Osteological Assessment of the Cremated Bone from Rotherwas Access Road, Herefordshire.

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Abstract

An analysis of the cremated bone from Rotherwas, Herefordshire (Grid Reference SO 35330 23790 to SO 35050 23660), recovered during an excavation undertaken by Worcestershire Historic Environment and Archaeology Services from 16th October-1st December 2006 and 26th March – 11th July 2007, was carried out in order to quantify the material excavated with the aim of identifying the bone present as well as providing information on pyre technology and funerary rituals. The deposit was thought to date to the prehistoric period.

Oxidised bone was recovered from two contexts, [1126] and [1110], which formed the primary and secondary fills of pit cut [1109]. No fragments of urn were recovered from the pit and there was additionally an absence of any significant quantity of pyre debris. Both fills contained only a very small quantity of bone and it was clear that the material present did not represent a complete individual. The majority of those fragments that could be identified were animal bone, probably ovine. There were a small number of fragments that could possibly have been human but could only be distinguished on the basis of cortical density, since observable morphological features or anatomical landmarks were absent. Age and sex could not be assessed and there were no indications of pathology. The majority of the bone present was observed to be fully oxidised and fissuring of the bone was present, suggesting that, despite the small quantity of fragments, the bone represented a cremation-related deposit.

In addition, unmodified human remains were also recovered from the surface of the 'Rotherwas Ribbon', represented by the distal third of a middle or proximal hand phalanx. The size of the fragment suggested the individual was adolescent or adult but no conclusive observations regarding the age of the individual could be made given an absence of an observable epiphysis.

Despite the lack of quantity, the presence of cremated bone may make an important contribution to our understanding of the use of the Rotherwas landscape during the prehistoric period. The analysis of the skeletal material suggests funerary rituals may have taken place in the neighbouring vicinity but if so, the bulk of the cremated remains representing the deceased do not appear to have been interred within the excavated area. The presence of unmodified human bone also indicates that there may have been other funerary rites carried out in the area, such as inhumation or exposure, but again the excavation did not reveal any further evidence for this. The data presented here can be integrated into analyses of associated archaeological finds and structures to give an insight into contemporary funerary practices.

Contents

1. Introduction

This report contains the results of the osteological analysis of the cremated bone recovered during an excavation of a prehistoric and Roman site at the site of the Rotherwas access road, Herefordshire (Grid Reference: SO 35330 23790 to SO 35050 23660) (Sworn *et al*., 2011) by Worcester Historic Environment and Archaeology Service, for which a full archaeological report is currently in preparation.

Two deposits of cremated bone (primary deposit [1126] and secondary deposit [1110] were excavated from a pit [1109] located to the west of two ditches (one possibly Iron Age and another Roman) and the 'Rotherwas Ribbon' (early Bronze Age) and to the east of an area of apparent settlement activity, including features such as a roundhouse and pits. The pit was sealed by a colluvial layer that has been broadly dated to the Iron Age. Neither urn fragments nor any substantial evidence of pyre debris was recovered from the pit containing the cremated bone. Dating of the associated features indicate that the cremated bone was likely to have been deposited during the prehistoric period and most likely dates to the Bronze Age.

The osteological analysis aims to provide a detailed description of the nature of the cremated bone present, to quantify and differentiate, where possible, between animal and human cremated bone, to assess the age, sex and presence of pathological changes and to identify any evidence of pyre technology used during the cremation process.

2. Methods and Process

The cremated material was analysed according to the standards laid out in the guidelines recommended by the British Association of Biological Anthropologists and Osteologists in conjunction with the IFA (Guidelines to the Standards for Recording Human Remains, Brickley and McKinley (eds) 2004) as well as by English Heritage (Human Bones from Archaeological Sites: Guidelines for producing assessment documents and analytical reports, Centre for Archaeology Guidelines, 2002).

- The material was analysed macroscopically and where necessary with the aid of a magnifying glass for identification purposes.
- The material was sorted into three fractions of 10mm, 5mm and 2mm using UKAS accredited calibrated sieves.
- The material was weighed using calibrated digital scales to an accuracy of 0.1g.
- The material was analysed without prior knowledge of associated artefacts
- The material was recorded on forms within an Access database submitted with the report

2.1 *Reasons for the Analysis*

Osteological analysis was carried out to ascertain:

- The type of deposit
- Total weight of the bone
- Identification and quantification of human bone
- Demographic data
- Pathology data
- Degree of fragmentation
- Efficiency of the cremation
- Presence and type of pyre goods
- Presence and type of pyre debris

3. Type of Deposit and Disturbance

3.1 *Introduction*

Recording of the type of deposit of cremated bone is necessary to make fair comparisons between different deposits from across a site, between one site and another and between cremated bone deposits from different historical contexts. Recording the type of deposit allows inferences to be made about the state of preservation of the material interred and how this may have affected bone content and fragmentation. This information is essential for accurate analysis of cremation processes due to diagnostic analytical techniques being based upon the weight and size of bone fragments present.

3.2 *Observations*

The nature of the deposit of the cremated bone was assessed during field excavation and recorded on the relevant context sheets. This information was subsequently classified according to the categories suggested by Brickley and McKinley (2004) and recorded on the database. The bone fragments under analysis were recovered from two deposits that either formed the primary and secondary fills of pit [1109] that was approximately 45cm in diameter and 11cm in depth (See Plate 1). Only a small amount of bone was present, with no evidence of urn fragments. Charcoal was presence in the fill was recorded as low level/occasional and some occasional small pieces of fired clay were also present. Root etching was noted on the majority of sizeable bone fragments present.

Plate 1: *Pit [1109] containing the bone deposit (WHEAS 2011)*

3.3 Results

It is difficult to state categorically the nature of the deposit; whilst it is clear that it represents the deposition of burnt remains within a pit, the overall quantity of bone present indicates that it is not the intentional burial of the remains of a complete individual, a hypothesis supported by the lack of any urn fragments or lack of concentration of burnt fragments within the pit. In addition, the near absence of charcoal in the fill also suggests that pyre debris is not present in any notable quantity (though it is interesting to note to presence of fired clay in small quantities). The deposit has, therefore, been recorded as a 'cremation related deposit'.

4. Bone Fragmentation

4.1 Introduction

The observation and quantification of bone fragmentation is essential in assessing its impact on the quality of the overall data retrieved from the analysis of cremated bone. It may also be an indicator of practices carried out during the cremation process and give an insight into pyre technology. Fragmentation of bone is assessed by sorting all bone fragments into three sieve fractions (10mm, 5mm and 2mm) and comparing the proportion of bone in each fraction (McKinley, 2004). Measurement of the maximum bone fragment length is also recorded.

The fragmentation of bone can occur for several reasons, i.e. from the raking of the remains during the cremation process, the collection and the subsequent interment of the remains, making it difficult to assess whether bone was deliberately fragmented as part of the cremation ritual (McKinley, 1994b; 2001). It is, however, generally believed that both the excavation and post-

excavation processes can lead to the largest amount of damage caused to the remains (Lange *et al.*, 1997; McKinley, 1994b).

4.2 Observations

Observations of the weight of bone present in each sieve fraction and the percentage of each fraction of the total weight of bone were recorded on the database.

Table 1 below summarises the results of the quantification of cremated bone present by sieve fraction weight and percentage of total weight:

Context	**1126**	**1126 <35>**	**1110**	**1110 <36>**
>10mm Weight (g)	1.7	0.9	13.2	4.2
>10mm Percentage of Total	*50.0%*	*14.3%*	*47.3%*	*17.8%*
>5mm Weight (g)	1.6	2.5	13.1	17
>5mm Percentage of Total	*47.1%*	*39.7%*	*47%*	*72.0%*
>2mm Weight (g)	0	2.5	1.2	1.9
>2mm Percentage of Total	*0.0%*	*39.7%*	*4.3%*	*8.1%*
Assessment of Bone Content Percentage <2mm residue	100%	100%	100%	100%

Table 1: *Fractional and Proportional Weights*

4.3 Results

These results indicate that the majority of the fragments were unsubstantial. Maximum bone size for the samples ranged from 12.5 – 30.1mm and estimated averages from 7mm-10mm. This small fragment size, in combination with the paucity of cremated bone present, will contribute significantly in limiting the results of the analysis for identification of species, age, sex and pathology. It was possible to re-associate two fragments of possible human long bone from context [1110] <36>. It is unclear whether the fragment had been broken as part of pre-depositional handling, *in situ* or during the excavation or post-excavation processes, however.

5. Identification and Quantification of Cremated Bone

5.1 Introduction

Cremated bone deposits have been found on frequent occasions to contain both human and animal bone remains. Often, particularly if the bone fragments are very small, it is not possible to identify whether bone is categorically human or animal. However, it is clear from the analysis of cremated

bone deposits that the deposition of both types of bone together is intentional and, therefore, it is imperative to approach the assessment of the cremated bone present holistically, as well as to attempt to identify human and animal elements.

An assessment of the quantity of bone recovered may give an indication of the state of preservation of the associated feature in which the bone was interred or, if recovered from relatively undisturbed context, may provide valuable information regarding cremation processes. This may relate not only to the actual pyre technology itself but also to the collection and ritual deposition of bone after the process was complete. McKinley (1993) found that modern cremation processes resulted in the production of between 1227.4g and 3001.3g of bone. From this she inferred that the cremation of a whole body and deposition of the remains in an archaeological context would realistically produce between 1001.5g and 2422g of cremated human bone. Whal (1988) found that average weights for cremated bone deposits dating to the Roman and Migration period from Suderbrarup, Germany were significantly lower, however; for men, 744.1g, for women, 472.2g and for children 224.4g (cited in Carnegie and Filmer-Sankey 1993). McKinley (2001) also notes that overall Bronze Age cremated bone deposits vary between approximately 50g-2500g.

Identification of particular elements of the human body serves to confirm the presence of human material and also may give an insight into any particular areas of the body, which may have been purposefully collected following cremation. The absence of elements, especially those that are smaller, may be due to the lack of their survival as a result of fragmentation during the cremation, post-depositional preservation conditions or may be due to their loss during the cremation itself.

5.2 Observations

The total amount of bone present in each context was weighed and subsequently analysed for identifiable fragments. These fragments were then weighed and recorded separately according the area of the body they originated from. Full quantification of bone is given in the database.

Bone from both the primary context [1126] and secondary deposit [1110] was recovered both by hand and through the processing of one environmental sample for each deposit, <35> and <36> respectively. The results are presented separately for each sample, though should be considered collectively for each context.

A summary of the quantification analysis is presented in Table 2 below:

Context	1126	1126 <35>	1110	1110 <36>
Total Weight of Cremated Materials (g)	3.4	6.3	27.9	23.6
Total Weight of Identifiable ?Human Fragments (g)	0.8	0	8.6	0.7
Minimum Number of Individuals	1	0	1	1

Table 2: *Results of the quantification of bone present*

5.3 Results

The total quantity of cremated bone present (61.2g) is very small in comparison to the 1000g or thereabouts generally expected from cremated bone burials containing complete individuals. None of the fragments present could be categorically identified as human due to a lack of observable morphological features (such as epiphyses or other anatomical landmarks). Human bone can, on some occasions, be differentiated macroscopically from animal bone on account of the density of the cortex (the outer wall) of long bone fragments. However, this method tends to discriminate positively for the identification of animal bone rather than conclusively identifying human individuals since there is invariably some overlap between the two given the potential number of skeletal elements. Animal bone can be distinguished from human bone at the microscopic level by comparing the circularity of osteons, with a correct classification of 76.5% of samples (Crescimanno and Stout, 2012) but this technique has not been applied to cremated bone at present.

Some long bone fragments found here in both contexts appeared to be of a similar density observed in human bone and the general shape of the fragments suggest that if human, the fragments may possibly belong to the upper limb, more specifically that of ulna, radius or possibly humerus. However, no diagnostic landmarks were present and based upon cortical density alone, this should be treated as a tentative identification.

Overall, a small number of fragments contained in both contexts [1126] and [1110] were identified as possibly human but no conclusive evidence was present to differentiate the fragments from animal species. There were no repeated elements present, so a minimum of 1 individual is represented in each deposit, if the identified elements are indeed human.

6. Demographic Data

6.1 Introduction

Demographic data recorded from human cremated bone gives an indication as to the age and sex of the individual. This information is derived from the macroscopic examination and metric assessment sexually dimorphic elements (e.g. Gejvall 1981; Van Vark, 1975) and Whal (1982) as well as analysis

of dental and bone development recommended by Buikstra and Ubelaker (1994). A large sample of well-preserved cremated bone deposits can provide a valuable insight into the demographic structure of the archaeological population and also into any ethnocentric funerary practices associated with the age and sex of the individual cremated.

6.2 Observations

Observations of material present and any indicators of age and sex were noted on the recording forms contained on the database. No fragments present were large enough to allow metric assessments to be undertaken so any observations were based upon morphological features.

6.3 Results

Age

No elements or fragments were present to allow an assessment of age in either context [1126] or [1136].

Sex

Sex could not be assessed from any of the fragments present in context [1126] or [1136].

7. Pathology Data

7.1 Introduction

Palaeopathology is the study of diseases of past peoples and can be used to infer the health status of groups of individuals within a population as well as indicate the overall success of the adaptation of a population to its surrounding environment. Pathologies are categorised according to their aetiologies; e.g. congenital, metabolic, infectious, traumatic, neoplastic etc. Any pathological modifications to the bone are described. The size and location of any lesion is also noted. Pathology data is usually restricted, however, by intrinsic nature of cremated bone, although if fragment size is large enough, pathological changes may be observed.

7.2 Observations

Observations were recorded on the forms contained in the database.

7.3 Results

No pathological changes were observed in any of fragments contained in either context [1126] or [1136]. This is mainly due to the small quantity of bone recovered and the small size of the fragments recovered from the deposit.

8. Efficiency of the Cremation

8.1 Introduction

Effective cremation of a human body requires basically two elements: burning at high temperatures and a sufficient length of time of the application of this heat. Differences in temperature and length of time of exposure will result in variation in how the bone is burned. Complete burning will result in complete oxidation of the organic element of bone, leaving the mineral portion remaining (McKinley 1994a; Lange *et al.,* 1987).

Holden *et al.* (1995a and 1995b) reports that generally, the range of colours seen in burnt bone relates to the temperature to which the bone was exposed:

Brown/Orange = Unburnt

Black = Charred (*c.*300°)

Blue/Grey = Incompletey Oxidised (*c.*600°)

White = Completely Oxidised (>600°)

The colour may vary from bone to bone as different elements of the body may be exposed to different temperatures for different lengths of time. It is, therefore, essential to record any differences in colouration according to skeletal elements affected and to the aspect of the element (i.e. interior, exterior) affected. The extent of the burning or oxidation of the bone represents the relative success of the cremation processed applied and contemporary knowledge of pyre technology.

Observations of dehydration of the bone should also be recorded. Shrinkage of bone due to dehydration can amount to a 25-30% decrease in cross-section width and accordingly approximately a 5% decrease in length (Lange *et al*., 1987). Evidence of dehydration presents itself on the bone fragments in the form of fissuring, transverse, concentric and parabolic cracking, especially on articular surfaces of long bones and cranial vault fragments (Lange *et al*., 1987; McKinley, 1994a). These are generally interpreted as occurring due to the result of cremating the bone when soft tissue was still present on the bone.

8.2 Observations

Observations were noted on the recording forms contained in the database. Generally, the bone was observed to be white in colour but some variation was noted. This variation occurred most frequently in the fragments of bone identified as being faunal. These fragments contained some blue-grey colouration in the centre of the cortices, exhibited as a result of being incompletely

oxidised during the cremation process. Observations regarding dehydration of the bone were also noted.

8.3 Results

The results of the analysis of colour variation in the fragments of bone suggest that the vast majority of bone present was completely calcined or oxidised (Murray *et al*., 1993). This suggests that the bone had been exposed to a temperature of at least 600° for a substantial period of time. It is noteworthy that the fragments of higher density and identified as animal bone were those exhibiting a variation in colour, such as blue/grey and black.

Fissuring and transverse cracking was present, however, on the vast majority of the elements contained in this context. This indicates that soft tissue was present on the bone when it was cremated. The presence of both transverse and longitudinal fissuring confirms that the bone has been cremated long enough for substantial amount of dehydration of the bone to occur, in concordance with the coloration of the bone.

9. Presence and Type of Pyre Goods

9.1 Introduction

Pyre goods are those items that were placed on the pyre and have been deliberately included for interment along with the cremated human bone. These can consist of objects manufactured from glass, ivory or metal, for example, which may have formed items of personal adornment. Metal items may only leave a trace of their presence in the form of staining on the bone, especially those manufactured from copper alloys.

It is most common for animal bone to be included with deposits of human bone (e.g. Wells, C 1960). It is generally perceived that these represent animal sacrifice or food offerings to the dead (McKinley 1994b, Bond 1994,). Williams (2005) has suggested, furthermore, that the deliberate admixture of animal and human cremated remains is deeply significant and may be associated with shamanistic rituals often observed ethnographically whereby not only can animals symbolically represent totemic ancestor lineages and but also both human and animal beings are seen to dynamically and mutually co-exist: ‘Animals were more than symbols of identity but agents of transformation, enabling the dead to be reconstituted into a new social status in death’ (Williams, 2005). The deliberate inclusion of animal remains is documented in Ibn Fadlan’s contemporary account of Viking cremations (Broendsted, 1965), which reveals that the dead were often cremated with their pets and that pieces of meat from sheep, goats or pigs were placed by the head as a food offering. Animal remains appear to have been equally important in the role they played in cremation rituals during the Bronze Age;

approximately 16% of burials of cremated bone contain faunal remains and typically include sheep or pigs and birds (McKinley, 2001). The lack of grave goods found during the Bronze Age compared with the presence of pyre goods indicates that their presence is strongly linked to the funerary rituals carried out through the cremation (McKinley, 2001).

9.2 Observations

Observations regarding the identification, quantification and percentage of identifiable animal bone present were recorded on sheets contained in the database.

9.3 Results

By Sylvia Warman

The hand-collected material from [1110] included 20 fragments weighing 13g that comprise fragmented shaft sections of long bones and some skull fragments consistent with a sheep-sized ungulate. The material from [1126] included 6 fragments weighing 4g that also appeared to be sheep-sized long bone shaft sections. The material from sample [1110] <36> comprised 13 fragments weighing 6.3g largely sheep-sized long bone shaft sections, with one skull fragment. It is likely the animal bone is from a sheep or goat but fragmentation and the lack of epiphyses prevented further identification. The thickness of the bone is consistent with an adult rather than juvenile specimen. All the fragments were burnt and white/grey or white/blue in colour some were fully calcined and some shrinkage/warping was visible. The bone fragments were not generally weathered but those from 1110 included some damage from etching by acids from plant roots; suggesting burial at a relatively shallow depth.

10. Presence and Type of Pyre Debris

10.1 Introduction

The presence and type of pyre debris is analysed in order to ascertain the nature of pyre technology and can be used to provide an insight into the type of deposit. Recent experimental reconstructions of pyre sites have determined that distinct features and types of debris can be left by former pyre sites and in particular that the use of different materials alters the type and form of deposit (Marshall 2005).

10.2 Observations

Observations regarding presence, quantity and type of pyre debris were made and recorded on the forms contained in the database.

10.3 Results

No pyre debris was observed to be present in the samples under analysis here, the context consisting entirely of bone fragments. Only a very small quantity of charcoal was observed to be present amongst the flot sample. This, unfortunately, prevents any inferences to be made regarding pyre technology employed at this site. McKinley (2001) noted in her experimental work that at very high temperatures, the combustion of wood is complete and the remaining wood ash can be completely blown away, leaving little carbon residue. The completeness of the process of oxidation of the bone and the presence of fissuring suggests that the bone is the product of a cremation process and that the remains this small quantity of bone was deliberately disposed of in a pit. Interestingly, a Saxon cremation pyre excavated from Suffolk produced 90g of small fragments of cremated bone (Carnegie and Filmer-Sankey, 1993), a similar amount to the bone present at Rotherwas and McKinley notes that cremated bone is a frequent inclusion within pyre debris and fragments are considerably smaller than that of primary burials (McKinley, 2008).

11. Additional Human Remains

Human remains were also recovered from context [1825], located on the surface of the 'Rotherwas ribbon' along with a flint and pottery assemblage dating to the Early Bronze Age (Sworn *et* al., 2011). Radiocarbon dating of a charcoal rich spread suggest the final phases of activity on the 'Ribbon' surface date to around 2100 to 1900 cal BC (Sworn *et* al., 2011). The remains consisted of a single fragment of the distal third of either a smaller proximal or larger middle hand phalanx. The bone was not cremated and was in an unmodified state. The distal joint surface was observable and no pathological changes were evident. Since the proximal end of the phalanx was absent it was not possible to identify the specific hand phalanx present or the age of the individual through epiphyseal fusion. The size of the fragment, however, suggests that the individual was likely to have been of adult or at least adolescent age.

12. Conclusion

Table 3 below summarises the findings of the osteological analysis of cremated bone. Oxidised bone was recovered from two contexts, [1126] and [1110] that formed the primary and secondary fills of pit cut [1109]. No fragments of urn were recovered from the pit and there was additionally an absence of any significant quantity of pyre debris. Both fills contained only a very small quantity of bone and it was clear that the material present did not represent a complete individual. The bone present was heavily fragmented and this fragmentation restricted the osteological data retrieved from the analysis. The majority of those fragments that could be identified were animal bone. There were a small number of fragments that could possibly have been human but could only be

distinguished on the basis of cortical density, since observable morphological features or anatomical landmarks were absent. Age and sex could not be assessed and there were no indications of pathology. The majority of the bone present was observed to be fully oxidised and fissuring of the bone was present, suggesting that, despite the small quantity of fragments, the bone represented a cremation-related deposit.

	1126	1126 <35>	1110	1110 <36>
Type of deposit	Cremation related deposit	Cremation related deposit	Cremation related deposit	Cremation related deposit
Total weight of cremated materials (g)	3.4	6.3	27.9	23.6
Quantification of bone -?Human (g)	0.8	0	8.6	0.7
Minimum Number of Individuals	1?	0	1?	1?
Demographic data: Age	Unobservable	Unobservable	Unobservable	Unobservable
Demographic data: Sex	Unobservable	Unobservable	Unobservable	Unobservable
Pathology data	Unobservable	Unobservable	Unobservable	Unobservable
Maximum Fragment Size (mm)	12.5	19.7	30.1	20.2
Degree of fragmentation – average fragment size (mm)	10	5	10	7
Efficiency of the cremation	Overall colour: White Blue/Grey (40%)	Overall colour: White Blue/Grey (20%)	Overall colour: White Blue/Grey (15%)	Overall colour: White Blue/Grey (10%)
Presence and type of pyre goods (g)	Animal bone: 1.6	Animal bone: 2.4	Animal Bone: 13.0	Animal bone: 6.3
Presence and type of pyre debris	None	None	None	None

Table 3: *Summary of the Analysis*

In addition, unmodified human remains were also recovered from the surface of the 'Rotherwas Ribbon', represented by the distal third of a single middle or proximal hand phalanx. The size of the fragment suggested the individual was adolescent or adult but no conclusive observations regarding the age of the individual could be made given the lack of observable epiphyses.

Despite the lack of quantity, the presence of cremated bone may make an important contribution to our understanding of the use of the Rotherwas landscape during the prehistoric period. The analysis of the skeletal material suggests funerary rituals may have taken place in the neighbouring vicinity but that the bulk of cremated human remains representing the deceased individual appear not to have been interred within the excavated area (or have not survived). The presence of unmodified human bone also indicates that there may have been other funerary rites carried out in the area, such as inhumation or exposure, but again the excavation did not reveal any further evidence for this. The data can also be integrated into analyses of associated archaeological finds and structures to give an insight into contemporary funerary practices.

Cremation was practised as a funerary rite throughout the Bronze Age, though predominantly in the early and middle Bronze Age periods, between 2500-700BC (McKinley, 2001). Evidence from this period suggests that large timbers, usually oak, were used to construct the frame of the pyre with brushwood infills of cherry, sloe and alder. In some cases during this period, mounds were constructed over the collapsed pyre containing the human remains, whereas in others remains were collected and interred. Redeposited pyre debris that has been recovered from ring-ditch fills, such as at Twyford Down, Winchester, where the line of tipping indicated that the interior area of the ring may have been used as a pyre site (McKinley, 2001). A small deposit of cremated bone dating to the Bronze Age was found in the fill of a Henge ditch in Castle Field, Stapleton, Herefordshire (Western, 2006). Pyre debris has also been noted to have been deliberately deposited in small pits as well as in the backfill of cremation burials. Mound burial was common during the Bronze Age and was an important means of creating monuments to the dead for the living in the surrounding landscape. Their substance, form and location would have important symbolic significance and would have formed part of the structured understanding of the environment and people's place in it (Tilley, 1994). It has been observed that many Bronze Age funerary landscapes would have been relatively open pasture lands (Parker-Pearson, 1999). Burials thought to date to the Early Bronze Age to Early Iron Age have been recorded at Stoke Prior, Bromsgrove, Worcestershire (WSM01718); Salter's Lane, Lower Moor, Wychavon, Worcestershire (WSM03255) and at Norton and Lenchwick, Wychavon, Worcestershire (WSM15459). A middle Bronze Age cremation cemetery has also been recently

discovered Tutnalls, Lydney, Gloucestershire (Geber, 2012) and Bronze Age urned cremated burials have been discovered in the Olchon Valley, Herefordshire. Here, several cremated burials were discovered within the turf layers of a secondary mound constructed over a stone cairn that in turn contained a primary multiple cremation burial within a collared urn vessel (Hoverd and Thomas, 2010).

During the Iron Age, burials of inhumated and cremated remains are both comparatively sparse. Some, therefore, suggest that excarnation was a predominant funerary rite during the period (Carr and Knuesel, 1997; Cunliffe 1991) with the deliberate interment of human remains representing a rare or unusual event, in some later Iron Age cases with violent and punitive overtones (Craig *et al*., 2005; Redfern, 2011; Western, forthcoming). Inhumations dating to the later Iron Age have been discovered in a natural stream bank, possibly forming a boundary, at Church Lench in Worcestershire (SP 0234 5235) (Griffin *et al.,* 2006) and at Wellington in Herefordshire (SMR No: 51633) (Jackson and Miller, 2004). The skeletons from these latter burials are not reported to exhibit trauma associated with violence and appear to represent a different mode of funerary rite to that found commonly at prominent hillfort sites such as Danebury, Maiden Castle or more locally, Sutton Walls, Herefordshire (Kenyon, 1950) and Kemerton Camp, Worcestershire (Hencken, 1938). Such isolated inhumation practices could relate to the nature of contemporary pastoral farming and dispersed settlement (Griffin *et al*., 2006) where scattered but discrete interment of partially complete cremated remains and inhumations may be located in natural or artificial features forming the boundaries of settlements (Wait, 1995; Griffin *et al*., 2006; Moore, 2006). It is generally observed that a re-introduction of cremated bone burial occurred during the late Iron Age and concomitantly the majority of inhumated bone dates to this period. Overall, burial of human remains during this period is idiosyncratic and sporadic, requiring contextualisation at a local level.

The osteological analysis of the oxidised bone deposit has proven to be beneficial and provides independent evidence for the practise of cremation during the prehistoric period in Herefordshire, raising questions regarding the nature of these deposits and local funerary rites:

- The deposit is now known to contain a small amount of cremated remains that do not represent a complete individual: what is the significance of this? Are there funerary monuments or features nearby?
- What is the significance of the animal bone in the deposit of burnt material?
- How does the cremated bone deposit compare to other features in the area?
- Does the context of this deposit reveal any spatial or temporal patterning in the ritual landscape during the prehistoric period?

The evidence presented by this analysis suggests that highly developed funerary rituals of symbolic significance had taken place at Rotherwas. It is clear that further research and the recovery of more comparable material would allow a greater insight into burial practices of this nature in the Herefordshire area to be reached.

13. Future Recommendations

Due to the lack of direct evidence for the deposit of oxidised bone and given the rarity of the find, it is recommended that independent dating (e.g. radiocarbon or AMS dating) be undertaken to confirm the date of the bone.

14. Acknowledgements

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THE ARCHIVE

Type	No	Type	No
Basic Context & Weights Recording Form	1	CD-Rom Database	1
Bone Fragment Analysis Recording Form	1		
Pyre Technology Recording Form	1		

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