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Folded, layered textiles from a Bronze Age pit pyre excavated from Over Barrow 2, Cambridgeshire.

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Abstract

The textiles from Over Barrow, Cambridgeshire, England present the opportunity to examine the burial practices at the end of the Early Bronze Age. They were excavated from a pit pyre cremation along with cremated bone, a bone needle/pin and two small sherds of a collared urn. Preserved in charred clumps of multiple layers, they have the potential to provide clues as to how the textiles were used in the cremation, for example, whether they were used as clothing, shrouds or for other purpose such as binding strips. These possibilities raise a number of questions as to the role of textiles in Bronze Age cremation burials in the early second millennium BC in Britain.

Keywords: textile, Bronze Age, cremation, wrapping, clothes

1. Over, Barrow 2

This paper presents textiles from an Early Bronze Age pit-pyre cremation beneath a round barrow in Over, Cambridgeshire, Britain. The textiles are unusual in that a number of them are preserved in thick multiple-layered clumps, some of which are over 1cm thick. Due to these aspects, the textiles have the potential to provide clues as to how they were used in the cremation, for example, whether they were used as clothing, shrouds or for other purpose such as binding strips. For this reason, in addition to a technical and fibre analysis of the textiles, particular attention is paid to the way in which the textile clumps were folded and layered. The excavation is currently being written up; all excavation context and specialist analyses derive from Christopher Evans' unpublished report (Evans et al, forthcoming).

1.1 Excavation context

A barrow in the area of Over, Cambridgeshire in the East of England was excavated between 1998-2001 as part of the annual training dig for the University of Cambridge, directed by Christopher Evans and Charly French. Over Barrow 2, from which the textiles originate, belongs to the southern group of barrows in the Over Narrows, an area of palaeo channels and islands on the River Great Ouse. The charred textiles were found in the primary burial, a cremation in the centre of the barrow dated to the first half of the second millennium BC, radiocarbon date 1887-1696 cal.BC (OxA024639 3477±30BP). The Early / Middle Bronze Age horizon in Britain varies according to authors and criteria used. Published work by Evans dates the Early Bronze Age in Britain between 2000-1600 cal. BC and the Middle Bronze Age between 1600-1200 cal. BC (Evans et al. 2014, p.245). On this basis the pit-pyre cremation dates to the later Early Bronze Age.

As revealed during excavation, the barrow was constructed in stages (Figure 1). In the first stage a pit (Feature number F.515/519) approximately 1m in diameter was dug into the buried soil and underlying subsoil (Figure 2). The pit sides are discoloured (orange, pink, purple and black) by heating, in the base of the pit there is a substantial deposit of cremated bone and charred wood. The charred textiles were found among the base deposit of cremated bone along with burnt animal bone, a bone needle/pin and two small sherds of a collared urn. Above the base deposit was heat-affected gravel and further cremated bone. Analysis of the bones by Natasha Dodwell suggests they belong to two adults (possibly female) and an infant. After the cremations a turf mound was built over the top of the pit, then expanded in a second stage of construction until it measured 22m in diameter. In later phases further burials were added into the south-eastern part of the barrow and ditch was dug around it.

Experiments were undertaken to understand the nature of such Early Bronze Age scorched cremation pits in Cambridgeshire (Dodwell 2012, 145-8). The results of the experiment suggests the fire was most likely the result of a pyre constructed above the pit (referred to by the excavators as a pit-pyre), while the spatial distribution and articulation of the skeletal remains suggests the bodies were tightly crouched (Dodwell 2012, 147-8).

Figure 1. Under excavation; Over Barrow 2, Cambridgeshire (© Cambridge Archaeology Unit). Image not available for repository copy.

Figure 2. Central cremation pit with discoloured sides due to burning (© Cambridge Archaeology Unit). Image not available for repository copy.

1.2 The textiles: deposition, preservation and storage

All the textiles from the pit-type are charred. Due to their position in the pit accompanied by burnt bone and charred timber, it seems likely they were charred as a result of being part of the cremation fire. Cellulose fibres are highly flammable (Harris 2012, 106; Hencken Elsasser 2010, 58), and as part of the cremation pyre they would have added to the blaze. For this reason one may assume that all traces of textile would have disappeared. How then did the textiles survive the fire? Textiles are known to survive cremation, indeed small fragments of charred textiles have been recovered from other British Bronze Age cremations (Henshall 1950, p.130-2; for example Petersen-Healy 1986, p.99). The presence of layered clumps is more exceptional; maybe like paper books, dense piles of cloth resisted burning. In an open fire cremation, as opposed to an efficient modern furnace, areas of the body (and presumably other materials) which were touching the ground or fuel may not burn (Barber 1990, p.380), also textiles may have fallen away from the heat of the fire and charred rather than burnt. As the pit-pyre burned, charred timbers and the body would have collapsed into the pit below, those falling outside the pit could have been raked in, cloth that fell into the pit early in the burning could have survived due to smothering (Evans pers.comm).

The textile clumps are stored at the British Museum (P+EE 2000,7-2.1/1-8), with the exception of one OVP00(TD) which is stored by Cambridge Archaeology Unit. In total there are eight textile clumps with multiple layers, some of which also have folds. The largest textile clump measures c.10x5cm, with a thickness of 1cm (P+EE 2000,7-2.1/1). The thickest clump is 1.5cm thick (P+EE 2000,7-2.1/2). In addition there are also approximately sixty loose textile fragments which were recovered from the pit-pyre cremation. Of the loose textile fragments, most are single layers but several have more than one layer.

2. Method of analysis

The textiles were examined using a 6X hand-held magnifier and a Dino Lite digital microscope. Following standard procedure (Walton-Eastwood 1988), they were observed for weave structure, spin direction, thread count, thread diameter and presence of borders, stitching and seams. To investigate the layers, the excavator initially commissioned x-rays to attempt to view the layers and folds, although these were not as successful as hoped. Instead a

programme was proposed whereby the clumps were observed, described and where possible drawn in plan and profile view with special attention to layers and folds.

Two fibre samples from one textile (OVP00(TD)) were analysed by Margarita Gleba using Scanning Electron Microscope (Hitachi S 2300N) at the Institute of Archaeology, University College London. The fibre samples were observed under variable pressure (BSE), instrument settings 15.00 kV accelerating voltage, working at a distance of 10 mm. Observation for species identification are based on the morphological characteristics of the fibre including: diameter, longitudinal surface, cross sections and dislocations.

3. Results

First I present the results of the textile technology analysis (summarised in Table 1), fibre analysis, then for the layers and folds.

3.1 Technology

The Over textiles are woven in balanced plain weave (tabby), with the exception of two (P+EE 2000,7-2.1/8 (1) & (3)) which have a higher thread count in system 1. Balanced plain weave is typical of textile technology in Bronze Age Britain, as established by earlier authors (Bender Jørgensen 1992, p.18-9; Henshall 1950, p.133). Only one selvedge is visible in the Over textiles, it is woven in unbalanced plain weave (P+EE 2000,7-2.1/7). The Over yarns are 2-ply, plied in an S direction (2S); a weak z-spin was discernible in two of them. Textile finds are still too scarce to claim any strong tradition in spin direction. However textile yarns from plant fibre plied in an S direction are recorded at other sites in Britain (Bender Jørgensen 1992, p.19), as for example those at the comparably dated Site 3659 at Weasenham Lyngs, Norfolk (Petersen-Healy 1986, p.99). This contrasts with wool textiles in Britain which show a preference for simple yarns (i.e. single-spun) (Bender Jørgensen 1992, p.19).

The full range of thread counts of the Over textiles is between 10-18 threads per cm, but most are characterised by thread counts from 12-15 threads per cm. Two of the textile fragments (P+EE 2000,7-2.1/8 (1) & (3)) have thread counts of c.12-18 threads per cm. The thread count of British textiles of this period range between 6-18 thread per cm, although most are around 10 threads per cm (Bender Jørgensen 1992, p.18-19; Henshall 1950, p.133,158-62). The Over textiles are therefore at the finer end of this range. The yarn diameters range from 0.2-0.9mm; most have a diameter of around 0.5-0.8 mm.

Inventory number	Length mm	Width mm	Thickness mm	Weave structure	Spin system 1	Spin system 2	Spin angle System 1	Spin angle System 2	Thread diameter System 1, mm	Thread diameter System 2, mm	Thread count System 1, per cm	Thread count System 2, per cm	Borders	Layers
P+EE 2000,7-2.1/1	94	45	10	plain weave, tabby	2S	2S	loose to medium	loose to medium	0.6-0.8	0.6-0.8	14-16	14-16	-	8 or more layers
P+EE 2000,7-2.1/2	48	33	15	plain weave, tabby	2S	2S weak z spin			0.7-0.8	0.5-0.7	12-13	12-13	-	9 layers visible
P+EE 2000,7-2.1/3	31	30	5	plain weave, tabby	2S	2S	loose	loose	0.7-0.8	0.7-0.8	13-14	13-15	-	layers, two overlapping folded clumps
P+EE 2000,7-2.1/4	30	26	7	plain weave, tabby	2S	2S	loose to medium	loose to medium	0.6-0.8	0.6-0.8	12-14	12-14	-	6 layers or more
P+EE 2000,7-2.1/5	45	23	15	plain weave, tabby	2S	2S	loose		0.5-0.7	0.5-0.7	12	12	-	at least 10 layers
P+EE 2000,7-2.1/6	38	24	5	plain weave, tabby	2S	2S	loose	loose	0.6-0.8	0.6-0.8	12-14	12-14	-	4 layers
P+EE 2000,7-2.1/7	40	13	5	plain weave, tabby	2S	2S	very loose	loose to medium	0.8-0.9	0.4	12	12	plain weave selvedge	layers visible in section
P+EE 2000,7-2.1/8 (1)	5	5		plain weave, unbalanced	2S	2S	loose	loose	0.2-0.3	0.2-0.3	18	12	-	see notes
P+EE 2000,7-2.1/8 (2)	18	5		plain weave, tabby	2S	2S	loose	loose	0.8-0.9	0.7-0.8	10-11	12	-	-
P+EE 2000,7-2.1/8 (3)	21	7		plain weave unbalanced	2S	2S	loose	loose	0.3-0.4	0.2-0.4	16-18	12	-	-
OVP00(TD)				plain weave, tabby	2Sz	2Sz	loose	very loose & untwisting	0.5-0.6	0.5-0.6	14	12-14	-	layers

Table 1. Technological details of the textiles from Over, Barrow 2.

The fibre analysis was complicated by charring and heavy dirt encrustation. Of the two samples analysed, both have characteristic dislocations and polygonal cross sections (Figure 3) indicating that the fibre is of plant origin. In terms of species, no clear identification was made and either flax (*Linum usitatissimum*) or nettle (*Urtica sp.*) remain possibilities. Further investigation is planned.

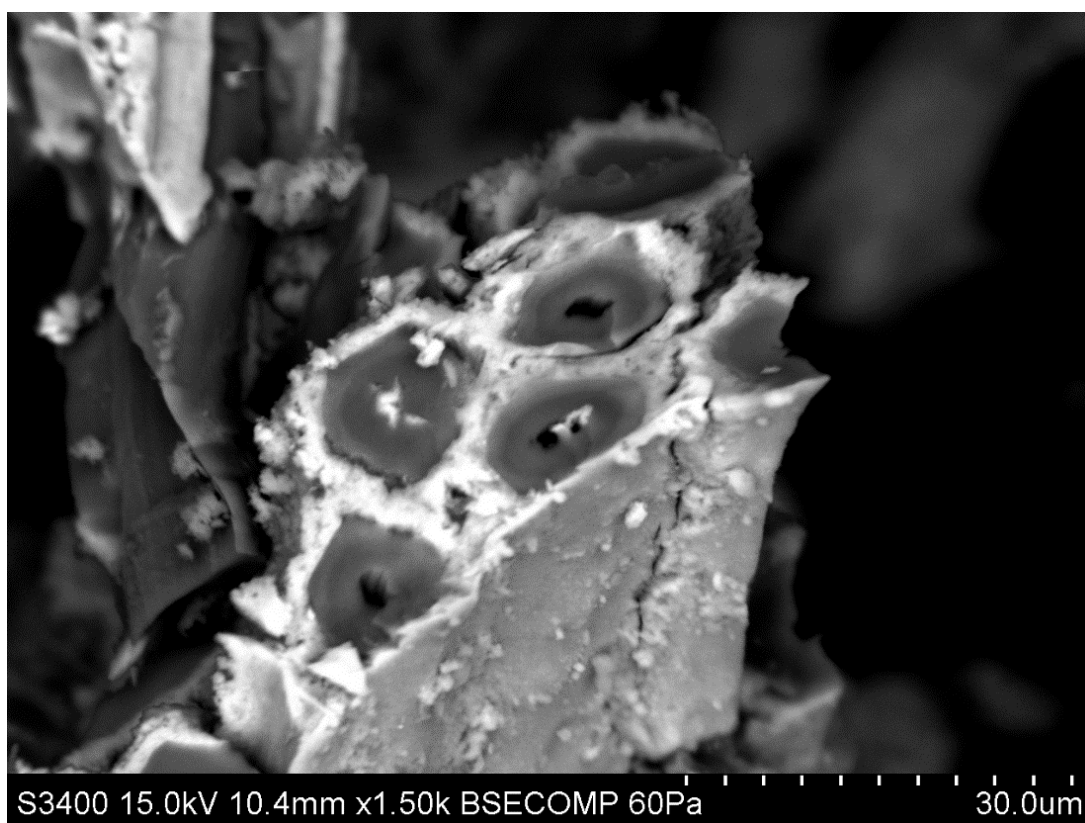


Figure 3. SEM micrograph showing polygonal cross sections of plant fibres (© Margarita Gleba).

3.2 Layers and folds

Five of the layered textile clumps are described individually below, and are summarised together with all the textile remains in Table 1. The clumps are described in plan view (i.e. from the flat surface of the textile) and profile (i.e. thickness/layers). As the broken edges of the clumps demonstrate, they do not represent fully preserved textiles but were part of larger textiles. They may originally have been composed of more layers as some could have burnt off in the fire or fallen off during retrieval.

Two clumps (Figure 4a, 5d & 5e, P&EE 2000 7-2.1/3 & P&EE 2000 7-2.1/6) both measure approximately 30x30mm and are 5mm thick. In plan view both clumps appears divided into two overlapping sections; it is not clear whether this is two overlapping folds or a thick seam. As no stitching is visible it seems most likely these are two overlapping folds. The sides and back of one are too encrusted with dirt to observe further details, the other has at least four layers in profile. The largest clump (Figure 4b & 5a, P+EE 2000,7-2.1/1) measures 94x45mm and is 10mm thick. Four layers are visible in plan view and a further 4-5 layers are visible in profile. Additional layers may be hidden due to the degraded nature of the sample. Therefore there are at least eight, possibly more layers. Another clump (Figure 5b, P+EE 2000,7-2.1/7) measures 40x30mm and is 5mm thick. A selvedge is visible on the upper surface of the clump, it is folded back on itself. In profile there are at least seven layers. A further clump (Figure 5c, P+EE 2000,7-2.1/2) measures 45x23mm and 15mm thick. In plan view, three layers are visible. The trace of layer (marked 1) supports this notion that layers could have been burnt off. The main textile visible on the surface folds around itself, as can be seen more clearly in profile. A total of nine layers are visible in profile.

Figure 4. a) top left; four textile clumps, lower two are P&EE 2000 7-2.1/3 & P&EE 2000 7-2.1/6 as illustrated in Figure 5 d & e; b) top right P+EE 2000,7-2.1/1 as illustrated in Figure 5a; c) bottom left loose textile fragments. (All textile images © Trustees of the British Museum; d) bottom right, studying the textile in the archive (© *Susanna Harris*). Images not available for repository copy.

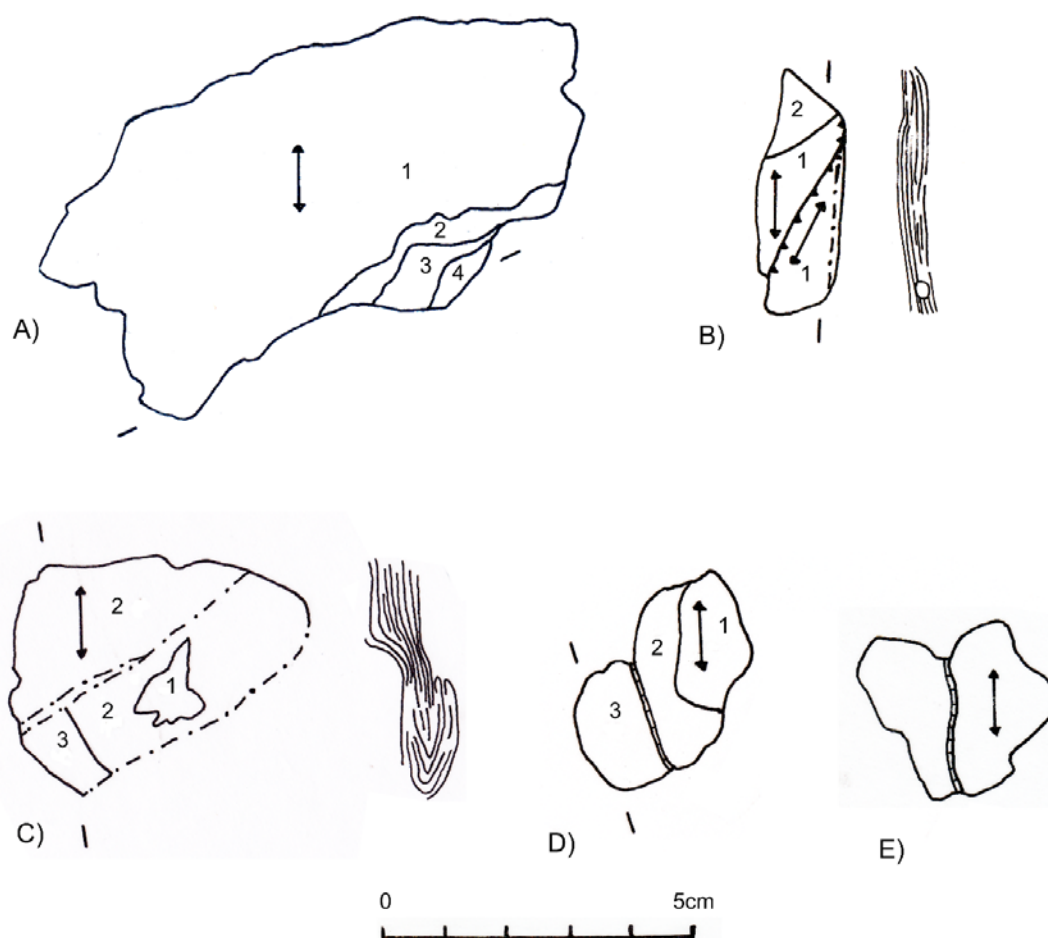


Figure 5. Diagram of layered textiles clumps: a) P+EE 2000,7-2.1/1 four layers are visible in plan view and a further 4-5 layers are visible in profile.; b) P+EE 2000,7-2.1/7, a selvedge is visible on the upper surface of the clump. In profile there are at least seven layers; c) P+EE 2000,7-2.1/2, In plan view, three layer are visible and nine layers are visible in profile; d & e) P&EE 2000 7-2.1/3 & P&EE 2000 7-2.1/6, in plan view both clumps appears divided into two overlapping sections, possibly a fold. **Key:** doubled ended arrow = direction of thread system 1 for top layer; numbers = sequence of layers in plan view, section lines = area where profile layers counted; dot and dash line = fold; line with small triangles = selvedge, ladder line = fold or seam. (Diagrams © Susanna Harris).

4. Comparanda: textiles in cremations

Charred textiles are known from cremations throughout Britain in the Bronze Age, for example at Winterborne Stoke 2 and 3, Wiltshire (Henshall 1950, p.148-9). Most comparable in terms of date, site and geography is another multiple cremation burial under a round barrow: Site 3659 at Weasenham Lyngs, Norfolk which is 90km from Over (Petersen-Healy 1986). Charcoal mixed with bone from the cremation is radiocarbon dated to 1791-1497

cal.BC (BM-877 3339±56BP) (Petersen & Healy 1986, p.73). The cremation contained charred tabby weave textiles, Collared Urn sherds and cremated human bone identified by C.B. Denston as those of three or four people including a non-adult female and two female adults (Petersen-Healy 1986, p.73,100). The textiles analysis by Elisabeth Crowfoot (Petersen-Healy 1986, p.99) identifies plain weave (tabby) fragments around 1cm squared, with S-ply yarn, thread counts 8 to 10 threads per cm. As they are charred they are presumably plant fibre; wool does not char. It is perhaps unsurprising that there were textiles in cremations as these may belong to clothing or bindings of the deceased. Due to their unusual clumping, can the Over textile clumps help address the question of the role of textiles in this cremation more specifically?

5. Discussion

Charred textiles are brittle and do not retain their flexibility. Therefore layers and folds must have formed before burning and have been placed in the fire in their layered state. There are many ways textiles could have been placed in a cremation. These can be separated into 'pyre goods', which are those things accompanying the deceased into the pyre such as clothing and offerings; and 'grave goods' which are placed with the cremated remains in the grave (Williams 2008, p.243). To pyre goods we may add wrappers, bindings, offerings of the deceased's clothing or cloth wealth, a mattress or textile parts of the couch or bier. As the textiles from this cremation are charred they can be described as pyre goods. However, they may have been placed in the fire at any point during the cremation process. Cremation of a human body on an open fire takes many hours (Barber 1990, p.380; McKinley 2008, p.67) and the ceremonies accompanying this could have involved many stages. Which kinds of textile goods do the layered textiles from Over represent?

5.1 Clothing worn by the deceased

It is unlikely the clumps are the remains of the clothing worn by the deceased, because it seems improbable that layers of clothing worn on the body would be so tightly packed. An exception could be quilted or padded clothing. Such garments may be for warmth or protection, as for example the later linen corslets referred to in Greek texts and Italic/Etruscan art (Gleba 2012, p.45-6). However, there is no clear evidence for stitching on the Over clumps to indicate quilting and, as far as I am aware, padded clothing is unknown in Bronze Age Europe.

5.2 Piles of cloth or clothing

Another possibility is that these clumps are the remains of piles of cloth that was stacked around the body, laid under the body as mattress or added as offerings of clothes or textiles. If this were the case we may consider these piles as deliberate destruction of wealth, gifts or the deceased's garments. Klaus Randsborg has suggested that textiles in the Scandinavian oak coffins represented wealth, in a similar way to metals (Randsborg 2011, p.34-7). As an indirect comparison, in the Homeric literature, burning of stored clothes in the funeral pyre was a way to bring glory to the deceased (Mueller 2010, p.13). Similar ideas should be borne in mind at Over.

5.3 Cloth to bind the body in a crouched position

A third possibility is that the cloth was used to wrap the bodies or body parts. As it seems likely that the bodies were cremated in a tightly crouched position (Dodwell 2012, 142), the textile could have served to bind the body into position. If this were the case, then they were wrapped in multiple layers, sometimes as many as ten deep; a process which could have required considerable quantities of textiles and may reflect the destruction of potentially valuable materials. To this we should add that cremation itself can be a labour and fuel intensive means of corpse disposal (Barber 1990, p.380-1). The wrapping of the body also brings into question the treatment of the dead and issues such as the visibility and invisibility of the corpse (Banck-Burgess 2014, p.152-3), in this case before cremation.

6. Conclusion

These possibilities raise a number of questions as to the role of textiles in Bronze Age cremation burials in the early second millennium BC in Britain, beyond their use as clothing or shrouds. Of the possible role of the Over textiles in cremation, their charred, layered state shows they went into the pyre in thick layers, small fragments of which escaped burning. Typical of textile technology in that they are made of plain weave, the Over textiles are nevertheless on the finer end of the scale in terms of the British Bronze Age. It seems unlikely they were the clothes worn on the deceased's body. Instead they could have been stacked clothing or other textile offerings which were sufficiently densely piled to resist immediate burning. Similarly they could have been layers of wrapping to bind the body in its crouched position. In my opinion it seems most likely the dense layers were wrappings used to bind the corpse before cremation. However the evidence does not exclude the other

possibilities. Either way textiles were labour intensive to make and may well have represented valuable materials consigned to the fire. The evidence from Over barrow 2 leads us to consider the relationship between textile technology and the role of textiles in the ceremonies and social alliances surrounding the disposal of the dead in later Early Bronze Age societies.

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