11th Professional Zooarchaeology Group Meeting
Saturday, February 19th, 2011

The11th Professional Zooarchaeology Group Meeting was organised and hosted by Vida Rajkovaca (Cambridge Archaeological Unit) at the McDonald Institute for Archaeological Research in Cambridge, on Saturday, February 19th, 2011. The theme of the meeting was Butchery and was very well attended, with almost all of the recorded 29 applicants present.

Following a warm welcome from Vida and Dr. Preston Miracle, Senior lecturer, University of Cambridge and first time attendee at a PZG meeting, the morning session started with the first presentation by Prof. Tony Legge (Professor Tony Legge, MacDonald Institute for Archaeological Research, University of Cambridge). Tony discussed the concept of butchery in relation to his work on the animal bones from Haua Fteah in Libya and el-Amarna in Egypt. The contrast between the two sites is striking. In both sites, the bones are highly processed. At the Palaeolithic site of Haua Fteah, the fragments are small and there is considerable difficulty in identifying butchery traces. Most meat was removed by the severing of tendons, and the bones then smashed by percussion. At Amarna, while some butchery was done by muscle stripping as at the Haua, there as also more evidence of the use of choppers or cleavers on the bone. Amarna was founded by Akhenaten as a new religious centre, but destroyed after only 14 years of occupation at his death. As such it provides a glimpse into a very short and precise time period of Egyptian life. The animal bone data show interesting differences between different parts of the town in the distribution of the main taxa. In a house of a powerful and wealthy administrator, over 95% of the bones were from cattle. The main city and the outlying villages had a much more varied diet, with more pig and caprines. However, body part representation was good for the cattle at sites of both the high and low classes, while that for pig and caprines was much less complete. This cannot be explained only by dog gnawing, which is rare. Much remains to be explained. The main contrast was between these sites where butchery was by means of small flint tools, and those where heavy cleavers, probably of metal, were used to joint carcasses."

The second presentation was by Mark Maltby (University of Bournemouth), who discussed butchery practices in the Roman period, illustrating these with some animal bone assemblages he had brought for display. Mark highlighted the consistency of butchery marks between assemblages from major towns such as Cirencester and Caerwent, and some sites in Gloucestershire and Bedfordshire. The characteristic traces include heavy chop marks reflective of rapid disarticulation/dismemberment, skimming marks made with a heavy blade, resulting from filleting of meat, and axially split upper limb bones. These marks also appear on Roman sites much further afield, for example as noted by Sheila Hamilton-Dyer on donkey bones from Egypt, reflecting the spread of Roman specialist butchery techniques. He has also noted however that there is variation between sites and that the prevalence of particular techniques may vary within and between sites. For example, at Gloucester Eastgate, a remarkably high proportion of upper limb bones were split, while the frequency is less marked at Caerwent and Winchester. At Gloucester and at Wortley, discrete accumulations consisting solely of split upper limb bones have been found. This suggests that on some occasions large numbers of upper limb bones were collected to be processed to acquire marrow in bulk. Mark also highlighted that splitting of bones and blade butchery is not universal on all Roman sites and is much less prevalent, if not totally absent, from rural sites. For example, in the Bedford region such processing was absent from the majority of sites studied recently but has been observed in quantities comparable to major Roman towns at the site of Kempston, suggesting that trained butchers were present at what is now believed to have been a substantial roadside settlement. He also discussed the possible military origin of this butchery practice. Like Tony, Mark highlighted the problem of determining what constitutes evidence of butchery (eg. smashing), and the problems of recording butchery.

Mattie Holmes (University of Leicester, PhD student and free-lance zooarchaeologist) led us into the Saxon period, describing the results of her synthesis of Saxon butchery data and identification of techniques and processes, highlighting the challenges of using other specialist's data. For example, many reports provide descriptive data which is not conducive to quantification. Furthermore where quantitative data are provided, unless explicit it may be

difficult to know what butchery terms refer to. In terms of butchery traces and tools, she noted the continuity of heavy chopping into the Saxon period, particularly on cattle bones, and that knives were used for the smaller stock, sheep/goat and pigs. She also observed that the use of saws was used only for craft work. Some of the butchery processes were more or less difficult to identify. For example, only one cattle skull showed signs of pole axing and no hyoids were ever recorded as cut. Many skulls were smashed though whether due to deliberate slaughter or other taphonomic factors was rarely clear. Horncores were always removed and there is some evidence from the Middle and Late Saxon periods that these were removed with hides. She also noted a range of carcass splitting techniques, including in the early Saxon period paramedial (off centre) splitting probably reflecting the greater ease of chopping through the vertebral transverse processes. She suggested that mid-line splitting, traditionally thought to have begun in the 10th-11th centuries, was practiced probably as early as the 9th c. Bilateral splitting, removing the centrum is also evident throughout the period. Disarticulation procedures were difficult to define and she illustrated the most common locations of butchery. Splitting of metapodia and other longbones was most common in the Early and Middle Saxon periods, less so in the Late Saxon period, possibly because these elements were required for bone working. With regards to the use of raw materials, Mattie suggests that while there is no evidence for intensive carcass processing, craftworkers were present and that redistribution of raw materials, eg. horn, occurred. She also noted that antler offcuts were less common in the Late Saxon period than earlier periods, possibly due to an abundance of bone as raw material in the newly developing urban centres. In conclusion she noted that while butchery appears to have occurred on an ad hoc basis, there was some organisation in the redistribution of products. She highlighted the problems of quantifying butchery data, the potential biases caused by taphonomic processes and whether this would always be a limitation, and raised the question of how accurate we need to be in the detail of recording, and the extent to which butchery is restricted by anatomy.

Krish Seetah (University of Central Lancashire) continued the discussion of techniques and processes with his talk on butchery "drivers", in which he suggested we de-emphasise the focus on butchery marks themselves and instead emphasise process. He began with the question "how can we improve our interpretation of butchery from analysis of cutmarks", and encapsulated the variables involved in a neat little equation $(C+D+T)^{M}$=Butchery (C-cutmarks; D-drivers; T-tools; M-morphology). He suggests we must do more than just give an account of the location of cutmarks, and look at the drivers behind the traces-ie. why is butchery carried out in the way it is). He also observed that for him butchery is not a linear process, but a circular one in which for example changes in tools (eg. Tony Legges data), movement of peoples (eg. Mark Maltby on Roman butchery) may influence approaches. As case studies to illustrate the influence of different drivers behind butchery he discussed butchery practice amongst the Maasai in Kenya and a traditional slaughtering event, Koline, practiced throughout much of Slovenia. Here he discussed the theme of morphology and how this differed between the two groups. He noted that amongst the Maasai, tools were used on an ad hoc basis and that it is the distribution of body parts including organs which directs butchery. He noted that the presence of bone in the distributed cuts was considered desirable as these made soups tastier. Interestingly there is no concept of butcher as such, but anyone with a basic knowledge of butchery could undertake this. In the Koline tradition, in contrast, all bone was removed before distribution, though all other parts were used. Krish noted that in this practice there is no particular social hierarchy influencing access to particular parts, but that the same driver, morphology, consisted of bone removal in this case. Krish also raised other points, for example suggesting that shifts in tools and methods may derive from changes in the animal themselves (eg. size increase), rather than from changes in technology, concluding that both tools and morphology can influence techniques, and are not mutually exclusive.

Peter Popkin (Freelance zooarchaeologist) concluded the morning session with a presentation of digital resources for recording butchery. While agreeing with Krish about the focus on interpretation, he emphasised that we still require a recording system that allows us to document marks and a host of other variables, which allow to to define, compare and interpret processes and drivers. He began with a brief overview of butchery recording from the mid 20th c. Using the example of White's nine part study of North American aboriginal butchery, published in the 1950's in American Antiquity, Peter noted that reporting of butchery

during the 1950s and 1960s, generally consisted of detailed descriptions of traces and techniques. While difficult to use statistically, it is possible to derive some trends from such data, and Peter observed that the interpretations are superior to some of the work undertaken in recent times. In the 1960s, there was a shift to emphasising process. By the 1980s, researchers began to publish relative frequencies of butchered bones by species, a statistic still in use today. Peter discussed the 1988 report by Roel Lauwerier which includes an extensive compendium of butchery diagrams for cattle, by element, bone part and aspect and type of butchery mark, which a number of specialists currently employ, adding to or modifying where required. Peter showed us his own skeletal element diagrams published in Internet Archaeology, and then introduced his digital system (in Access), which consists of recording cut type and location by bone zones and aspect, and cut direction and orientation. This was followed by an overview of David Orton's recently published GIS skeletal diagrams (Internet Archaeology) which allow users to illustrate relative frequency of butchery tool type, element and/or element zone on a complete skeleton. This is useful for visualising location and intensity of butchery process. In 2002, Marean and colleagues published a different system (Yoshiko, A., Marean, C.W., Nilssen, P.J., Assefa, Z., and Stone E.C., 2002, The analysis of cutmarks on archaeofauna: a review and critique of quantification procedures and a new image-analysis GIS approach, *American Antiquity* 63(4), 643-663) based on proportion of bone surface (deriving from their 2001 work on MNE calculation), which allows calculation of cuts/%surface area, which holds potential for assemblage comparisons regardless of relative fragmentation. Turning to 3D modelling, Peter introduced Jane Steele's work on the recording of butchery traces on equid bones from Gough's Cave (Palaeolithic). She overlay these with areas of tendon and ligament attachment areas, which is an excellent way to visualise the relationship between traces and morphology, and while not completely novel, this potentially constitutes an excellent means of getting at the drivers behind the process (in this case the use of tendons). Peter concluded his talk with the question "why is GIS not used more commonly?". Up until recently, this has been in part related to the expense of software, however with free GIS packages now available, for example QGIS (www.qgis.org) and gvSIG (http://www.gvsig.org/web/home/gvsig-home/view?set_language=en) he suggested this should no longer be a problem and exhorted us to go forth, try GIS and develop new resources. 3D models of skeletal elements are also being created which might be used as the basis for 3D GIS analysis, for example the VZAP (Virtual Zooarchaeology of the Arctic Project; http://vzap.iri.isu.edu). See also: Betts, MW et al. 2011. Virtual zooarchaeology: building a web-based reference collection of northern vertebrates for archaeofaunal research and education. *Journal of Archaeological Science* 38, 755-762.

Following a delicious buffet lunch, including homemade baklava and brownies courtesy of Vida and her chef husband, the afternoon session began with case studies by PZG members. Jim Morris (Museum of London Archaeology, MOLA) described the very unusual assemblage of human and animal bones from the Royal London Hospital. Excavations yielded human burials and burials of bodyparts, which are not recorded in the hospital records. In addition to humans, a wide range of domestic and wild animals were used for dissection and display, including monkey, tortoise, guinea pig and other taxa. The presence of small, copper stained holes in some bones of animals and humans provides evidence of wiring up of specimens for display. Sliced sheep mandibles exposing the teeth and the internal tooth structure were present in abundance, as were sliced cow phalanges. Human remains included sliced vertebrae and crania. In order to record this unusual assemblage, and examine patterns in the distribution of elements and modifications on them, Jim and his human osteologist colleague developed a recording form for animals, which displays animal skeletons in similar anatomical layout to that of humans, adapted from earlier work by Helmer (Helmer, D 1987. Fiches descriptives pour les relevés d'ensembles osseux animaux. *Fiches d'ostéologie animale pour l'archéologie*, Série B: mammifères 1, 10. They recorded a range of cutmark types, including "hesitation" marks. The recording system provides an effective means of comparing and contrasting animal and human butchery in order to interpret medical training methods. One hypothesis is that students were practicing procedures on animals, possibly before they moved onto human cadavers. This and other hypotheses will be tested once the human bone analysis is finished. Jim concluded that the butchery data provides unique information about medical training, as the historical records are limited for example, to evidence for cagers or letters complaining about local theft of dogs.

Richard Thomas (University of Leicester) followed Jim's study with a discussion of hunting and butchery rites and processes amongst the Medieval elite. The zooarchaeological evidence neatly confirms the documented social hierarchy which dictated the dismemberment and distribution of bodyparts and organs of deer following the hunt, and is well illustrated by the predominance of deer hind limb bones, evidence of venison haunches, at many elite sites. Richard noted that elite practices changed over time as illustrated by his research at Dudley Castle and synthesis of other data. The zooarchaeological data from some sites shows that in the 11th-early 14th c. there was an even distribution of red deer body parts, whereas in the late Medieval period hind limb bones, evidence of haunches, predominated. This raised the question of where the other bodyparts went. Richard referred to Naomi Sykes' data for the presence of other bodyparts, for example shoulder joints, in keepers' cottages, while evidence for deer remains in urban sites, which include "a bit of everything", may indicate the presence of poached deer in town. The data suggest that following the Black Death, there was greater adherence to the "correct" procedures of acquiring venison as described in hunting manuals of the period. Richard explains the stricter emphasis as reflecting the concern amongst the elite to maintain their social position during a period of gradual erosion of aristocratic identity. Various laws were promulgated, for example the Ordinance of Labourers, Statute of Labourers, Sumptuary Laws, and the Game Law, in an attempt to control the behaviour and economic and social advancement of the peasantry. In addition, the elite adopted new or modified existing practices in order to define themselves. The zooarchaeological evidence shows that the drivers behind dismemberment and distribution were firmly embedded in social behaviour and social structures.

Our host, Vida Rajkovaca, contributed the third case study which focussed on a settlement on the western Fen edge, Cambridgeshire spanning in date from the Early Bronze Age, through to the Early Iron Age and Middle Iron Age. The developer funded excavations revealed a very large settlement, in which three Middle Iron Age roundhouses and associated pits are of particular interest. These yielded over 50% of the total faunal assemblage. The assemblage from the bottom of one particular dump (pit) consisted of 714 fragments of disarticulated animal bone and one polished human cranium. The bone was in pristine condition (no gnawing marks) and there is evidence for standardised butchery of cattle pelves. A total of nineteen pelves show the same location of butchery through the acetabulum and ilium. Vida noted that a number of interpretations might be possible, including a standardised Iron Age butchery process, practice by a singe individual, and or possible evidence for feasting. There is certainly evidence for a level of knowledge and skill; Sylvia Warman noted that the location of butchery corresponded to the fusion areas which would have constituted the weakest points in the bone structure. Mark Maltby noted that the butchery marks were unusual for the period, and that we should consider why that might be, for example possible preservation of meat (eg. salting). There is no evidence of briquetage on site, yet other ways of preserving could have come into play. This study is a good example of how butchery evidence plays an important role in interpreting socio-economic activities within the community and the level of specialisation in certain aspects of food production.

Following the case studies, participants were treated to a tour of the zooarchaeology laboratory by Preston Miracle and Jessica Rippengal, laboratory technician responsible for all of the laboratory facilities of the department. The excellent collection is used by research students as well as by commercial zooarchaeolgists. As an example of some of the work being undertaken in the laboratory, Tony Legge displayed and discussed some of the specimens from the Haua Fteah assemblage. The tour was then followed by an excellent tea/coffee break during which copious amounts of biscuits and desserts were provided, preparing us well for the Round Table session.

Preston Miracle chaired the Round Table on the development of a butchery recording system. In keeping with the ethos of the PZG, the session was aimed at developing tools and procedures that support professional, in particular commercial practice, and enhance the information potential of the mass of data generated by developer funded excavations. The discussion began with personal introductions and descriptions of members own methods. This proved to be a very useful process (thanks to Fay Worley for suggesting this), as recurrent variables and methods were mentioned, problems described and new ideas proposed. Members described a range of materials on which they are working/record

butchery (eg. bird bones, Palaeolithic remains, human bone, fish bone) and topics which they are attempting or would like to explore through butchery analysis, for example butchery expertise (and the difficulties of recognising and interpreting this), culture change in time and space, standardisation of butchery and control of meat distribution, the meaning of butchery traces on human bone, Late Industrial processes, to name just a few.

A range of approaches for recording butchery are currently in use, including custom-made and institutional databases, free-hand description and illustrations. Some of the more common systems include:

- the "Maltby" or "Bournemouth" method, which consists of a "string" of information, including location, type of mark, depth, and interpreted action. Many members currently use or have modified this sytem;
- Lauwerier's system which includes of a range of drawings for each element, indicating location and type of mark. These may be modified or added to by those who use them;
- the MOLAS Oracle database;
- and published element zones.

Many members rely solely or in part on detailed descriptions of butchered specimens. Many also draw individual butchered remains, some take photographs, while fewer currently employ more sophisticated methods such as 3D imaging. Suggestions for digital recording include using drawing software, layering of images of butchered elements and GIS (see above).

A number of variables recurred in the discussion, with location and type of mark being the more commonly highlighted, with orientation, angle, depth also mentioned. Some members also provide an interpretation of the intended action when recording butchery traces.

Though it became apparent that most members recorded certain variables as a minimum, as might have been expected the discussion revealed just how complex the analysis and interpretation of butchery traces actually are. A number of cautionary remarks/queries were made, for example:

- whether we all define marks in the same way; for example what is a "fine cut"
- we need to include "ancient breakage" even where a specimen is not obviously chopped
- how much precision is required when recording location
- that the recording method and variables will depend on the period studied
- there is restricted time for recording butchery in commercial practice, and we need academic papers to justify the time spent.

To conclude the session, it was decided that a small group of members led by Mark Maltby, will head up a "butchery group". As an initial step, a questionnaire will be sent to members regarding their methods of and aims and aspirations for butchery recording and analysis. The group will collate and provide lists of variables and definitions which will be sent to members to comment on and which will form the basis of a protocol. This could be developed into a butchery standard or technical paper. A copy of the questionnaire is produced below.

Any other business

A few items were mentioned at the close of the meeting:

- **The next PZG meeting** will focus on Taphonomy and is scheduled for July 16th in York. The meeting is being hosted by Terry O'Connor and members willing to help with the organisation and/or contribute presentations should contact Terry at tpoc1@york.ac.uk.

- **The reference collection resource** for the PZG webpage is being developed by Fay Worley who has received information about 14 collections to date. Please send information about your organisation's reference collection, or own personal collection if available to external zooarchaeologists, to Fay at fay.worley@english-heritage.org.uk.

- **The PZG membership policy** has been revised in response to numerous enquiries from graduate and postgraduate students. We have decided to widen membership to include students who do occasional paid zooarchaeological work, as the benefits are manifold, for them and the wider profession. Membership will provide the opportunity to network and

make contacts in the profession, gain insight into professional opportunities and practice, and view reference collections and facilities in various organisations. Perhaps most importantly, once graduated they will be known amongst the professional community and have access to continuing support and training. However, priority will be given to professional practitioners (employed, unemployed or free-lance) for attendance at PZG meetings as the aim of these is to provide support and training to the professional sector. The membership policy is now posted on the PZG webpage.

Additional items of interest

- **Short case studies** relating to the meeting topic are a useful way of being made aware of members work and new data. We suggest that part of each meeting could be dedicated to hearing from members in this way.

- **Next AEA meeting**, organised by Preston Miracle, will be held at St. John's College, Cambridge, on April 16th, 2011. The topic is The Archaeology of Hunger.

Minutes submitted by Polydora Baker, March 17th, 2011

PZG Butchery Questionnaire

As a consequence of the PZG meeting in Cambridge on 19th February 2011, we were asked to carry out a survey of current practice in recording carcass processing within zooarchaeological analyses and reports and how happy you are with what you do. Please answer the questions below in as far as they are applicable to your studies. We will collate the information and report back to the group in due course.

It may take you a bit of time to fill these out, but it would be great to get as broad a survey as possible.

Please return your questionnaires to Poly at the PZG address (PZG@english-heritage.org.uk).

Thank You

Mark Maltby
Polydora Baker

PZG Butchery Questionnaire

1 - What kinds of question are you trying to answer through your carcass processing analyses? Are there further questions you would like to answer, but don't using your current methods?

2 – What and how do you record?

What do you record? (i.e. what variables have you included when recording carcass processing marks?). Variables could include (list not exhaustive):	**How do you record? (eg ; presence/absence, "strings" of codes; summary codes; predefined 'drop down' lists digital drawings, GIS, photos, sketches, freehand descriptions or any combination of these and others**
a) types of tool marks (cuts, chops, metal, stone etc)	
b) location (zone, aspect, direction)	
c) nature of marks (depth, angle, frequency)	
d) breakage (fragmentation, fracture patterns)	
e) other please specify below	

4 - How do you manipulate these data to make interpretations? (i.e. what kind of summary data do you derive from the raw data? Do you quantify the data in any way?)

5 -What problems or limitations have you encountered with your methods in attempting to analyse carcass processing?

6 -What software do you use for any part of recording, analysis and presentation of carcass processing data?

7 - Have you described your methods in any publication? If so where? (State if you would be happy for the reference to be included in a list of sources that could be produced from this survey)

8 - Any other comments?
These can include whether you think:-
a) (some degree of) standardization is a good idea:
b) what the minimum amount of data recorded should be
c) whether or not some sort of consultable databank would be useful (similar to those available for metrical data) and, if so, what it should contain.
d) anything else that occurs to you!

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