains studies, on a par with lithic or

pottery research. It should be acknowledged that animal bones do not relate simply to the “economic” aspects of a culture but to all areas of the life world.

Animal bones have long been a ubiquitous part of the archaeological record. Interest in archaeological bones extends back to the beginning of the nineteenth century, an example being the work of Buckland who investigated Kirkdale Cave in Yorkshire (Rackham 1994). Discoveries of fossilised animal bones in association with stone tools in the mid nineteenth century created an appreciation of the deep time of the human species, and along with geological work such as that of Lyell, and Darwin’s *Origin of Species*, the antiquity of certain animal species associated with Palaeolithic tools became an area of immense interest (Davis 1987; Trigger 1989). In the 1860s Rutimeyer, studying Neolithic lakeside dwellings in Switzerland was perhaps the first person to distinguish domestic animals from wild ones and to recognise cut marks (Davis 1987). Thus "Archaeozoology" was born. Since then, archaeologists have continued to acknowledge the importance of faunal remains on archaeological sites and have used information that can be gleaned from bones.

Archaeozoology has been transformed by its evolution from an activity carried out by zoologist-consultants to one practised by specialists, trained with archaeological questions in mind. Early research on archaeological animal remains was carried out by zoologists and the kinds of questions asked and information they gathered derived directly from issues in the biological sciences. The study of morphological change with domestication provides an obvious example that can be traced back to the writings of Darwin (1869 [1996]) and Duerst who in the early 1900s attempted to explain the transition of wild cattle and sheep to their domestic descendants (Davis 1987). Another approach that developed out of a zoological framework was the use of animal taxa to reconstruct past environments. The excavation of Star Carr, published in 1954, began to move beyond these concerns by using animal remains to try to reconstruct the seasonality of *human occupation* (Clark 1954). This represented the beginning of an important change in which animal bones began to provide information about human activities. Subsequently, the uniquely archaeological nature of ancient animal bones started to be taken seriously as taphonomic studies developed in the 1960’s and 1970’s, particularly in studies relating to early Hominids in Africa. In the late 1960s and early 1970s, the

'palaeoeconomy' school emerged at Cambridge under the leadership of Higgs (e.g. 1972) whereby research became focused on palaeoeconomy and subsistence strategies of people in the past. This school represented the elaboration of the already entrenched position that the most important thing about animals in the archaeological past was that they had been procured by people to be consumed as food (see, e.g. Clark 1957: 177-196). For better or for worse, the 'palaeoeconomy' school helped to define archaeozoology as a sub-discipline in archaeology. A number of additional developments in archaeozoology have occurred during the past twenty years, as the specialist study of archaeological animal remains has emerged as a bona fide discipline (MacDonald 1991). But to what extent has archaeozoology moved beyond 'palaeoeconomy' and to what extent does it have further to go?

Bone research beyond palaeoeconomy

Broadly defined, the 'palaeoeconomy' approach has helped to both unify archaeozoology and to distance it from some recent directions in theoretical archaeology. Because archaeozoological work has been seen as focusing on the natural environment, and often environmental determinism, the discipline has become increasingly suspect to those who pursue 'social archaeology.' In addition, as archaeozoology has continued to strongly espouse a 'scientific' (positivist) approach, it has become increasingly isolated by trends developed under post-processualism, which are critical of positivism (although in some rare cases bordering on dogmatic anti-scientism). This polarisation has the dangerous tendency of stifling dialogue, as archaeozoologists retreat into doing archaeological *science* and theoretical archaeologists pursuing current theoretical interests ignore archaeozoological evidence as being irrelevant.

The problem of a division between humanistic archaeology and archaeological science has been explored in *ARC* before (*ARC* 10:1). Thomas (1991) explored this problem, and called for "a rapprochement" which he argued could be achieved by archaeozoologists being "engaged in the theoretical work required to render their results intelligible in terms of the past." (Thomas 1991, 33). Equally, however, there is a need for the generalist or theoretical archaeologist, to be aware of the kinds of difficulties encountered by the animal remains specialists that are particular to their bone/shell data-set. Although there is perhaps a tendency for the non-specialist to role her/his eyes or snigger at some of the seemingly trivial debates

amongst specialists, there is a need for wider appreciation that many of the discussions of archaeozoologists about bone densities, fracture patterns and the like are important because their resolution will help us to gain more of a secure insight into past human practices, or the post-depositional processes that obscure them. Admittedly, when specialists stick only to addressing these methodological details, the potential wider insights are lost.

We suspect that this division is increasingly reinforced as archaeozoology and theoretical archaeology each continue to develop and refine their own dense jargons, making results and discussions increasingly opaque, and perhaps seemingly boring, to the uninitiated (an issue explored by Boivin 1997 and Stevens 1997). As we have suggested elsewhere, a certain amount of jargon seems to be created unnecessarily, more for reasons of gaining status within academic circles, than for clarity of expression. This 'status jargon' (Fuller and Milner 1997, 5) needs to be edited out of both technical report conclusions and theoretical writings if communication across the divide is to become possible. Communication can only make for more successful collaboration, and as Bailey noted, working across the divide should be "productive in terms of the range of collaboration and the generation of unexpected ideas and avenues of investigation" (Bailey 1991, 17).

In addition, the division is reinforced by the structure of conferences. The division between environmental archaeology/ archaeological science/ archaeozoology and 'others' has been abundantly clear to us from recent meetings and conferences. At the Theoretical Archaeology Group 1998, a day-long session on Environmental Archaeology was held, in which several contributors complained about the lack of engagement with general archaeologists, and the lack of appreciation for issues of environmental archaeology by those organising archaeological digs and site publications. Unfortunately, this session was largely attended by environmental archaeologists, and made little apparent headway towards integration. On the other hand where were the contributions by environmental archaeologists to other TAG sessions, many of which highlighted landscape studies? With a few notable exceptions such contributions were absent. Both sides of the divide need to work toward communication and integration, not just the archaeozoologists, as Thomas (1991) seems to imply. We are beginning, however, to see some positive steps as a growing number of archaeozoologists and others take an interest in

issues of consumption, a theme that impinges directly on social relations and social theory, highlighted for example by a symposium at Cambridge in September 1998 (see Martin 1998; Milek 1997, Rowley-Conwy 1998), and recent books (e.g. Gosden and Hather 1999). These developments call for recognition of the central importance of 'economy' to which we will return below.

The separation of archaeozoology, or indeed the wider field that is often called 'environmental archaeology' (O'Connor 1998), from what is seen by some vociferous archaeological theorists as 'mainstream' archaeology, is neither necessary nor helpful. Archaeozoology can be, and we would suggest needs to be, both scientific and interpretative. Despite the insistence of some of archaeology's self-styled spokesmen for 'science' (e.g. Binford 1983; Dunnell 1982), science is not a unified method, but a set of research styles, that attempt to interpret and make sense of reality (Greene 1985). Reasoning in archaeozoology, as in palaeontology or geology, uses historical and interpretative reasoning (e.g. Frodeman 1995), called 'hermeneutics' by the terminologically trendy (see also Hodder 1998: 105-108). What this means is that we as archaeozoological researchers inherit frameworks of thinking about bones and terms for describing them and that these frameworks influence what we see and what we find. To say this does not amount to being purely relativist and saying that we are not getting at facts, but rather it is to admit that despite all of the methodological advances of recent decades, there is no perfect, simple method that provides us with 'the truth'. Instead our ways of thinking about faunal remains and our methods of study need to be constantly re-assessed and questioned. Indeed, even the most basic primary data, such as taxonomic identification are interpretations based on the knowledge of a worker and available comparative material (Reitz and Wing 1999: 170).

Methods of recovery, sampling techniques, taphonomy and using modern control samples are all important issues that underpin interpretation, and resolving such issues represents an ongoing process, that can be seen as a 'hermeneutic spiral'. Nevertheless, archaeozoologists are frequently revising and questioning older analytical assumptions, and updating these assumptions on the basis of additional experimental or ethnographic observation (see Lyman 1994; Reitz and Wing 1999). Some examples of methodological refinements or the need to reconsider previously unquestioned

assumptions, are addressed by articles in this issue (eg. Luff; Stewart; Milner).

Taphonomy remains a central part of archaeozoology, regardless of one's ultimate theoretical aims and questions (MacDonald 1991, O'Conner 1996). Stewart's paper discusses a problem resulting from the opposition between archaeology as a humanistic discipline and sedimentology as a natural (i.e. non-cultural) science. Although Palaeolithic sites use earth sciences to understand geological processes, later sites tend to exclude such approaches due to recognition that such sites are inherently cultural. Stewart forwards important issues that should be considered when excavating a site, in order to direct archaeozoologists towards examining individual contexts from a sedimentological perspective. Bones in the ground behave like other sedimentary particles, and thus the sedimentological description of the bones as part of the sediments as a whole will help an understanding of their original depositional mode.

Luff discusses the taphonomy of fish bones from Egypt in her paper. She points out how an appreciation for the problems of preservation for this category of remains is often neglected. It was only through microscopic observation that a major problem with salt crystallization was recognised. This paper warns that even though bones may appear robust externally they may be highly fragile internally, a phenomenon that archaeologists in the field must be aware of. This taphonomic factor could also affect other categories of remains, and Luff explores some of its potential impacts on other issues such as interpreting early bovine bones in the Nile valley in relation to cattle domestication.

Identifying taxonomic, or indeed intra-specific, variation in bone assemblages also requires refined methods, which in turn may relate to important social/cultural issues. The paper by Bruck explores a data set of canine bones from Roman Britain, and attempts to address whether two distinct breeds are present. While not an explicitly theoretical paper, it provides a good example of the kind of methodological difficulties that can be encountered in answering a basic question of this sort. This may superficially seem trivial, but recognising the presence of different breeds in the past is important, since these breeds represent the results of genetic changes brought about in dogs by the selective pressure of human social practices. As segments of society desire dogs for particular aspects of cultural life, such as hunting, herding, or home companionship, the presence of

different breeds relates to ancient perception and use of dogs in different contexts. Addressing the relationship of dog breeds to different human activities or social patterning (such as class) can only be explored once secure methods are developed for distinguishing these breeds. Thus theoretical questions may demand methodological answers.

One traditional area of bone studies is the reconstruction of past ecologies and the populations of animal species. The classic areas of environmental archaeology are often regarded either as uninteresting or old hat by theoretical critics, but in fact such ecological/population issues remain dynamic areas of debate and theoretical development. Older approaches to past animal populations, and environmental inference, derived from orthodox systems ecology of Odum (1971; e.g. Butzer 1982, 15), which saw populations in equilibrium with their environment, and adjusting to changes. More recently, however, theoretical ecology has changed, partly as mathematical models have matured but also as natural world observations have forced reconsideration. The 'new' ecology is one that recognises the constantly dynamic, and in many cases unstable, natural world (McIntosh 1987; Zimmerer 1994; Blumler 1996). Winder's contribution reconsiders issues of reconstructing past goat populations, as a way into better understanding the size of past populations needed to sustain human predation. Rather than assuming stable equilibrium populations, however, Winder draws on chaos theory to produce a more realistic and dynamic model of past goatherds. In addition, to constraining the predicted range of mortality rate that herds could have sustained, Winder demonstrates the role of the mathematical models for evaluating archaeological inference on matters for which direct evidence is absent from the archaeological record.

Researchers with archaeological backgrounds are increasingly dipping into the natural science disciplines in order to use their techniques to investigate archaeological concerns. However, as Milner's paper warns, there is a grave danger of misinterpretation due to insufficient background knowledge of natural variability. Milner illustrates how easily this may be done using seasonality studies as an example. It is demonstrated how simple it is to make mistakes in seasonality assessments through plain misunderstandings of animal behaviour and ecology, human exploitation practices and scientific techniques. This is an important consideration when such techniques are used in

a broader sense to explain social and economic issues of the culture in question.

Montón deals with different aspects of the division between the archaeology of animal remains and 'traditional' archaeological data sets of artefacts, such as lithics and pottery. Montón explores the state of archaeozoology in Spain, although the points that arise may be applied to other countries including the United Kingdom. She shows how animal bones are not always given the attention they deserve. Due to a traditional culture-historic approach in archaeology and a concentration on artefacts such as flint, pottery and lithics there are common problems such as a lack of theory for interpretation, and a scarcity of funding which highlight the need for interdisciplinarity. A change in this state of affairs may only occur through a growing interest in archaeozoology.

Revitalising the Study of Economy

In sum, contributions in this issue show the range of archaeozoological research that is both productive and necessary for a holistic perspective on economy. While we agree with Thomas (1991) that archaeozoology needs to engage in interpretative issues having to do with social practices, it should be clear that there is a continued need for taphonomic and methodological studies, such as the work by Luff, Bruck, Winder and Stewart, in order to understand the sources of patterning in the material remains. This should not result in archaeology descending into what Thomas describes as being about "what bog men ate for breakfast...whether Roman pigs had bad teeth, and about 'piecing together this information'" (Thomas 1991, 30). Archaeozoology does not stop at producing these data, but interpretations must be made, with care, otherwise as Milner has shown gross misunderstandings can occur which will affect the perception of many different aspects of the culture in question. Indeed, archaeozoological datasets must be constantly reassessed and reconsidered in relation both to new understandings of methodological issues (emanating from zoological or taphonomic studies) and new interpretations of other lines of archaeological evidence. Montón explores the better integration of faunal data and other archaeological evidence, and we can foresee increasing studies that draw on a wide range of kinds of evidence as archaeologists pursue issues such as landscape and food.

Archaeozoology should be part of a wider interest in past socio-economics that reclaims 'economy' from 'palaeoeconomy'. Within most archaeozoological discussions, economy, still under the influence of Higgs' 'palaeoeconomy' focuses on the natural environment and its cultural exploitation for subsistence and diet. This implies a lack of concern with issues to do with ritual, cultural and symbolic dimensions of bone assemblages. For many, 'economy', has become a bad word, but this should not be so. Economy resides at the interchange between ecology and society as well as between the social actor and the socially ascribed category of value. Economic decisions and relations are always social, but they are constrained and work through material circumstances, which includes material culture as well as the natural environment. Animals and plants have ecologies, while human societies have economies. Economy is therefore more than mere procurement of diet, and studies of past economy need to be more in line with the discussions of economy by anthropologists like Gregory (1982), and archaeological considerations of prestige goods economies, feasting, etc. (e.g. Edwards 1996; Dietler 1996; Hayden 1996; Cumberpatch 1998; Sherrat 1999). As argued recently by Trigger (1998) in a search for common ground between theoretical polarisations, there is a larger shared problem:

'Human beings simultaneously inhabit a conceptual environment that exists in their minds and a social and natural construct that exists independently of their wills. A challenge that is faced by archaeologists, other social scientists, and philosophers is to define more precisely the relations between this inner and outer environment.' (Trigger 1998: 20).

Archaeozoology has much to contribute to the understanding of the changing natural world and the changing ways in which it is reinterpreted and transformed by social action. On the one hand, traditional concerns with ecology and resource procurement, when updated with current dynamic ecology, can help to better define the outer environment. On the other hand, through creative approaches of using uniformitarian relationships from zoology, such as body part utility indices, and careful taphonomic considerations, animal remains can contribute to outlining social patterns in the archaeological record. This then is not a narrowly defined 'archaeozoology' but simply archaeology that uses the evidence from animals to explore that plethora of questions that we might call economic.

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