Animal Bones in Archaeology: how archaeozoologists can make a greater contribution to British Iron Age and Romano-British archaeology

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My first meeting with Don Brothwell was in Sheffield in 1977. He acted as the External Examiner for my MA thesis on the Exeter animal bones and I attended a *viva voce* examination. He provided valuable and constructive criticisms, which I was able to incorporate into the subsequent publication of the research (Maltby 1979). As we have been asked to look into the future in these papers, I thought it might be instructive to turn to the end of that monograph to remind myself of what I said then about the priorities for future work in faunal studies.

To put it in its historical perspective, this was probably the last large report on animal bones not to explicitly mention the term “Taphonomy”. In the conclusions entitled “Exeter, Urban Sites and Research Priorities” there were sub-sections discussing the need for further work on relevant historical records, the desirability of examining other assemblages within the town, the need to compare these with assemblages from rural settlements, the need to provide more detailed records about butchery data and the priority for the development of more consistent methods of quantification in archaeozoology in general. (Maltby 1979, 93-4). These are of course themes that have been discussed both in previous and subsequent papers.

The final section was entitled “Archaeozoology and archaeology”. To quote a section from it:

“It may seem ironic to conclude a volume that has been entirely devoted to the study of animal bones by emphasising that we should not be dealing with faunal data in isolation from other aspects of archaeological evidence.... This is therefore a plea for a more integrated approach to archaeology....animal bone studies should not be treated simply as appendices to site reports but must be included as an intrinsic tool to aid the understanding ...of prehistoric and historic societies” (Maltby 1979, 94).

It is disturbing to report that similar pleas for integration are still being made. For example, one of the organisers of this conference, Terry O’Connor, has recently advocated for the need for better integration.

“The archaeology of more socially complex societies.....tends to be dominated by structures and artefacts, and there is a tendency for bones to be described and discussed separately from the ‘rest’ of the archaeology of a site, if at all.” (O’Connor 1996, 11).

There are a few exceptions but clearly it is a sad indictment of the development of the discipline over the last 20 years that, in a typical excavation monograph, animal bone reports have advanced only a few pages forward from an appendix to a section just in front of the final site summary - a summary furthermore, which rarely integrates the animal bone evidence satisfactorily.

So what lies behind this slow progress? First it seems, as O’Connor (1996, 12) has pointed out, that there is a perception that animal bone specialists have not embraced

new ideas and approaches and are seen to be pursuing an independent research trajectory divorced from the rest of archaeology. However, disillusionment with the objectives and results of archaeozoological study is not restricted to those who follow post-processualist or post-modernist paradigms. There is a widely held belief that animal bone studies have failed to produce the answers to what other archaeologists want to know. For example, when an archaeozoologist is asked the apparently simple question of "What did they eat?", there is likely to be a very convoluted answer.

Of course, archaeozoologists are right to point out the complexities caused by taphonomic processes; small sample size; retrieval rates; intra- and inter-site variation; the effects of different methods of quantification etc. However, it's a sad fact that others are not particularly interested in such problems. They want positive answers. Counter-arguments to the effect that at least archaeozoologists are attempting to look at their data critically, although valid, are unpopular.

Yet, some very positive statements about many aspects of animal bone studies have been made over the past 20 years but in many cases it is taking a long time for them to be fully incorporated into general archaeological discussion. For example, if we look at the period of the Late Iron Age (from c.100BC) and Roman period in Britain, there are many characteristics of faunal assemblages that have been found to vary both chronologically and spatially. There follows a list of some examples of these variations:

Species Representation

It is over 20 years since Tony King first noted that the relative abundance of cattle bones tended to be greater (in comparison with sheep/goat and pig) in assemblages from military and urban Romano-British sites than rural ones (King 1978). This general trend has stood the test of time as more sites have been added to subsequent summaries, in which these assemblages have also been compared with those from elsewhere in Europe (King 1984; 1999).

There are complementary and other variations in the relative abundance of other species on later Iron Age and Romano-British sites. For example pig bones have been found in relatively greater numbers on most Iron Age sites in Western England (Hambleton 1999) and on some late Iron Age sites in the South of England where there is evidence of significant continental contact, such as Braughing and Skeleton Green, Hertfordshire, Ower, Dorset and Mount Batten, Devon (see Hambleton 1999 for details of species and original reports). King (1978; 1984; 1999) has also noted that pig bones tend to be found more frequently on “Romanised” sites such as forts, towns and, to a lesser extent, villas in Roman Britain.

Conversely, sheep/goat bones are usually better represented on “native” rural Romano-British settlements (King 1978; 1984; 1999; Grant 1989; Maltby 1994).

Other general surveys of species representation have noted variations in the relative abundance of horse bones, which tend to be more common on rural sites than in towns (Maltby 1994) and of domestic fowl bones, which are usually more common in samples from the larger towns and military sites than elsewhere (Maltby 1997).

Mortality Patterns

There are chronological and possibly regional variations in mortality patterns of domestic stock in the Iron Age and Romano-British period. For example, there tend to be more second and third year mortalities of sheep on Roman sites than in Iron Age samples (Maltby 1981) and there is some evidence that there was an increase in the proportion of older sheep exploited in later Romano-British samples (Maltby 1981; Grant 1989). In some regions the mortality profiles of sheep/goat and cattle appear to vary between urban and rural settlements. There is generally less diversity in mortality profiles in urban assemblages and more distinct peaks in the most frequent ages of slaughter (Maltby 1994).

Size Variation

There are chronological and regional variations in the size of cattle. More bones of larger cattle and sheep have been found in the lowland zone in the Romano-British period than in the South West of England, Wales and Northern England (Maltby 1981; Stallibrass 1993). New (larger) cattle may have been introduced during the Roman period, for example in Lincoln (Dobney et al. 1996). In Hampshire, there is evidence to suggest that some larger, hornless, sheep were exploited in the town of Winchester in the Early Roman period but sheep of similar size did not appear at the neighbouring rural settlement at Owslebury until the later Roman period and most continued be of smaller stature with horns (Maltby 1994). Similarly pigs in Winchester were nearly all larger than those at Owslebury (Maltby 1994).

Butchery on Iron Age sites tended to be performed with knives, whereas cleavers tended to be more commonly used in the Roman period, particularly on urban and

military sites (Maltby 1989; Dobney at al. 1996). Large-scale dumps of cattle processing waste, biased towards particular types of bones and displaying distinctive breakage and butchery marks presumably made by various specialists tend to be found in and around Roman urban settlements (e.g. Maltby 1984; 1998; O'Connor 1988; Dobney at al. 1996) and rarely on rural ones.

As can be seen, many of the reports of these traits amongst others have been published for a long time. Despite real problems concerning intra-site comparisons and quantification methods, there are clearly patterns in the data, which have been demonstrated, refined and can be investigated further.

At one level these patterns, changes and variations can be discussed and explained simply in terms of changing trajectories in animal exploitation patterns, environmental adaptation, population pressures and so on. In addition, however, explanations of these assemblage variations can and have been sought, for example, in terms of cultural preferences and taboos; status; economic prosperity; trading patterns; consumption and production patterns; military supply; changes in taxation; advances in husbandry practices and technology and various guises of the nebulous term "Romanization".

Clearly all those topics form an important part of Late Iron Age and Romano-British studies in general and therefore it should be expected that animal bone studies have had an important role in the development of ideas.

However, as indicated above, the impact appears, at best, to be patchy. To start on a positive note, there have been a number of syntheses of animal bone studies which have appeared in edited volumes on Roman Britain, for example Annie Grant's chapter in Malcolm Todd's book on "Research on Roman Britain" (Grant 1989) or Tony King's contributions to Branigan and Miles volume on Roman villas and Rik Jones volume on "Roman Britain: Recent trends" (King 198 ; 1991). Cynics may say that those not interested in animal bones may not have read these chapters even if they bought the book! Other syntheses have tended to be published in places where non-zooarchaeologists rarely visit, either as monographs - for example Rosemary Luff's (1982) work on Essex and NW Europe material or Ellen Hambleton's (1999) synthesis of Iron Age assemblages, or in volumes or journals devoted to archaeozoology or environmental archaeology (Maltby 1981; 1994).

Similarly, some of the reports on the most important samples from urban sites have been published as separate monographs or fascicules. Examples include Exeter (Maltby 1979), Lincoln (Dobney et al. 1996), York (O'Connor 1988; 1991) and Colchester (Luff 1993). Most excavation monographs these days do include a section on animal bones but, as stated above, these are only rarely successfully integrated into the general synthesis of the site.

A perusal through period journals or general archaeological works for significant incorporation of animal bone evidence is a particularly depressing exercise. Apart from the occasional bone report embedded within excavation reports, there has not been an article incorporating significant discussion of animal bone data in the Journal "Britannia" since the second volume in the series (Davies 1971).

Nor does a review of some of the general works on Roman Britain in the last decade provide much encouragement that animal bone studies have been accepted as an useful source of information. There is comparatively little use of it made by Martin Millett in his "Romanization of Britain" (Millett 1990). In Salway's "A History of Roman Britain" Chapters 20 and 21 are devoted respectively to 'Town and Country' and 'Economy' yet apart from the inevitable reference to Strabo's list of exports, the only mention of faunal data consists of a short passage about bones found at Hockwold (Salway 1993). Richard Hingley (1989) makes no mention of any bone data in his book "Rural Settlement in Roman Britain". Similarly, there is no mention of animal bones in Burnham and Wacher's (1990) "Small Towns of Roman Britain" . There were no contributions from archaeozoologists in Brown's (1995) edited volume on "Roman Small Towns in Eastern England and Beyond". Ken and Petra Dark's "The Landscape of Roman Britain" does list animal bones as a source of evidence (Dark & Dark 1997, 4) but the section on animals in the chapter 'Agriculture and the Landscape' is restricted to a competent summary of little over one page (Dark & Dark 1997, 111-3).

The proceedings of the Roman Theoretical Archaeological Conferences offer more hope. Here at least we have had several papers written by archaeozoologists (e.g. Meadows 1994; Richardson 1997; Dobney 1999) - [Keith please confirm]) addressing issues beyond narrow archaeozoological boundaries. Just as encouraging are a few articles by non-archaeozoologists that specifically refer to animal bones in discussions advocating integrated approaches to finds studies (e.g. Rippengal 1993; Evans 1995).

It is clear that the results of work on faunal remains have not been used or disseminated to their full potential in Romano-British studies. It must be emphasised that this is not a problem that is restricted to this period but it is used here as an example of a more general problem.

The remainder of this paper will examine ways in which we might improve on the current situation. These come under four main headings.

1) Education
2) Project management
3) Dissemination
4) Integrated Research

Education

There is a need to provide a broader understanding of both theoretical and practical matters relating to animal bones. It is important on sites where bones are likely to be preserved, that someone in the excavation team has identification skills in animal bones along with at least a fair knowledge of the sorts of faunal assemblages that can be expected from the period and the type of site involved. This will enable appropriate action to be taken when significant finds are made.

To illustrate this point, we can examine the issue about the significance of complete and partial animal skeletons found in various features on many British Iron Age sites. Since Annie Grant's original observations about this phenomenon (Grant 1984a) there has been a lot of discussion about the interpretation of such finds. Were they sacrifices, natural mortalities, diseased animals, butchery waste, the remains of ritual

feasts or any combination of the above? This is not the place to the arguments for and against these ideas here - they have been discussed extensively in the literature both by archaeozoologists (e.g. Grant 1984b; Wilson 1996) and by other archaeologists (e.g. Hill 1995; Green 1992; Cunliffe 1992). What is clear, however, is that archaeologists should be able to recognise such deposits during excavation and be prepared to record detailed contextual information, orientations and associated finds, in order to maximise their potential information.

Without this evidence, any archaeozoologist, who is not a member of the excavation team, cannot be expected to make a full contribution to the information about the animal burials. Interpretations can be limited by the fact that the full significance of them was not recognised during excavation. Somebody in the excavation team needs to have sufficient knowledge of animal bones to identify and react appropriately to the find, perhaps including calling out an archaeozoologist . There may be occasions, however, that time constraints and lack of specialist availability mean that decisions have to be made on site and that is why somebody with appropriate training should be available in the excavation team.

If there is still a shortage of archaeologists working on excavations with the necessary basic identification skills and background knowledge or archaeozoology, more need to be trained. They should not be expected to do the assessment of the bones or eventually do the full analysis. However, they should liaise with the designated specialists - perhaps assisting them at the assessment stage, particularly to ensure that the archaeozoologist has a full appreciation of the archaeology of the site.

Project Management

The second area where integration can be improved is in the way archaeological projects are managed. In England, it is a question of ensuring that procedures that have been recommended are actually carried out.

In "Management of Archaeological Projects " (MAP2), there are a lot of passages encouraging integration of specialists (English Heritage 1991).

For example, under 'Phase 1: project planning', MAP2 states "The core team will include representatives of all relevant specialisms (e.g. environmentalists…)…The Project Manager and core team will together formulate the project design…" (English Heritage 1991, 9)

I do not recall ever being approached prior to fieldwork to discuss a project. There may be exceptions but most specialists' first involvement usually does not begin prior to boxes being delivered to their workplace.

Under 'Phase 2: fieldwork, (data-collection)' MAP2 states "It is likely to be at this point that the full project team will be brought together" (English Heritage 1991, 12). One assumes that this should include all the relevant specialists. Too often the archaeozoologist who eventually analyses the material has never visited the site, and is even less likely to have had an interactive input into the strategy of the excavations. This is partly a consequence of the rigid structuring of archaeological projects and the advent of competitive tendering, which have developed since MAP2 was published. Because the planning, fieldwork, assessment and analysis stages are temporally

distinct and separately costed phases, it is not uncommon for them to be carried out by different archaeological units who in turn are likely to be sub-contracting their work to different archaeozoologists. The laudable aim to produce structure, cost-effectiveness and accountability into archaeological projects does have the consequence of discontinuity.

'Phase 3: assessment of potential for analysis' is the next key stage in an archaeological project (English Heritage 1991, 15-19). Assessments of animal bones are now commonly undertaken as a component of this process, although a review of the effectiveness of these assessments is long overdue. MAP2 does, however, offer some explicit recommendations in this section. For example, it states that the best available staff should be used for assessments to utilise their experience and breadth of knowledge (English Heritage 1991, 15). This is undoubtedly the case. If the designated archaeozoologist does not have the necessary experience, a more experienced consultant should be brought in at this stage to give guidance.

MAP2 states "A key aspect of this assessment phase…is the need for a co-ordinated approach. The importance of integrating artefact and environmental evidence with the stratigraphic record has long been acknowledged but not always fully exploited. Too often programmes of analysis have been initiated with insufficient contact between the specialists concerned and no cross-reference made until the final stages of publication preparation" (English Heritage 1991, 16).

This is absolutely correct. Animal bones are usually assessed in complete isolation, although spot dates (provisional phasing) are usually provided together sometimes

with indications of residuality and a stratigraphic summary. A disturbing trend is for bones to be pre-selected for assessment by excavators. For example, bones from contexts which are not closely dated are not included. This adds to the isolation of the bone specialist. It is of course probable that bone assemblages from contexts containing high percentages of residual or contaminated pottery are not going to be useful. However, sometimes the best bone groups have very few datable finds associated with them. By their nature, animal burials or discrete dumps of butchery waste are unlikely to be accompanied by good groups of pottery.

A case in point is a set of material published recently from Roman Cirencester, Gloucestershire (Maltby 1998). The assemblage consisted of a large dump of cattle butchery waste from near the centre of the town. Stratigraphically, it was securely contained within layers of late Roman origin. However, because there were a few sherds of heavily abraded early Roman pottery within these layers, the assemblage was originally ignored because of the possibility of residuality.

However, initial examination revealed that the bones were not eroded and the faunal assemblage is clearly a discrete deposit derived from specialist processing. An important set of material could easily have been overlooked.

MAP2 continues, “Once assessments have been made of the individual classes of data, the results should be integrated…..To be successful this will need a period of intense communication between all the specialists involved. This should be achieved principally through regular meetings of the project team” (English Heritage 1991, 18).

My personal experience of this ‘intense communication’ is limited to about three meetings over the past 20 years. To be fair, two of these have taken place in the last year and so there are some signs of progress. These recent meetings have been extremely useful days. There is no doubt that they have mutual benefits, as specialists discover the range of compatibility there is in the questions they are asking of their material. For example, animal bone specialists and ceramics specialists both commonly grade the state of preservation of their assemblages. It can be very informative to establish whether the least abraded pottery groups are found together with faunal assemblages that show little evidence of gnawing damage or surface erosion. Being able to compare assemblages down to context level also provides everybody with a broader and more detailed understanding of the archaeology.

So I am strongly in favour of such meetings, particularly if everybody’s assessments are precirculated. But it would be even more stimulating and efficient for such meetings not to wait until after the individual assessments have been done separately. Why not arrange for the assessments to be done at the same time in the same room with relevant members of the excavation team also in attendance? It is surely better to view the physical data together rather than to compare artificial data records subsequently. Some may argue that this would be impractical to arrange but I think it would often be worth the effort and additional costs.

Dissemination

The third means by which to achieve better integration is to improve how the results of animal bone studies are disseminated. MAP2 is rather vague about how specialist reports should be integrated into the final report. It does state:

"Specialist reports and their supporting data should be carefully chosen and given their proper value. Specialist contributors must be involved in or informed of editorial decisions affecting the presentation of their work in print" (English Heritage 1991, 40).

Elsewhere in the recommendations it says:

"The report should be submitted …containing all the evidence, analysis, and synthesis the author considers necessary to fulfil the project design." (English Heritage 1991, 21). Unfortunately, specialists are still rarely consulted on how their results have been synthesised (if at all). I have been given the opportunity to proof read many of my reports but I have rarely seen a draft of the synthesis prior to publication. The syntheses are often the most disappointing section of an excavation monograph. It is rare that finds specialists are entrusted with the writing of these syntheses. I would argue that in some cases it would be more appropriate if they were.

The second aspect of dissemination is that bone specialists should make greater efforts to ensure their contributions are accessible to other archaeologists. The depressing statistic about the lack of bone articles in 'Britannia' was noted above. The editors of that journal may well say that they have never or rarely received anything from bone specialists worthy of submission for a more general readership. It is important that archaeozoological specialists on a project are fully aware of the overall research aims of the project and that their reports are designed accordingly.

Integrated Research

This leads on to the fourth suggestion - the development of integrated research projects. There is too little collaborative research between different sorts of

specialists. An example of such a project can be found in the article by Terry O'Connor and Marijke van der Veen (1998), where they have combined their expertise on animal bones and plant remains to produce a joint paper on the expansion of agricultural production in the Late Iron Age and Romano-British periods in Northern England. The Environmental Laboratory in York has of course been in the position to pursue an integrated approach to the study of environmental data.

However, it would be nice to see animal bone specialists and other environmental archaeologists also combining more with other types of specialist on areas of common interest.

To take some possible examples again from the Iron Age and Roman periods in Britain, there is, as noted above, abundant evidence for the presence of specialist butchers on some Roman sites and more general changes in butchery practices during the Romano-British period. It would be informative to work with metalwork specialists to see whether these changes coincide with variations and developments in the technology and design of potential butchery implements in the period.

There are plenty of opportunities for archaeozoologists and ceramics specialists to collaborate on projects of mutual interest. Analyses of residues on pottery have already begun to shed some light on food products in various types of vessel. There are, however, also more routine collaborations that could be carried out on many sites. Comparisons of intra- and inter-site distributions of different sorts of vessels with animal bone distributions are one example. At Winnall Down, Hampshire, the densities of both pottery and bone finds in Iron Age pits and other features were

calculated and a more coherent picture of settlement activity areas and rubbish disposal was subsequently obtained (Fasham 1985).

Hill (199) has suggested that changes in the range and typology of pottery vessels in the Late Iron Age were connected with changes in cuisine and food preparation. Clearly this is a topic that archaeozoologists should also be considering and appropriate research programmes ought to be devised.

Analyses and interpretations of 'animal bone special deposits', to use Annie Grant's (1984b) original phrase for the occurrence of complete and partial animal skeletons and complete skulls, on Iron Age sites with 'special deposits' of ceramics and other finds would be more convincing, if carried out by specialists looking at their data together rather than a third party trying to piece together a coherent interpretation without possessing a full understanding of one or either of the archaeological materials involved.

It is a mystery why animal bone specialists have not paid more attention to the implications of a major technological innovation that took place in the Late Bronze Age and Iron Age - that of the marked increase in salt production and trade. Hallstatt itself was a salt production centre. In Britain evidence for the exploitation of salt from both coastal and inland sources during the Iron Age is well attested and Elaine Morris (1994) has been able to demonstrate some of the trading patterns using the evidence of briquetage (salt containers). It must be assumed that a lot of this salt would have been used by people who wanted to preserve meat. This implies possible fundamental changes in storage technology and possibly related changes in how meat

was consumed, prepared and distributed. Surely it is worth investigating the implications of this in some integrated manner.

Isotope analysis of suitable human skeletons of Iron Age and Romano-British date to establish a broad picture of diet has enormous potential, particularly if it can be integrated with archaeozoological and archaeobotanical data. A programme of isotope analysis on human remains of this period from settlements which have good archaeozoological and archaeobotanical evidence is long overdue.

There are many more broad and specific topics which would allow a fruitful collaboration between seemingly unlikely partners. In addition to their own intrinsic interest, such research projects would demonstrate that animal bone data can be used beyond its preconceived narrow boundaries. Similarly, it will make bone specialists realise they should not exist in isolation.

If what we do with animal bones can be regarded as a science, it is significant that Don Brothwell and Eric Higgs' seminal work (1964) was not entitled "Science and Archaeology" but "Science in Archaeology". Small words are often significant. Animal bone studies should be 'in' archaeology. One of the features of Don Brothwell's career to date is the breadth of his interests. He has been successful in combining many types of data into his research. We too would advance the progress of archaeology is we followed his example.

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