Interacting Barbarians
Contacts, Exchange and Migrations in the First Millennium AD

Neue Studien zur Sachsenforschung 9

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durch
Babette Ludowici

Interacting Barbarians
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herausgegeben von
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Universität Warschau

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Vorwort

Die wechselseitigen Beziehungen zwischen verschiedenen Völkern und Kulturen stellen seit Beginn der Archäologie als wissenschaftliche Disziplin zentrale Forschungsfragen dar. Die im Laufe der Jahre entwickelten Forschungsmethoden, so etwa typologische und chronologische Studien, Analysen der Verbreitung vorherrschender Kulturmerkmale oder materialwissenschaftliche Forschungen erlauben oft detaillierte Schlussfolgerungen. Sehr lehrreiche Resultate liefern vergleichende Studien, in denen die Ergebnisse archäologischer Forschung schriftlichen Überlieferungen gegenübergestellt werden. Aus diesem Grund umfasst der vorliegende Band, der die Beiträge zum 65. Internationalen Sachsensymposion vom 13.-17. September 2014 am Institut für Archäologie der Universität Warschau präsentiert, Zeiträume der Frühgeschichte und des Frühmittelalters. Der Band präsentiert für verschiedene Teile Europas im ersten Jahrtausend nach Christus im Überblick methodische Vorgehensweisen in Studien zu interkulturellen Kontakten und einen Vergleich von Ergebnissen und Folgerungsmöglichkeiten. Die Vielzahl der Themen, die Vielfalt der kulturellen Traditionen sowie der gegenseitigen Wechselwirkungen, die unterschiedliche Strahlkraft von Zivilisationszentren, aber auch abwechslungsreiche klimatische und geografische Bedingungen nebst materiellen Ressourcen in einem so weiten Gebiet lassen uns ein faszinierendes wissenschaftliches Abenteuer erleben. Im Sinne des Themenschwerpunktes des Symposion versammelt er „interacting scolars"!

Die insgesamt 31 Beiträge werden in vier Kapiteln präsentiert. Das erste Kapitel „Contacts" befasst sich mit einem breiten Spektrum von Kontaktverhältnissen in komplexen, oft interkulturellen Konfigurationen. Hier findet man Analysen von Beziehungen auf wirtschaftlicher, sozialer, politischer oder militärischer Ebene. Das Kapitel „Austausch" thematisiert den Transfer von materiellen Gütern (einschließlich Sklaven), aber auch von Technologie und Ideologie. Unter dem Titel „Migration" sind Beispiele für die Konvergenz der Forschungsergebnisse von Archäologen und Historikern zu Bevölkerungsbewegungen in verschiedenen Teilen des europäischen Kontinents versammelt; die Abhandlungen betrachten deren Ursachen, heterogene Mechanismen zur Verlagerung menschlicher Gruppen oder unterschiedliche Strategien zum Einleben von Neuankömmlingen unter neuen Bedingungen. Im Kapitel „New finds and Studies" werden neue archäologische Entdeckungen und Analysen vorgestellt. Die interessantesten Aufschlüsse und Einsichten ergeben sich oft an den Schnittstellen zwischen den historischen Fachdisziplinen und ebenso gibt es naturgemäß vielfältige inhaltliche Überschneidungen zwischen den einzelnen Kapiteln – aber eben dies ist der Mehrwert unseres Symposions.

Dass das Institut für Archäologie der Universität Warschau Mitherausgeber dieses Bandes ist, zeigt dass sich die vor einigen Jahren gegründete polnische Sektion des Internationalen Sachsensymposions fest etabliert hat und die in Polen durchgeführten Forschungen perfekt zum Themenschwerpunkt des Bandes passen. Schließlich haben Studien zu interkulturellen Beziehungen in der polnischen Archäologie und ganz allgemein in Mitteleuropa eine lange Tradition, wie beispielsweise die Forschung über die Migration der Goten, Studien über die sogenannte Bernsteinstraße oder Bevölkerungsveränderungen am Ausgang der Antike. Wir hoffen, dass dieser Band auf reges Interesse stoßen wird und wünschen Ihnen eine angenehme Lektüre!

Ins Englische oder Deutsche übersetzte Texte wurden von John Hines, Gundula Lidke und Clifford Sofield sprachlich überprüft. Ihnen sei hierfür herzlich gedankt.

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NEW FINDS AND STUDIES

Experimental cremations – can they help us to understand prehistoric cremation graves?

Mogens Bo Henriksen

Introduction

According to the Norwegian anthropologist Terje Oestigaard, "Cremation is not one, but many funeral practices" (Oestigaard 2013, 497). This seems to hold particularly true in the case of cremation practices in prehistoric Scandinavia. The huge amount of data from cremation graves, in museums and publications, illustrates a variety of practices connected to the cremation process itself, as well as procedures that followed the sorting of the pyre, including the construction of the grave. Probing deeper into the material, it becomes evident that cremation has several dimensions: technological, physical, social, religious, emotional, and probably even more. The central question is, is it possible to separate such individual dimensions in the archaeological record?

There are five primary questions to address when working with prehistoric cremations: *What* was the outcome of a cremation process? *Where* did the cremation take place? *How* did prehistoric man carry out the cremation process? *Who* was in charge of the cremation? *Why* did prehistoric man cremate human bodies? This series of questions reveals that cremation is a complex matter, and, as it is not possible to deal with all of these aspects in this paper, I shall focus on the how.

Many cremation graves

We have about 25,000 recorded cremation graves from prehistoric Denmark. The earliest examples are from the Mesolithic, and the latest cremation graves are from the late 10th century AD, the terminal phase of the Viking Period. Cremation was widespread if not dominant in the Late Bronze Age and the Early Iron Age in particular (ca 1000 BC – AD 400), but in the centuries of the modern era cremation was preferred only in some regions. We can observe the same tendencies in many other parts of northern Europe during this period.

Few pyres – an archaeological paradox

In contrast to the large number of graves, we only know a few dozen structures which we can certainly classify as pyre sites. In some cemeteries, deposits of pyre debris occur in pits or even layers, and this material is indirect evidence of pyres nearby which have not survived (Henriksen 2015).

The majority of the certain pyre sites in Denmark have been excavated beneath mounds, while others are preserved because they were sealed by wind-blown sand or eroded soil. Most of these pyres can be dated to the Late Bronze Age (1000 BC–500 BC) or the Late Iron Age/Viking Age (AD 500–1000). Almost all of the pyres had been constructed directly on top of the prehistoric ground surface, and in some cases post-holes with pyre debris show that there had been a stabilizing post construction within or around the pyre (Fig. 1). A very few pyres had been built over or even within a shallow pit; diffuse stone constructions are seen only in a few cases, and there is absolutely no evidence of furnace structures (Henriksen 2016).

The remains of the pyres consist of a black layer of pyre debris, which in most cases does not exceed 3 × 2 m in its dimensions, i.e. just a little more than a human body in a supine position (cf. Henriksen 2009, 82ff.). The thickness of this layer is 2–5 cm (Fig. 2). Under and around the layer of pyre debris there are often no more than sparse traces of effects upon the ground surface. However, if the construction included a pit in which glacial sediments were exposed to the fire, there can be traces of a reddish or a blackish colouring of the sides.

The contents of the pyre debris reveal that the burnt down pyres were not left without further treatment. The layers often contain only a small amount of burnt bone, and if pyre goods are present, these are also in a state of pars pro toto. We can therefore conclude that, in most cases, the pyre debris was sorted, and probably the majority of the human remains as well as the pyre goods were removed. In the Late Bronze Age in particular, a grave (an urn or a cist of stone slabs) was subsequently constructed in the sorted pyre, but the selected material was frequently deposited somewhere else.

The archaeological material from Scandinavia is comparable with the evidence from the rest of northern Europe in most respects. A prominent exception is the combined pyre and grave of so-called bustum type, which is known from the Roman Empire (e.g. Struck 1993) and from Early Bronze Age England (Dodwell 2012), but completely lacking in Scandinavia[1].

From the lack of definite pyre sites, some scholars have suggested that the widespread cremation pit graves of the Late Bronze Age and Early Iron Age were the actual sites of the cremation (e.g. Arcini 2005). Others have suggested that corpses were cremated in furnaces, which were also used for metal handicrafts, during the Bronze and Iron Ages (Goldhahn and Oestigaard 2008). But what does the archaeological record really

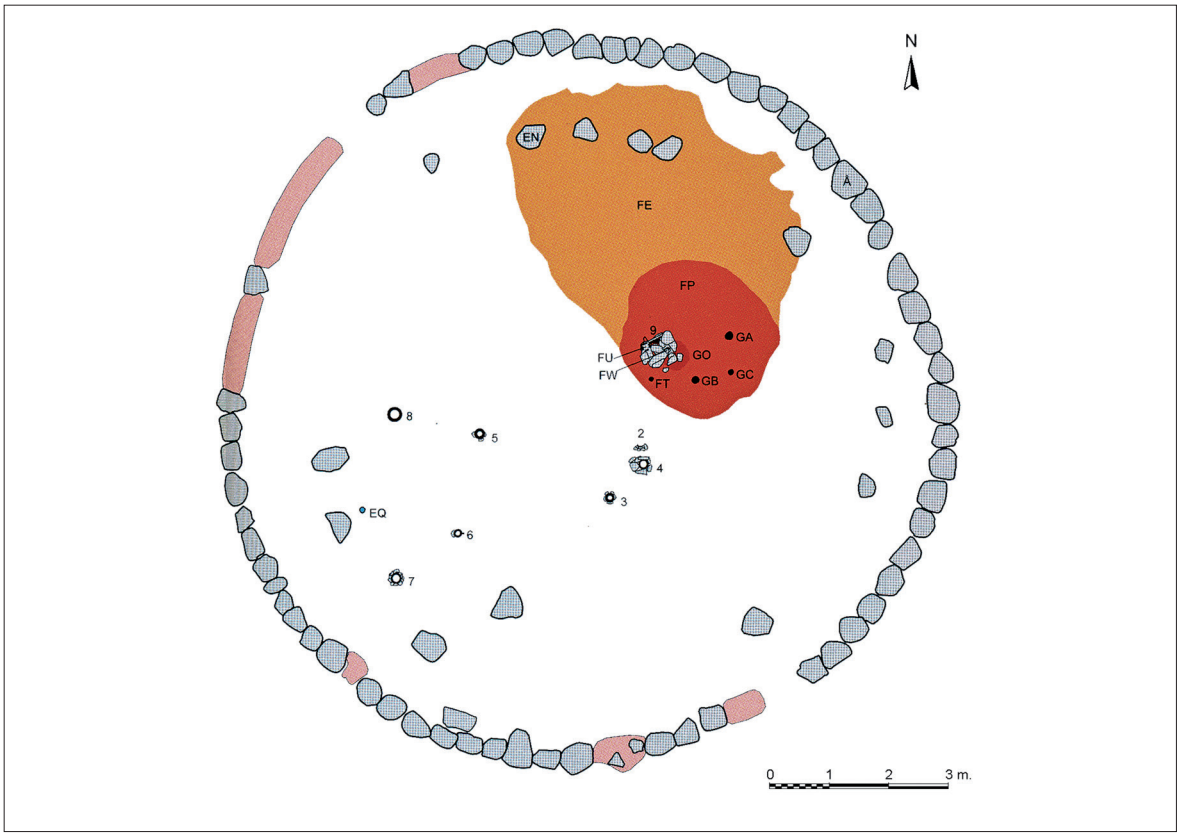

Figure 1. Late Bronze Age mound covering several urn graves (marked with numbers), a pyre site (FP) with a grave of stone-slabs on top of it (9). Inside the ash-bed there are four post holes from a supporting structure (GA etc.), and to the north-west of the pyre site a thin layer of charcoal dust (FE) was uncovered. Lerbjerg, southern Funen, Denmark (after Thrane 2004).

Figure 2. Partly excavated Late Bronze Age pyre site from Lerbjerg, Funen, Denmark (after Thrane 2004).

tell us: what are the facts, and what is only guesswork? A first step is to ask what we can deduce from a comparison of the definite pyre sites with the contents of the cremation graves.

With or without pyre debris

Traditionally, the construction of the cremation graves has been used to divide them into types – e.g. an urn grave, an urn cremation pit, etc. This kind of classification does not, however, provide any information about the process that created the individual grave. Using a different approach, I shall focus on the composition of inclusions in the graves, as this is what was intentionally selected from the pyre sites. The variables of this composition in cremation graves are:

- the amount, character and placement of burnt bones,
- the amount, character and selection of pyre debris,
- the selection, treatment and placement of pyre goods (if present).

Using such an approach, it becomes clear that we can identify two main groups of cremation graves, within which groups the burials can be sub-divided into types: one group of graves with pyre debris (sub-types: cremation pit and urn cremation pit) and the other group without pyre debris (sub-types: urn grave and bone heap) (Henriksen 2009, 67ff; Harvig et al. 2014).

Very few aspects of funeral practice are the results of coincidence, or of individual or spontaneous choice, so we can assume that the composition of the inclusions in the cremation graves is the final product of planned and targeted selection and collection. The contents of the graves thus primarily provide information about the post-cremation cultural and natural processes (cf. Schiffer 1987, 47ff.). The evidence raises a number of questions about what was the effect of the fire and what was a result of human intervention, and the answers to these questions are visible only to a certain degree in the archaeological data. In order to answer some of the questions, we must use approaches other than archaeological methods.

An experimental approach

In an attempt to find an answer to some of the problems presented above I have used data and observations from several dozen published experimental cremations that have been carried out all over Europe, especially in recent decades. Some of these are full-scale experiments involving complete carcasses of animals or larger portions of bone and tissue; others have only included soft tissue or bones from animals and/or humans. Unfortunately, with a few exceptions, the results of the experiments have only partially been published (Lambot 1994; Becker et al. 2006; Jonuks and Konsa 2007; Marshall 2011; Jæger and Johansen 2014).

In an attempt to find answers to both general and specific questions, I carried out four full-scale experiments with complete pig carcasses in the years 1989–92. In addition, since 2013 some small-scale experiments have been carried out, aimed at the investigation of specific issues (for terminology, see Marshall 2011, 14f.) involving only animal bones and tissue.

The experiments related to many questions:

- the construction and size of the pyre,
- the placement of the corpse,
- the course of the cremation (time, smoke, noise etc.),
- the effect of structures (a pit below pyre, supporting posts),
- the impact on the ground, fuel, pyre goods, and the corpse itself,
- the sorting process (whether complicated or not complicated),
- products from the pyre (amount and character).

In this article I will deal with a few of the results of experiment; the full data will be published elsewhere (cf. Henriksen 2016), but photographs from the experiments are available at my blog (http://blog.museum.odense.dk/mogens-bo-Henriksen/).

Experiment 1 – 1989

In Experiment 1 a pig of ca 65 kg and a glass bottle were placed in the uppermost part of a box pyre (for terminology see Marshall 2011, 16) that was constructed on flat ground. The dimensions of the pyre were ca 200 × 150 × 120 cm, and additional fuel was added during the process. After 7 hours, the carcass was almost completely burnt. 19 hours after lighting, the pyre had reduced to an ash-bed consisting of a few bucketfuls of charcoal and wood ash. The extent of the ash-bed was 300 × 200 cm and it was 12 cm thick (Henriksen 1991) (Fig. 3). Ash and charcoal were wafted away using a wooden board in the absence of a hide, and 995 grams of calcined bones were recovered, as was the completely melted bottle. The effect on the ground under and around the pyre was low, although a thin and brittle crust of burnt soil was visible here and there.

Experiment 2 – 1990

A pyre stack measuring 140 × 90 × 130 cm was constructed in a pit of 140 × 100 × 15 cm; the pit should help the flow of oxygen in the pyre structure. The 52 kg carcass of a pig was placed at the bottom of the pyre structure on a bed of straw and branches. To stabilize the structure, six vertical posts were hammered into the ground around the pyre stack. The pig carcass was dressed with a necklace of copies of Iron Age glass beads around its neck, and replicas of Iron Age vessels – a small cup, a large pot and a large sherd – were added to the pyre.

The pyre stack collapsed vertically during the process, and the supporting posts broke at the ground after about an hour. After 7 hours the cremation was almost complete, leaving just

Figure 3. The burnt out pyre of experiment 1 – in plane and in profile (Photo: M. B. Henriksen 1989).

a small lump of tissue and slag in the area where the stomach of the pig had been.

After 24 hours, the last embers were extinguished with water. The ash layer covered an area of 190 × 170 cm, and it was 10–15 cm thick in the centre and just a few millimetres at the periphery. When excavating the ash-bed it transpired that the skeleton lay more or less undisturbed in anatomical order. The small cup was intact, but the large sherd and pot were broken into larger fragments. Two of the five glass beads, one molten and one unaffected by the heat, were found in the ash layer together with 720 grams of calcined bones. The glacial sediments at the bottom of the pit had been affected by the heat; here a blackish crust, just a few millimetres thick, was visible. Except for charred vegetation, there were almost no traces of heat impact around the ash-bed.

After the careful excavation of the ash-bed, the pyre debris was scraped into the pit, which was then covered with grass turf. In 2013 – precisely 23 years after the experiment – the pyre was re-excavated in 25 × 25 cm squares. The tips of two of the posts from the supporting structure were found well-preserved in the ground, but charred on the top. There were absolutely no traces of the other four posts; not even post-holes. The pit was visible only as a diffuse concentration of darker soil containing charcoal, and the fire-affected base was no longer as distinct as it had been in 1990.

The soil was collected for water sieving and floatation, during which process 21.5 grams of small fragments of burnt bone were found. The pyre debris also contained two halved glass beads and two lumps of melted glass as well as a few small sherds from the pots; obviously, these objects were not recognized in 1990 because of their dark colour and small size. 92 grams of fire-cracked flint was found; all the pieces were small and clearly a result of flint nodules from the glacial sediments 'exploding'. 1010 grams or ca 3.9 litres of charcoal were recovered, no pieces of which measured more than 3 cm.

Following the 2013 excavation I could conclude that the site was difficult to recognize as the remnants of a funeral pyre without prior knowledge of the experiment. The small amount of charcoal and the high degree of fragmentation in particular were striking; so was the low degree of heat impact on the ground. It was obvious that both charcoal and the crust on the bottom of the pit were affected by post-depositional processes during the 23 years in the ground. As the bottom of the pit was only 15 cm below the surface, we are obviously seeing the effect of percolating water and its freezing and thawing.

Experiment 3 – 1990

A 120 × 120 × 120 cm pyre was constructed over a pit measuring 80 × 80 × 20 cm. A 63 kg pig carcass was placed on top of the pyre structure; four posts were hammered into the ground to support the pyre stack. The pig had a necklace of glass beads, and two replica Iron Age pots – one large and one small – were placed at its side (Fig. 4). The supporting posts collapsed after about an hour, but by that time the pyre had sunk vertically to a heap of embers and burning logs. Fuel was added throughout the 5-hour cremation process, and afterwards a 195 × 155 cm ash-bed remained. The small pot had sunk vertically to the bottom

Figure 4. Experiment 3 – the corpse has started to burn on top of the pyre (Photo: M. B. Henriksen 1990).

of the pit, and the large one had broken into large sherds. After recording, the pit was covered with grass turf, and it has not yet been re-excavated (2017).

Experiment 4 – 1992

The purpose of experiment 4, in 1992, was to test the theory that cremation pit graves were the actual pyre sites (cf. Arcini 2005). A 120 × 100 × 100 cm pyre was constructed over a pit which measured 60 × 60 × 60 cm, and it was supported by three posts hammered into the ground. The 35 kg carcass of a pig was placed in the uppermost part of the pyre. A replica of an Iron Age pot was placed on the bottom of the pit, and a necklace of seven glass beads was hung around the neck of the pig. Beside the body lay a replica of an iron spearhead.

About an hour after the ignition of the fuel, the supporting posts collapsed, by when the pyre had sunk down to a 50 cm heap of embers and burning logs. More fuel was added during the process and, after ca 6½ hours, the pit was completely filled with embers, while at the top only scattered elements of the corpse were visible. After 21 hours, the embers were still glowing in the pit; around it was a thin layer of ash and charcoal, 200 × 160 cm, so most of the material had ended up in the pit, which was subsequently covered with the material and grass turf dug from it.

In 1993, nine months after the experiment, half of the pit was excavated using archaeological methods (Henriksen 1993), and the second half was excavated in 2013, 21 years after the experiment (Fig. 5). There were no major differences between the results of the two excavations, although the filling was more compact in 2013 than in 1993, thus giving a more realistic impression of a prehistoric structure. Within the pit, the stratigraphy was very distinct, with three layers. At the top was a layer consisting of humus and gravel/clay mixed with a small quantity of charcoal, burnt bones and lumps of red burnt sediment. The latter material represents the glacial sediments which were dug out when constructing the pit and subsequently put back during filling. Below this was a layer of charcoal, mixed at the top with small lumps of reddish burnt clay and 714 grams of fire-cracked flint; some of the lumps were as big as 6.5 cm. This burnt flint and clay derives from the glacial sediments that had been dug out but which were lying around and very close to the fire in 1992. In this layer, 394 grams of burnt bones as well as the spearhead and six glass beads were uncovered. Some of the glass beads were melted, but some were unaffected by the fire. The seventh glass bead was not found during either of the two excavations; it probably rolled out of the pyre and landed outside the excavated area.

The bottom layer of the pit consisted only of charcoal – probably 100 litres – and many pieces had fungal mycelia indicating that the fuel was not completely burnt. In 1993, pieces measuring up to 30 cm were observed in the top of this layer, but after 20 years, these pieces had broken into smaller fragments, although still lying in 'anatomical' order. The bottom layer contained only a very few and extremely small fragments of burnt bone, in the uppermost part alone. On the bottom of the pit, the clay pot was uncovered; it was crushed, but barely affected by the heat.

In the uppermost part of the pit, the sides had a 1–2 cm hard crust, which was burned to a reddish colour. Further down in the pit the same crust became darker until quite blackish, while at the base no visible effects of the heat were observed. It was noteworthy that the crust felt harder in 1993 than in 2013, so there had been some kind of impact in the years in between.

Around the pit, the tips of the three supporting posts were uncovered; all of them were charred on top but otherwise well preserved.

The pit in experiment 4 differed from prehistoric cremation pit graves in several key ways. Primarily the distinct stratigraphy of the pit is never recorded in prehistoric cremation pits, which contain a mixture of charcoal, burnt bones and pyre goods, distributed more or less randomly in the pit. Secondly, the amount of charcoal in the experimental pit exceeds the amount in any prehistoric cremation pit I have seen many times over. Moreover, the presence of incompletely burnt fuel has not been recognized in the archaeological record. Finally, heat-affected sides as in the experimental pit are never found in prehistoric cremation pits in Scandinavia – although often in cooking pits. In contrast, this phenomenon, as well as the distinct stratigraphy, are typical of the Continental bustum type graves (Struck 1993; Dodwell 2012). With the evidence from experiment 4, we can reject the hypothesis of C. Arcini, that the cremation pit graves are pyre sites (Arcini 2005). We can also conclude that a deep pit under the pyre structure does not help the oxygen flow in a way that accelerates the cremation process many (e.g., Zagórska-Telega 2015, 246); on the contrary, it reduces the consumption of the fuel and it makes the recovery of the human remains and pyre goods much more difficult.

Figure 5. Experiment 4 – the pit in profile in the 2013 excavation, Photo: M. B. Henriksen 2013).

What is left from the cremation process?

Both my own experiments and other full-scale experiments have produced more or less the same results. Technically the cremation process is complex, but not as complicated as some have suggested (Goldhahn and Oestigaard 2008, 216f.), and it certainly does not require a furnace to transform a body into a bag of calcined bones. The process takes about 5–8 hours, depending on many factors, such as the size and character of the carcass, the amount of fuel, and the circulation of oxygen around the body. Moreover, the human factor, i.e. how much those present maintain the pyre, has a crucial impact on both the process and the results.

A pyre that is sufficient for the cremation of a human adult leaves an ash-bed of ca 3 × 2 metres, which before compression by the soil is up to 10–15 cm thick and contains only a few bucketfuls of wood ash and charcoal. The effect on the ground under and around the ash-bed is superficial, and if it is not immediately covered with soil, it will rapidly erode and vanish. The bones from the cremated body are easy to detect in the grey and black ash, and if the organic materials are wafted away with a piece of cloth or hide, collection of the heavier objects – bones and pyre goods – is no difficult or time-consuming task. In most cases, no crushing of the bones is necessary; this was done by the heat and the collapsing pyre structure. This was also the case with pots; if they broke, they would typically lie in hand-sized or even larger sherds.

What should we expect to find?

As the sorting process turned out to be quite straightforward, we can conclude that if larger pieces of burnt bone or grave goods are left in the burnt down pyre, it was intentionally so. The experiments have illustrated what we might expect to find – and when we compare these observations with the contents of prehistoric pyre sites and cremation graves, it is obvious that a great deal is missing!

If the burnt down pyre was sealed without intervention – or if everything was deposited in a grave – we should expect to find more than 1 kg of burnt bones per individual, while if ceramic vessels were present at the pyre from the beginning, they would be represented by large sherds. Iron objects would be more or less intact, and objects of other metals would be intact or at least present as a quantity of melted lumps resembling the original object. As detailed studies of material from cremation graves from the Late Bronze Age and Early Iron Age on Fyn have documented, all groups of materials are actually present in a state of pars pro toto that cannot be explained by the effect of the fire (Henriksen 2009, 93ff.). We can therefore conclude that the surviving appearance of the material has been heavily affected by post-cremation processes.

Post-cremation handling

When the pyre had burnt down and probably cooled, the post-cremation handling process could start, and by this juncture at the latest it was decided which components should be left at the pyre site and which should be selected for activities and/or deposition elsewhere. A consequence of this process was the choice of the group and type of grave the deceased person's remains would be buried in.

Stage 1 – the first selection

There are three possible approaches to the sorting of the pyre: absent, symbolic or complete. Pyres which are left without any kind of sorting or handling after the fire burnt out – so called in situ cremations – are extremely rare, and known in Denmark only from a few Neolithic sites (Krause 2009). A symbolic sorting process is when only a few things were picked up to represent the totality of bones or pyre goods. The majority of the excavated prehistoric pyres contain only very small amounts of bone and pyre goods, implying that they were not sorted symbolically. On the contrary, the cremation graves contain human remains as well as grave goods in a state of pars pro toto. The paradoxical situation is all the more emphatic when graves have been constructed in the pyre after the sorting process; here it emerges very clearly that we are missing most of the material we would expect to find. In most cases, therefore, it appears that the sorting of the pyre was not symbolic; conversely, it was not complete, as pyre debris was left at the site of the cremation process. Probably the best way to describe the process is that it was selective.

Stage 2 – destruction and separation

In this stage, the material that was picked up from the ash layer was handled in different ways. This stage is dominated by destruction and separation. Swords and other iron items were bent out of shape or even chopped/broken into pieces, parts of composite objects were taken apart (e.g. shield bosses or shield handles were separated from other sword mountings), and pots were deliberately crushed. Some of these actions required tools such as axes or hammers (Henriksen 2009, 89ff.). Contrastively, the human skeletal remains were only exceptionally crushed as a result of deliberate handling. As documented during the experiments, the heat and the collapse of the pyre sufficed to create the size and character of the material we find in the cremation graves.

Stage 3 – the second selection

After this destruction and separation, a second step of selection followed. In this phase, the contents of the grave and the symbolic impression of the pyre goods was determined: should an entire sword, including scabbard mounts, be buried with the cremated bones or should the sword grip alone represent a complete weapon? Should the deceased person be represented as a complete skeleton or just as symbolic parts of the body?

If any unburnt objects (grave goods) were to be added to the material, it was done in this phase.

Stage 4 – deposition
After these three stages – and perhaps even further stages that we are unable to discover in the archaeological record – it was time for deposition in the grave and/or elsewhere.

Conclusion

When we compare the empirical evidence of thousands of well-preserved cremation graves and the few pyres with the data and observations from the experiments, it is clearly the case that a lot of material from the cremation process is missing. Of course, some of this material will have disappeared due to taphonomic losses between the cremation and the deposition: some things will have vanished due to post-depositional processes, and other things in the post-depositional context. Even allowing for these loss processes, we must conclude that a lot of osteological material as well as pyre goods never ended up in the graves. So, where are the missing components? We can see that some types of grave received greater amounts of bone and pyre goods than others, and the quantitiues of deposited objects and of bone can also vary over time (Henriksen 2009, 104ff.). The mode of selection was thus in no way random: during the four-step chain presented above, the residues from the cremation process were further transformed and reduced. What we find in the graves are primarily the end-products of this chain of selection. A consequence of this observation is, that the cremation graves are most of all a symbolic representation of the pyre, the grave goods, and not at least a symbolic representation of the cremated body.

The final question must be, then, where was the material that we do not find in graves and pyre sites deposited? We simply do not know, and there seem to be several options. Some material was probably dumped in waste heaps at the cemeteries; the material evidently was not buried as we find only a very few pits with pyre debris (e.g., Zagórska-Telega 2009; Zagórska-Telega 2015; Henriksen 2016:56f.). The material could also be distributed amongst several graves at the same cemetery or even at several cemeteries, as a way of symbolizing relationships with kin and allies. This phenomenon is described in ethnographic sources (McKinley 2013, 151), and if this was one of the practices, we are missing even more material and graves than we do already! Spreading of material over fields or water must also be allowed for; if this was done, the material has little chance of being preserved to the present day. The storing of objects or burnt bones in special places, structures (e.g. a columbarium)[2] or at home was another option, but then we should expect to find remains in settlement deposits every now and then, and that does not seem to be the case.

All in all, the post-cremation sorting process has a black box effect: we have an idea of the amount of material that was put into the box, and we can observe what came out, but we do not know what happened inside the box. That is a major problem as it was precisely within that black box, that the contents of the cremation graves was defined!

(Translation revised by John Hines)

1 Zagórska-Telega (Zagórska-Telega 2009) has presented some structures from the Przeworsk culture cemetery at Opatów, pow. Kłobuck as "relating to the bustum type". Obviously these structures are not of the bustum type sensu stricto (Henriksen 2016, 71, 84ff.).

2 Byrska-Fudali and Przybyła (Byrska-Fudali and Przybyła 2010) have presented bog deposits of cremated bones as well as pottery and metal objects from Site 2 in Modlniczka, pow. Kraków. This material might be secondary deposited in the wetland after being kept in another context for a long period – even centuries.

Bibliography

Arcini 2005
C. Arcini, Pyre Sites before Our Eyes. In: T. Artelius and F. Svanberg (eds.), Dealing with the Dead. Archaeological Perspectives on Prehistoric Scandinavian Burial Ritual. Riksantikvarieämbetets arkeologiska undersökningar – Skrifter 65 (Ödeshög 2005) 63–72.

Becker et al. 2006
M. Becker, H-J. Döhle, M. Hellmund, R. Leineweber and R. Schafberg, Nach dem großen Brand. Verbrennung auf dem Scheiterhaufen – ein interdisziplinärer Ansatz. Bericht der Römisch-Germanischen Kommission 86, 2005, 61–195.

Byrska-Fudali and Przybyła 2010
M. Byrska-Fudali and M. M. Przybyła 2010, Bog deposit of burnt human remains from site 2 in Modlniczka, dist. Cracow. Sprawozdania Archeologiczne 62, 2010, 439–489.

Dodwell 2012
N. Dodwell, Early Bronze Age Busta in Cambridgeshire? On-Site Experiments to Investigate the Effects of Fires and Pyres on Pits. In: P. D. Mitchell and J. Buckberry (eds.), Proceedings of the Twelfth Annual Conference of the British Association for Biological Anthropology and Osteoarchaeology. British Archaeological Reports – International Series 2380 (Oxford 2012) 141–149.

Goldhahn and Oestigaard 2008
J. Goldhahn and T. Oestigaard, Smith and death – cremations in furnaces in Bronze and Iron Age Scandinavia. In: K. Chilidis, J. Lund and C. Prescott (eds.), Facets of Archeology. Essays in Honour of Lotte Hedeager on her 60th Birthday (Oslo 2008) 215–241.

Harvig et al. 2014
L. Harvig, M. T. Runge and M. B. Lundø, Typology and function of Late Bronze Age and Early Iron Age cremation graves – a micro-regional case study. Danish Journal of Archaeology 2014, 1–16.

Henriksen 1991
M. B. Henriksen, Et forsøg med forhistorisk ligbrænding. Nogle kommentarer til undersøgelsen af brandgrave. Eksperimentel Arkæologi. Studier i teknologi og kultur 1 (Lejre 1991) 50–60.

Henriksen 1993
M. B. Henriksen, Et ligbrændingsforsøg på Hollufgård – hvad kan det fortælle om jernalderens brandgrave? Fynske Minder 1993, 99–116.

Henriksen 2009
M. B. Henriksen, Brudager Mark – en romertidsgravplads nær Gudme på Sydøstfyn 1–2. Fynske Jernaldergrave 6/1–2. Fynske Studier 22 (Odense 2009).

Henriksen 2015
M. B. Henriksen, Kenotafer, ødelagte grave eller ofringer? Deponeringer og andre aktiviteter på ældre jernalders gravpladser. In: P. Foss and N. Algreen Møller (eds.), De dødes landskab. Grav og gravskik i ældre jernalder i Danmark. Beretning fra et colloquium i Ribe 19.–20. marts 2013. Arkæologiske Skrifter 13 (København 2015) 183–214.

Henriksen 2016
M. B. Henriksen, Bålets betydning. Ligbrænding i Danmarks oldtid belyst ved arkæologiske fund og ligbrændingseksperimenter. PhD thesis (University of Copenhagen 2016).

Jonuks and Konsa 2007
T. Jonuks and M. Konsa, The Revival of Prehistoric Burial Practices: Three Archaeological Experiments. Folklore 37, 2007, 91–110.

Jæger and Johansen 2014
J. H. Jæger and V. L. Johansen, The cremation of infants/small children: An archaeological experiment concerning the effects of fire on bone weight. Cadernos do GEEvH 2/2, 2014, 13–26.

Krause 2009
C. Krause, En senneolitisk brandgrav ved Østerhoved, Sydvestsjælland, fundet under en høj fra bronzealderen. Årbøger for Nordisk Oldkyndighed og Historie 2005, 55–85.

Lambot 1994
B. Lambot, Le bûcher experimental d'Acy-Romance 11-12 Août 1989. In: B. Lambot, M. Friboulet and P. Méniel (eds.), Le site protohistorique d'Acy-Romance (Ardennes) II. Les nécropoles dans leur context régional (Reims 1994) 247–315.

Marshall 2011
A. Marshall, A., Experimental Archaeology: 1. Early Bronze Age Cremation Pyres. British Archaeological Reports – British Series 530 (Oxford).

Mckinley 2013
J. I. McKinley, Cremation: Excavation, Analysis and Interpretation of Material from Cremation-Related Contexts. In: S. Tarlow and L. N. Stutz (eds.), Handbook on the Archaeology of Death and Burials (Oxford 2013) 147–171.

Oestigaard 2013
T. Oestigaard, Cremations in Culture and Cosmology. In: S. Tarlow and L. N. Stutz (eds.), Handbook on the Archaeology of Death and Burials (Oxford 2013) 497–509.

Schiffer 1987
M. B. Schiffer, Formation processes of the archaeological record (Alberquerque 1987).

Struck 1993
M. Struck, Busta in Britannien und ihre Verbindungen zum Kontinent. Algemeine Überlegungen zur Herleitung der Bestattungssitte I: Römerzeitliche Gräber als Quellen zu Religion, Bevölkerungsstruktur und Sozialgeschichte. Archäologische Schriften des Instituts für Vor- und Frühgeschichte der Johannes Gutenberg-Universität Mainz 3 (Mainz 1993) 81–94.

Thrane 2004
H. Thrane, Fyns Yngre Broncealdergrave 1–2. Fynske Studier 20 (Odense 2004).

Zagórska-Telega 2009
J. Zagórska-Telega, Some remarks on the funerary rite of the Przeworsk culture in the Younger and Late Roman Periods. In: B. Kontny, A. Szela and J. Kleemann (eds.), Światowit Supplement Series B: Barbaricum 8 (Warszawa 2009) 263–278.

Zagórska-Telega 2015
J. Zagórska-Telega, Obiekty kremacyjne z cmentarzysk kultury przeworskiej z dorzecza Liswarty z młodszego i późnego okresu wpływów rzymskich oraz wczesnej fazy okresu wędrówek ludów. Wiadomości Archeologiczne LXVI, 2015, 201–246.

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