The Bioarchaeology of Early Medieval Cremation Practices in England

Kirsty Squires

Cremation was a dominant mortuary rite in England from the fifth to early seventh centuries CE. A notable characteristic of cremation practicing communities is the large cemeteries where the living interred the cremated remains of the dead, alongside grave- and pyre-goods, and animal offerings in pottery cinerary urns. Yet despite the wealth of information that can be obtained from material culture and human burnt bone, this funerary rite has historically been largely ignored in favour of the contemporary inhumation rite. Where cremation is studied, there is an overreliance on the rich data from the Spong Hill (Norfolk) cemetery. As a result, our understanding of social identity is skewed towards inhumation practicing groups and those that buried the dead at the aforementioned site. However, in recent years there has been a gradual shift towards the study of other sites and the application of analytical techniques to better understand social identity and demographic makeup of these groups, and the cremation process itself. It is clear that we should not treat cremation as the poorer relative of inhumation, given the largely untapped potential of cremated human remains and associated funerary assemblages.

bioarchaeology, human remains, cremated bone, cremation process, social identity, early medieval.

Introduction

FL: Could you introduce yourself and your work relating to early medieval cremation burials?

KS: My name is Dr Kirsty Squires; I am currently Associate Professor of Bioarchaeology. I started my journey into cremation studies when I was enrolled on the MSc in Human Osteology and Funerary Archaeology course at the University of Sheffield. For my dissertation, I decided to write a project focusing on the early medieval cemetery at Elsham (North Lincolnshire). I analysed 300 burials, as I hoped to gain a more comprehensive insight into the site's burial population. The cemetery hadn't been studied since it had been excavated in the mid-1970s, bar Mary Harman's (n.d.) initial assessment of the human remains. I was interested in looking at additional associations in terms of demographic patterns with grave-goods and pyre-goods as well as the variation in the cinerary urns. I became particularly interested in cremation after that and I pursued this further during my doctoral research (Squires 2011). This allowed me to investigate both the

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Elsham and Cleatham (North Lincolnshire) cemeteries in their entirety, analysing all burials and all individuals. In total, 1,545 individuals were analysed. I was looking for associations between demographic characteristics, cinerary urns, animal offerings, grave- and pyre-goods, and spatial organisation. I was especially interested in pyre technology: here, I used histomorphology, as well as FTIR (Fourier-Transform Infrared) Spectroscopy, which allowed me to answer questions about the cremation process itself (e.g. see Squires *et al.* 2011). Throughout the early stages of my career, my primary research focus was early medieval cremation practices, though this is not so much the case anymore. I'm still carrying out smaller research projects in this area, especially around pyre technology, the information we can extract from burnt human remains, as well as the social identity of children from this period.

Interpreting early medieval cremation practices

FL: Which site in your research area featuring cremation burials deserves more attention, and why?

KS: ~~Not that I'm biased or anything, but~~ I think Elsham and Cleatham definitely need more attention. Even now, where we are seeing greater focus on early medieval funerary rites and cremation more broadly, both Elsham and Cleatham (and even smaller early medieval cremation cemeteries) are still neglected, despite the wealth of information we now have about the dead and the cremation rite. Publications that have been released over the past few years where cremation is addressed continue to concentrate on Spong Hill (e.g. Sayer 2020). This situation persists in limiting our understanding of the cremation rite and the identity of those that practised it during this period in parts of England. I do think we need to be promoting these other sites and encouraging researchers to study them further. A good example is research currently being undertaken by Tessi Löffelmann at Durham University/Vrije Universiteit Brussel, who is conducting isotope analysis on a sample of skeletal remains from Cleatham (e.g. Löffelmann 2023 and this volume) as part of a larger project that explores mobility and funerary rites in the medieval period. So, we are slowly starting to see more work being conducted on skeletal assemblages other than Spong Hill, but there is still a way to go.

HW: It's the whole site-type curse, it's a blessing that Spong Hill has been so extensively excavated and analysed of course (McKinley 1994; Hills and Lucy 2013), but it also has a stranglehold on our interpretations and broader research agenda (see also Harland this volume).

KS: Definitely, whilst individual site studies are very valuable, I do think we need to move away from this approach and look at the bigger picture. The focus on Spong Hill creates a tunnel vision, perpetuating the assumption that if it has happened at Spong Hill, it must have happened everywhere, and that's not the case. This is evident from biocultural associations observed at Spong Hill in comparison with Sancton I (East Riding of Yorkshire), Elsham, and Cleatham (Squires 2013).

FL: In that way, Spong Hill, unfortunately, can dominate perceptions of what cremation burials in the whole of southern and eastern England are like at this time.

HW: What's your take on why cremation cemeteries are comparatively larger than contemporaneous inhumation burial sites?

KS: I think the cremation cemeteries were being used by multiple settlements as opposed to a single settlement (Squires 2012). Here, Elsham and Cleatham are very interesting as they are so large, and they are only about 12 miles apart: they were clearly accommodating large numbers and populations from multiple settlement sites. Based on McKinley's (1994: 69–71) work on the Spong Hill cemetery, Leahy (2007: 32) suggests that such cemeteries were likely used over a 150–200-year period. Therefore, if Elsham and Cleatham were used for 150 years, three to four burials at Elsham and six to seven interments at Cleatham would be taking place each year on average (Squires 2012). So, this is quite a lot for a single settlement, and so we estimate there are multiple settlements served by these cemeteries. I'm not sure of the reason for that, certainly their key location in the landscape played a role but I think there may have been other significances to the choice and importance of these locations (see also Williams 2002; Perry, this volume).

FL: You have pointed out interesting patterns of gender and age differentiation between cremation and inhumation burials. Could you elaborate and what is your interpretation of these patterns?

KS: What I find interesting about cremation is the lack of dichotomous gender categories, which is in contrast to the inhumation rite. In the cremation rite, the display of gender is more muted in the burial context. Instead, age and life cycle appear to be more important, or at least it's more evident, when we look at funerary offerings and cinerary urns. For example, juveniles are buried in smaller pots (Squires 2013; also see Perry, this volume). Of course, they produce less bone than adults, but there appear to be clear gradations in terms of the increasing height of cinerary urns assigned to individuals at different life stages (Squires 2013; Squires 2014; Figure 11.1). We also see that children were less likely to have been interred with animal offerings than their older counterparts, and

were afforded a more limited range of grave-goods/pyre-goods. Furthermore, where infants and children were provided these goods, they are more similar to the female types of grave provisions (Squires 2014). Obviously, there is variability, but these young individuals were most typically found with beads, rings, combs, and spindle whorls: objects typically associated with females and domestic contexts (Crawford 2008; Squires 2019).

I think objects afforded to the dead were carefully curated and reflected their social identity, their role within society and, how much they contributed to their household or society more broadly. For example, infants and young children have closer ties with the home as they are more likely to have spent much of their time within the domestic sphere than going out and participating in agricultural activities or other more physically demanding tasks (Squires 2014; Squires 2019). In my analysis, these social roles and the perception of the youngest members of society would have influenced the funerary offerings and whether and how these individuals were cremated.

As previously mentioned, gender-related associations between ~~the~~ skeletal remains and associated funerary assemblages tend to be more muted in the cremation rite. With regards to females, their assemblages were more akin to what we are used to seeing in inhumations. For example, jewellery: rings, brooches, beads, and objects related to female-oriented domestic tasks, such as spindle whorls. In terms of male grave assemblages, things aren't as clear cut; for instance, weapons and knives aren't as common as we see in the inhumation rite. At some sites, sets of miniature toilet sets are associated with males but at other sites they are not (Squires 2013). At Cleatham, 67% of individuals found with a miniature toilet set were identified as males, whereas similar frequencies were recorded as female from Elsham. Now, the numbers are very small, and this is one of the issues of looking at biocultural associations amongst cremation practicing groups. Specialists must be able to identify these distorted pyre-goods in the first instance and, secondly, osteologists need to be able to determine the sex of the deceased individual, which can be very difficult because the remains are fragmentary and sexually dimorphic characteristics may not survive. This is a real challenge, and we must be careful when looking at the associations between demographic traits and grave- and pyre-goods.

FL: In one of your papers, you discuss a special relationship between animal offerings and certain demographics, could you elaborate?

KS: I find animal offerings really interesting as they seem to have played an important role in the cremation rite (see also Croix, this volume). At several cremation cemeteries, accessory vessels containing cremated horse bones have been recorded (Squires 2011). The burning patterns on faunal remains are, in itself, intriguing as they were less intensely burned than the associated human remains. It would appear that the duration of cremation of the human and associated animal offerings was the same but given the large size of some animals and/or their position on the funerary pyre, the bones were not given the opportunity to undergo complete calcination (Squires 2015: 164). Unfortunately, this has not been studied in great detail to date, but is an area I intend to investigate over the coming years. As previously mentioned, infants and children were less likely to be offered animals at the funeral. Similar to the muted gender associations observed when examining pyre- and grave-goods, there wasn't really any distinction in terms of the frequency of animal remains between males and females at Elsham, Cleatham and, indeed, other contemporary cremation cemeteries (Squires 2013). Where species could be identified (i.e. by me, as the faunal remains are awaiting a comprehensive zooarchaeological analysis), there were no clear links between the biological attributes of the dead and species offered. Yet, despite this, there are clearly trends over time. In total, 24% of early medieval cremation deposits that I looked at in England contained animal offerings (Squires 2016). I compared this with cremation cemeteries on the Continent. In Roman Germany, 74% of cremations contained animal offerings, though this figure is drastically reduced at Migration Period sites (7%) (Squires 2016). It therefore seems that in the early medieval period, cremation practising groups were holding on to this older tradition of cremating animals with the dead. This is of particular interest to me as it shows how beliefs, social structure, and identity evolved over time and this is reflected in the mortuary rites of past populations.

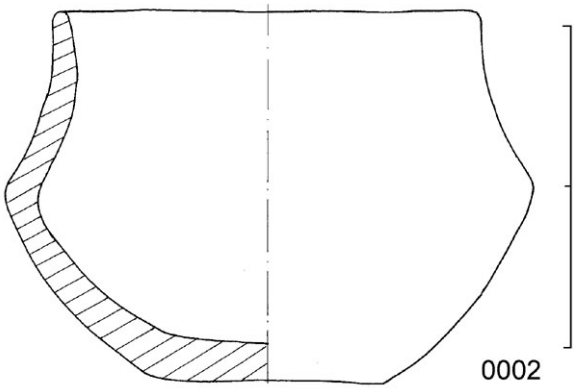

Figure 11.1: Urn 2 from Cleatham (North Lincolnshire) held the cremated remains of an infant (drawing courtesy of Kevin Leahy)

HW: Because you have determined that there is less of a gender-emphasis in the cremations, could that be in part

due to the contrasting preservation of the objects? As we gender graves according to the objects, and then when less objects are preserved, that could automatically lead to less of a distinction between burials?

KS: Certainly, the poor preservation of objects further compounds a complete understanding of how social identity was expressed in death during this period. In many cases, it is difficult to establish the sex of the dead for the reasons outlined earlier. Due to the shrinkage of bone during the cremation process, poor preservation, and the lack of surviving sexually dimorphic traits, individuals are undoubtedly misidentified as females (McKinley 1994: 68–69; Squires 2012: 336). This is a problem in itself. We then have to consider the preservation of the objects themselves, whether they were put on the pyre (and where they were, they are often damaged) and the remnants of some objects may not have been collected and interred by mourners. This highlights that there are many limitations and challenges when exploring the gender of individuals that belonged to cremation practicing households. At present, this ultimately means that we are only able to get a snapshot into gender identity of those offered the cremation rite.

The decline and end of cremation

HW: What is your take on social stratification as an explanation for the shift to inhumation burials in the sixth and seventh centuries (i.e. the decline and end of cremation in early Anglo-Saxon England)?

KS: This is something that can be observed in the funerary record and, in part, this relates to a couple of points I mentioned earlier about gender division being more muted in cremation burials compared to inhumations, and the burial of cremation practicing individuals in household plots. The latter, in particular, points to household identities with a lack of internal social divisions. In contrast, strongly gendered grave provisions and increasing amounts of wealth invested in the dress and personal effects offered at the funeral tell a different story. Here, I think inhumation practicing groups were showing not only their identity at the funeral, but their (and possibly their household's) social standing in the local area, and possibly shifting attitudes in ideological beliefs and kin identities (Ravn 2003; Squires 2013). This aligns with the notion that the reuse of monuments, particularly moving into the seventh century, may have been instigated by elites as a means of visually displaying their power and control, as well as connections with their ancestors (Hills 1997; Stoodley 1999; Härke 2001). Funerary rites may thus have been a means of reinforcing social stratification and conveying a multitude of social, ideological, and political messages to the living; and the living may have used these to reinforce their social standing within the local and regional areas through these rites.

FL: You are suggesting that inhumation burials would be seen as a better way to display status?

KS: Yes, I think this was the case towards the end of the sixth century and the beginning of the early seventh century. However, that is not to say that there weren't elaborate cremations; we know that there are examples of cremated horses and large numbers of cremation burials containing animal offerings. This in itself would have been a large investment in terms of resources (Squires 2013). It could be said that inhumation was a different way of conveying social and political messages, though the amount of investment placed in them is much clearer to archaeologists as they have not sustained damage caused during the cremation process. Additionally, the change in funerary rites and emphasis on displaying social standing could also have been linked to changing beliefs and a move away from an older ideology.

FL: Developing on this point, what is your take on using Christianisation to explain the disappearance of cremation burials towards the end of the Early Middle Ages?

KS: I think this is ultimately linked to the fragmentation and transformation of the body, which Howard has written about extensively (e.g. Williams 2003; Williams 2005). For example, he argues that the use of objects, such as combs and toiletries, was important in creating a new body and social identity whereas the inhumation practicing groups were burying their dead in an idealised, complete state (Williams 2005). While cremation alters the state of the body, Christian beliefs during the Middle Ages encouraged the conception of corporeal integrity which was necessary for Resurrection. I therefore think that Christianity was one of the main underlying reasons why cremation burials disappeared in the seventh century. However, the switch from cremation to inhumation wasn't immediate; we can see this at some of the higher status burial sites, such as the mixture of cremation and inhumation graves at Sutton Hoo (Suffolk) (Carver 2005) and the 'princely' chambered inhumation burial at Prittlewell (Essex) (Blackmore *et al.* 2019) where there was an interplay of Christian influences and pre-existing ideological beliefs and iconography (Sayer 2013). Again, this appears to be linked to social stratification and social standing of the dead more than personal faith.

FL: Recent research has focused on the long-durée perspective of co-occurring inhumation and cremation graves. The Early Middle Ages are no exception in the sense that co-occurrence of these rites is frequent. How do

you think this perspective changes our understanding of early medieval cremations and the burial ritual at large?

KS: I think that the co-occurrence of inhumation and cremation burials at the same site can provide an insight into social relationships and kin affiliations. Interestingly, at Cleatham inhumation and cremation were both practised throughout the fifth and sixth centuries, though only inhumation continued into the latter half of the seventh century (Leahy 2007). Inhumation burials were found throughout the cemetery amongst the cremated bone deposits. This ties into the notion that individuals were buried in household plots, that not only comprised of immediate family members but those that had developed artificial kin affiliations, such as affiliates, wet nurses, fosterers, and those responsible for childcare (Squires 2012; Squires 2019). Extended kin members may have held differential beliefs and social structure. Following death, they are likely to have been afforded funerary rites in line with their own social and cultural customs but interred in household plots with their kin group. I think increased awareness of co-occurring cremation and inhumation rites has highlighted that groups, and individuals, practicing cremation or inhumation did not live in bubbles nor were they segregated from those with differing beliefs or mortuary rites. The development of methodologies to further understand these relationships will be addressed below.

HW: Would you say that the (cremation) burial repertoires in North Lincolnshire are regionally distinct? How do they compare to surrounding regions?

KS: From what I have seen, in terms of the actual cremation process, it does seem to be part of a broader phenomenon, with some degree of variability. This is also evident through an examination of burning patterns and intensity exhibited on bones, fragmentation of human remains, and cremated bone deposit weight. All individuals buried at Elsham and Cleatham received an adequate cremation, in that there was no evidence of a failed cremation, though there was variability in terms of the intensity of cremation between human bone deposits (Squires 2015; Carroll and Squires 2020a). This could be attributed to the amount of investment placed in a cremation, for example the amount of resources, labour, and time invested in a funeral. For instance, individuals, perhaps of a lower social standing, may have received a smaller funerary pyre as this required less fuel and labour. These cremations may have been shorter and, consequently, the remains exhibit less intense burning patterns than, say, individuals cremated on a larger pyre for a longer period of time (Squires 2015). On a similar line, if the pyre of a person that was deemed to be of lower social standing was extinguished and the bones were 'adequately' cremated, but not calcined, mourners may not have invested in the time and labour required to ensure bones were calcined. This notion can be extended to the collection and interment of remains, when we look at the quantity of bone buried in urns, though there are many factors at play here, for example if mourners retained fragments of burnt bone, if bones were distributed between mourners, if bones were not collected from the pyre site, or if some cremated bone fragments were interred or scattered elsewhere (Squires 2015). There are some slight differences in terms of the artefacts that are buried with individuals, which could be explained through different local identities. One of the main challenges we face when drawing conclusions around regional variability, particularly concerning pyre-goods, is the small numbers of identifiable artefacts; this is something we must be mindful of when studying cremation burials. An examination of burning intensity and heat-induced changes to bone can further our understanding of the cremation process and social identity. It is clear that more work is required to compare and contrast variability in cremation technology within and between cemeteries.

FL: What's the role of historical sources in the interpretation of cremation burials?

KS: It's quite difficult to use historical sources when interpreting cremations from early medieval contexts as there are no contemporaneous sources. In my own research, I've had to refer to historical sources from different chronological periods and different geographical areas. Whilst these sources can potentially provide a glimpse into the cremation process itself and some of the challenges faced by these cremation practicing communities in England, we can't draw a direct comparison due to social and cultural differences between disparate societies (Squires 2019). However, textual sources can be useful as they highlight some of the considerations that populations had to make when cremating bodies. For example, in Tacitus *Germania*, written around AD 98, the author outlines the process of selecting different types of wood for the cremation pyre (Birley 1999). Indeed, this could potentially be explored further in the present context through analysis of charcoal recovered from early medieval cremation deposits. So, it sparks ideas in terms of future avenues of research. Overall, I think there is a place for historical sources when studying early medieval cremation, but we do have to use them with caution and cannot draw direct links between two disparate societies. The same can be said for ethnographic sources, particularly when we focus on the cremation process, pyre construction, and comparison of burning patterns on the body when an open-air pyre is used versus

cremation in a crematorium which allows for controlled burning (McKinley 1997; Williams 2016; Squires 2017).

Methodological advances

HW: What methodological advances do you see influencing the study of early medieval cremations in the foreseeable future?

KS: It has been incredibly exciting to see the methodological advances over the past ten years. In particular, the ability to apply isotope analysis to archaeological cremated bone has further demonstrated that analytical methods *can* be employed in cremation studies; these developments are thanks in part to the research carried out by Lise Harvig (Harvig *et al.* 2014), and Christophe Snoeck and the CRUMBEL team in Belgium (Snoeck *et al.* 2018; Snoeck *et al.* 2019). I think these developments will help us understand more about kin-associations, the movement of populations, and the identity of these cremation practicing groups. Furthermore, I think it is only a matter of time before we see studies that successfully extract aDNA from burnt bones. Research that focuses on burning intensity is integral here because it's difficult to extract aDNA samples from bone that has been subjected to high intensity burning. However, knowledge of burning intensity and the use of techniques, such as histomorphometry and FTIR spectroscopy, can be used to target samples of less intensely burnt bone, which is more likely to be useful in the extraction of genetic material.

The successful application of aDNA analysis in cremation studies would also open up new research avenues. For example, the sex estimation of individuals from cremation cemeteries, which at present is scant due to the reasons outlined earlier, would lead to a better understanding of bio-cultural associations and identities of these groups (Squires 2011).

In terms of my own research, I employ histomorphology, which involves cutting thin sections of bone and examining the bone microstructure as a means of establishing burning intensity. I have also used FTIR Spectroscopy with colleagues at Teesside University for the same purpose (Squires *et al.* 2011). The resultant data from these forms of analysis can be used to learn about the position of the body on the pyre and burning intensity more broadly. I have ~~recently~~ published a couple of papers with Emily Carroll, whereby we employed histomorphology and traditional colour (of bone) analysis to compare the cremation process during the Roman and early medieval periods (Carroll and Squires 2020a). It is interesting to highlight that there was clearly a difference between the samples from the different chronological periods. Roman-period communities were achieving much higher temperatures, potentially due to the use of professional cremators (or *ustores*) who were responsible for cremating the dead. The use of analytical techniques to explore variability in cremation conditions through time has also been explored by Stamataki *et al.* (2021), though the focus here was cremation during the Metal Ages in Belgium. It is essential that we start making use of these methods due to the wealth of information we can obtain from the resultant data. In the past, they have often not been applied because of the time and effort required to prepare the samples. Nonetheless, the advantages of this methodology are evident. Furthermore, Emily, as part of her doctoral research, has developed a faster and more standardised technique to prepare samples, which will hopefully encourage other bioarchaeologists to adopt histomorphometry in their own research (Carroll and Squires 2020b).

FL: How do you see advancements in isotopic study changing the way we look at (early medieval) cremations? What questions might this methodological advancement help us answer?

KS: The only thing I would add is that after so many years of research on artefacts from cremation cemeteries, it is nice to see more bioarchaeological and biomolecular work being carried out on cremated human remains. Ultimately, this will offer a more accurate insight into the lives and deaths of individuals that belonged to cremation practicing groups, and I'm therefore very much looking forward to seeing what new information we will learn about early medieval cremation practicing communities over the next few years.

FL: What's the most efficient way of burning a body?

KS: On an open pyre, potentially supine and extended would be best, because of the concentrations of fat in the abdomen. If a body is positioned atop a funerary pyre, the direct heat would have resulted in faster cremation, provided there were good oxidising conditions (e.g. through the use of under pyre scoops). In contrast, the body in a crouched position would have taken a little longer to cremate, because the body would have been flexed, resulting in tissue shielding; this, in turn, would have taken longer for the intense heat to reach the concentration of fat in the abdominal area.

HW: I remember Jackie McKinley saying there is not much evidence for variation in body position. But could we potentially see the difference between prone and crouched positions on the pyre? What would we be looking at?

KS: That is correct, I have yet to observe evidence of this from early medieval cremated bone deposits. To identify different positions on the pyre, macroscopic colour

changes (alongside histomorphometry and FTIR spectroscopy, e.g. Squires *et al.* 2011) can be examined to gauge burning intensity. Variable burning intensity will show which bone surface was exposed to direct, intense heat. For example, if the anterior surface of a femur fragment was white and fully calcined, we could conclude that this bone surface was directly exposed to high intensity burning as opposed to the posterior surface which may be greyish black, indicative of reducing conditions and less intense burning.

FL: What about weather conditions, did they affect cremation practices?

KS: This notion has interested me for some time. It is likely that weather conditions did play a role in the duration and effectiveness of cremations, and this may have also tied into the social standing of the deceased. For example, if there was a storm during the cremation of an individual and the pyre was extinguished, it is possible that mourners re-lit the pyre if the bones were perceived to be inadequately cremated (Squires 2017). It is worth highlighting that there is no evidence of 'failed' cremations from the period in question. In cases where individuals were of a lower social standing and the pyre died out before the bones had undergone complete calcination, the mourners may have deemed the remains to be sufficiently cremated rather than extend the funeral and relight the pyre. In contrast, mourners attending the cremation of an individual that was of a high social standing, may have waited for the rain to subside, or if it was very windy, they may have waited for it to calm down. Once inclement weather improved, they may have continued with the funeral and associated rites due to the social status of the deceased. This, alongside seasonality issues (e.g. fuel scarcity and greater number of deaths during the winter months) is something to bear in mind, as it may have impacted the burial ritual depending on the social identity of the dead (Squires 2017).

FL: We know that dating cremation burials is hard in most cases due to their preservation. If you could send in 100 samples for a free ^{14}C date, which site or/graves would you spend it on?

I think chronology can be challenging when dealing with early medieval cremation cemeteries, particularly as the individuals were buried in household plots. I would therefore identify several household plots and send them for radiocarbon dating to establish whether all of the urns were buried at the same time, or if some had been retained over several years or generations. On a similar line, I would also select multiple burials, which contained two or more individuals to determine if some of the remains had been retained by living relatives and buried at a later date.

HW: You've just come out of co-editing on global ethics in bioarchaeology and forensic anthropology, you have a unique position to offer a perspective on ethical issues regarding early medieval cremation practices. Would you care to comment?

KS: In the book, there wasn't much about cremation, I mentioned it in the destructive analysis chapter that I wrote with Thomas Booth and Charlotte Roberts (Squires *et al.* 2019), but I think there are a number of points that we need to bear in mind. Firstly, it's fantastic that we have new techniques at our disposal (e.g. isotope analysis, radiocarbon dating, and histomorphology), but we have to bear in mind that they are destructive, even though some of these methods require a small quantity of bone. This is particularly problematic as there are often smaller quantities of skeletal elements available for study and if one bone is used for sampling, there will be no bones available for future researchers who will have more advanced technologies than we currently do. In order to overcome this issue, researchers should only select a skeletal element if there are duplicates from the same individual, such as a left and right petrous bone ~~and only one of these is used in analyses~~. This is something I am extremely conscious of and when selecting dental samples for a project I am undertaking with a colleague at the University of Nottingham, I ensured the left or right equivalent tooth was present and there were five or more teeth, which is a challenge in itself but it is key that we think of the long-term preservation of skeletal remains for future generations.

Another challenge is the treatment and perception of cremated bone, largely due to its fragmentary nature. Given that it is difficult to visualise cremated remains as a complete skeleton, some do not excavate, handle, and even store the remains as carefully as they would if they were dealing with an unburnt, complete skeleton. Handling human remains is challenging due to the many fragments in larger deposits, but when removing cremated bone from receptacles, we must do so slowly and with care to avoid further breakage (e.g. the main image from a popular news item shows cremated bone being tipped out on to a tray; this speed of this is apparent and could lead to damage. Kennedy, 2018) There is much to be said about ethics of dealing with cremated bone, which has never been addressed. I am currently writing a series of ethical principles and guidelines that focus on cremated bone with Jackie McKinley, Charlotte Roberts, and Trish Biers. It is hoped this will be ready in the near future.

Conclusion

FL: Is there anything you would like to add to what we've talked about?

Site	MNI
Alwalton, Cambridgeshire	30
Snape, Suffolk	32
Rayleigh, Essex	118
Newark, Nottinghamshire	235
Sancton I, East Riding of Yorkshire	364
Mucking, Essex	403
Elsham, North Lincolnshire	564
Cleatham, North Lincolnshire	1,009
Spong Hill, Norfolk	2,284

Table 11.1: Minimum number of individuals from early medieval cremation cemeteries in England

KS: The only thing is to emphasise again that we need to be looking at different sites and not just type-sites, notably Spong Hill. Archaeologists and bioarchaeologists need to give Elsham, Cleatham, and other early medieval cremation sites a chance, as this will provide a more comprehensive understanding of this funerary rite.

Fact box

Where do cremations occur in your research area?

Cremations in my research area typically date to the fifth to sixth century CE (though the rite continues into the seventh century in some areas) and are predominantly found in the East Midlands and East Anglia, particularly in Norfolk, Lincolnshire, and the East Riding of Yorkshire.

In what quantities do cremations occur in your research area?

Some of the early medieval cemeteries where cremation is the dominant rite are very large, whilst others are much smaller (Table 11.1). The Spong Hill cemetery is the largest such site discovered to date where 2,284 individuals were recovered (McKinley 1994). The second largest cremation dominant cemetery analysed to date is Cleatham (MNI n = 1,009), followed by Elsham (MNI n = 564), which are just 12 miles apart from one another. The size of cemeteries where cremation was principally practised varied from thirty at Alwalton (Cambridgeshire) to 403 at Mucking (Essex). It is believed the Loveden Hill cemetery (Lincolnshire) housed over 1,000 individuals though the skeletal remains have all but vanished. I have contacted museums, archaeological units, universities, and councils up and down the country but there is no sign of these bones, and no one knows what has happened to them.

In what forms are cremations deposited in your research area? Are there any indications of pyres?

Cremated human bone may be deposited individually or in a pit with other cinerary urns containing human bone, and sometimes animal bone. So-called accessory vessels containing horses, are sometimes deposited in these contexts as well.

Very few cremation pyres have been identified from early medieval contexts in England, and those that have been uncovered have been identified with varying degrees of certainty (Squires 2011). These potential pyre sites have been noted at Sancton I (Myres and Southern 1973; McKinley 1993), Snape (Suffolk) (Filmer-Sankey 1992; Carnegie and Filmer-Sankey 1993; Filmer-Sankey *et al.* 2001), and Asthall Barrow (Oxfordshire) (Dickinson and Speake 1992). This raises many questions about the location of pyre sites as the archaeological evidence suggests that cremations did not take place at these cemeteries.

What types of containers are associated with cremations?

Cremated human bone was primarily deposited in pottery cinerary urns (which Dr Gareth Perry explored in another interview). These vessels were of differing forms and sizes, decoration, and some exhibited the use of lead plugs (Elsham: n = 7; Cleatham: n = 10) (Squires 2011). There were a small number of unurned human bone deposits. At Elsham there were 29 such deposits (5.3%) and at Cleatham only 13 deposits were found to be unurned (1.3%). At Elsham the quantity of bone deposited varied from 7.30 g (EL75AV) to 1,762.40 g (EL76KL(b)), while at Cleatham the unurned cremated human remains weighed between 1.80 g (MT85MI) to 790.80 g (MT84NA). These unurned interments could potentially represent redeposited burials. However, some of the larger quantities of bone may have once been held in organic bags or containers but, as a result of taphonomic processes, these receptacles have not survived.

Are there funerary monuments or other structures surrounding cremations in your research area?

Howard Williams (1997, 2002) has discussed this extensively in his own work. Early medieval cremation-dominant cemeteries are frequently located near prominent landmarks, such as prehistoric monuments, strategic positions in the landscape, and geological features. Elsham is positioned by a Roman road and there is a prehistoric ditch in the south-west corner of the cemetery; two Bronze Age inhumations were associated with this feature (Squires 2011). The Cleatham cemetery is situated within 500 m of the Mount Pleasant Roman villa and Leahy (2007) observes that masonry from the

villa was taken to the Cleatham cemetery. When the Cleatham cemetery was discovered by Trollope in 1856, there was some evidence of a tumulus. As Howard has noted in his research, these landmarks may have acted as features to demarcate the location of a cemetery or to act as a meeting place (Williams 1997).

Is there any noteworthy spatial patterning of cremation burials on the sites they occur on?

No spatial patterning of cremation burials has been noted to date. Individuals were not segregated or grouped together based on their age, sex, or gender. Instead, it would appear that individuals were potentially buried in household plots where immediate family and extended kin (i.e. non-blood related kin. Interestingly, the West Saxon law code *Ine* 63 notes the extended household of thanes, which may have some relation to earlier socio-cultural traditions (see Squires 2019). This has been observed at Mucking, Spong Hill, Cleatham, and Elsham. The use of biomolecular techniques may provide greater insight into spatial patterns at cremation cemeteries in years to come.

What trends can be observed regarding the occurrence of cremation burials throughout time in your research area?

This isn't something I focused upon but certainly needs exploring. When I was completing my doctoral research the Elsham pottery assemblage had not been fully assessed and it was beyond the scope of my research given the number of burials I had to analyse. However, some conclusions can be drawn between Romano-British cremations from Folly Lane (St Albans, Hertfordshire) and early medieval cremation deposits from Elsham. At both sites variable burning intensities were observed, but a greater number of individuals from Folly Lane reached temperatures over 1,000°C (Carroll and Squires 2020b). This may represent the use of *ustores* (or professional cremators) at the Roman town of Verulamium, which we don't see during the early medieval period (Carroll and Squires 2020a).

Where osteological data are available, is there any apparent selection of deceased according to their sex or age?

There is no apparent selection of the dead. Both males and females are represented at Elsham (58 adults, 18.1%) and Cleatham (147 adults, 29.2%), with a higher proportion of females from both sites (Squires 2012). This has similarly been observed at other cremation dominant cemeteries, e.g. Spong Hill, Sancton I, and Newark (Nottinghamshire) (Squires 2012). All age groups, including infants and children, were also recorded at each of these cemeteries. Older adults (e.g. individuals over 41 years old) are noted from Elsham and Cleatham, but are in very low numbers compared to those identified at Sancton I and, to a lesser extent, Spong Hill (Squires 2012). Trends in these data are addressed in a later question.

When objects occur with cremations, what type of objects are they? (do they tend to be burnt or unburnt?)

Animal offerings played a significant role in early medieval cremations in England and are found with all ages and both males and females (McKinley 1994; Bond 1996; Bond and Worley 2006; Squires 2013). These remains are predominantly burnt, that is, they were placed on the funerary pyre. Bone and antler combs are recovered in many cremated bone deposits. The majority of these objects are unburnt and are found with individuals of all ages, and both males and females. Howard (Williams 2003, 2005) has explored this in previous papers. All other objects offered to the dead were burned on the pyre. These items include beads (from jewellery), spindle whorls, rings, toilet sets and miniatures, brooches, and, less commonly, knives and weaponry. Many of these objects were taken from everyday contexts and the (functional) nature of many items may have been linked to the individual's identity during life (Squires 2011).

What relationship existed between inhumation burials and cremation burials in your research area? Do they occur on the same site, or even in the same grave context?

To my knowledge, all cremation dominant cemeteries also contain inhumation burials, though some occur in very small numbers, for example only one inhumation was identified at Sancton I (Timby 1993). Inhumations and cremated bone deposits are intermingled and used at the same time throughout much of the life of these sites. At Cleatham there was little association between the two rites in that urns were not found in inhumation burials. Leahy (2007) noted that where there was a relationship between inhumation and cremation, in that inhumations always cut cremations (n = 32). At Spong Hill, this also occurred on two occasions, though in 17 instances, cremations were cut into grave fills (Hills et al. 1984). In the majority of occasions, these appear to be coincidental, for example, unaware of the location of previous burials (Leahy 2007; Hills and Lucy 2013), though at Spong Hill this appeared to be intentional on eight occasions (Hills and Lucy 2013).

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