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From Roman Table to Anglo-Saxon Grave: An Archaeological Biography of the Scremby Cup

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The presence of Roman material in early Anglo-Saxon graves in England is well documented, and recent excavations at Scremby in Lincolnshire have revealed a complete copper-alloy enamelled drinking cup in a sixth-century AD *female burial. Not only is such a Roman vessel a very rare find, but also its inclusion in an early medieval grave makes it a unique example of the reuse of an antique object in a funerary context. This article presents a typological and metallurgical analysis of the cup and selected comparative examples from England and France are discussed. The context of deposition and the role the cup played as a burial container for animal fat are examined, as are the mechanisms that lay behind the cup's continued life several centuries after its manufacture*.
Keywords: Roman, Anglo-Saxon, enamel, bronze, lipids, biography

INTRODUCTION

In 2018, excavations by the University of Sheffield on the Migration Period cemetery at Scremby, Lincolnshire, revealed a grave containing a copper-alloy enamelled cup as part of its assemblage. The cup came from a burial dated to the first half of the sixth century, one of forty-nine inhumation burials in the cemetery. The vessel accompanied an adolescent female, in a sparsely furnished grave: besides the cup, only two plain annular brooches and a pair of simple wrist clasps were found.

Although the burial dates to the sixth century AD, the cup is Roman and thus of considerable age when deposited. Several similar Roman enamelled vessels are known from antiquarian investigations in the UK, and in recent years, hobby metal detectorists have added to the corpus. The Scremby Cup, however, is one of very few such vessels found during a modern excavation and from a secure archaeological context. This find provides the opportunity to examine a new and significant addition to this corpus of Roman metalwork, both stylistically and compositionally. Furthermore, its location in an Anglo-Saxon grave and the results from residue analysis of its contents demand consideration of what function and meanings it might have held for an audience that was very different from that originally intended. How the cup survived and changed course over three centuries are key aspects of our enquiry, demonstrating the importance of studying an artefact's biography rather than just viewing it through a static, typological lens.

The Funerary Context

The cup came from a burial at Scremby (Lincolnshire). The site consisted of forty-nine richly furnished inhumation burials, all interred between *c.* AD 480 and 540, and containing a range of grave goods typical for a Migration Period cemetery in that part of eastern England. Although a few fragments of Roman material were present in some of the other graves, a phenomenon well-attested in burials of this period (see below), the inclusion of a complete and still usable cup was unique at this site, and a rare occurrence nationally.

The vessel was found beside the head of an adolescent female (Sk18), aligned west-east, her body flexed and the head and knees facing north (Figure 1). Her grave was unusually sparsely furnished compared to the other female burials at Scremby. It contained no beads, belt, or bag, the only other artefacts being two plain annular brooches (Hines, 1984: 260–67) and a pair of simple Hines Type B wrist clasps (Hines, 1993: 90–92). Such finds are ubiquitous in sixth-century graves in Lincolnshire, with annular brooches occurring in around ninety per cent of female burials in the region (Leahy, 2007: 64). Of the cemetery's other twenty-nine female burials that were sufficiently undisturbed by later agricultural activity, only two contained fewer artefacts in their assemblages.

The cup nevertheless clearly held significant meaning for the deceased and the people who performed the funerary rites. Not only was it placed prominently by the head of the deceased, but also it was an intact and still functional vessel. In this regard, it differs from other pieces of occasional Roman metalwork found in the Scremby burials, which are pieces of scrap whose original purpose has long been lost. The cup, in contrast, was still a viable container.

Form, Decoration and Provenance of the Cup

The Scremby Cup is 57 mm tall and gently convex-sided; its walls are between 1 and 1.5 mm thick, with a slightly rounded and in-turned rim, whose diameter is 97 mm (Figure 2). The base is made from a separate extremely thin metal sheet around 0.5–0.8 mm thick and 58 mm in diameter, soldered onto the cup's body. The fact that the cup retains its base, although highly fragmented, is unusual, as vessels of a similar form and construction found in antiquarian investigations or by metal detecting are almost invariably missing this element. A notable exception is a cup found in the nineteenth century at Rochefort-sur-Nenon (Jura, France), which also has a thin separate base piece soldered onto the main body (Pelpel & Vernou, 2018: 251, fig. 2).

When complete, the Scremby Cup would have held around 280 ml of liquid. Its body is decorated with vertical panels of cast insets, most of which retain the remains of coloured enamels in aquamarine, red, and deep blue/purple. Since considerable attention has been paid to cataloguing and classifying the corpus of Roman enamelled vessels in the UK and continental Europe in recent years (e.g. Künzl, 1995; Breeze, 2012a; Pelpel & Vernou, 2018; Grossi, 2020), it is not our intention to revisit this work here. While these and other publications have served to highlight vessels comparable in form and decoration, there is no direct comparison for the Scremby Cup amongst this group. It is worth noting, however, that relatively few enamelled vessels have been found during modern archaeological excavations. Exceptions in Britain include a flask dating to the first half of the second century AD from Corbridge, Northumberland (Casey & Hoffmann, 1995: 24), and pans from the sacred spring at Bath, Somerset (Henig et al., 1988: 9–21) and the cemetery at Brougham, Cumbria (Cool, 2004: 124–28). Despite their archaeological scarcity, new finds of enamelled vessels are still being made in Britain by hobby metal detectorists, most recently at St Lavan, Cornwall, in 2019 (Pearce & Worrell, 2020).

To date, most British enamelled vessels are either cups or pans, although the latter are considerably more common. Ostensibly the forms are the same, the key difference being the presence of a flat horizontal handle in the case of a pan. The three so-called ‘Hadrian’s Wall Series’ vessels (as they are decorated with the names of military forts on the frontier), the Rudge Cup, Amiens Patera, and Ilam Pan, share their body shape: a convex side and an in-turned rim (Breeze, 2012b). They are also squat, with the overall height of the vessel being less than the base diameter. A similar shape and body proportion can be seen in the Winterton (Lincolnshire) and Eastrington (East Yorkshire) pans (British Portable Antiquities Scheme, hereafter PAS: PAS NLM-F50443 and PAS YORKM-20B68C), which are so alike in appearance that they almost certainly came from the same workshop. The Scremby Cup, in contrast, is subtly different; it has a taller profile and, although it is still slightly convex-sided, this is much less pronounced, and the rim remains the widest portion of the vessel.

One of the closest parallels for the slightly taller, less convex shape of the Scremby Cup is the Selborne Cup, found in Hampshire in 1867, with which it shares some stylistic similarities (Grossi, 2020: 216). It is a handled barrel-shaped beaker formed from two identical cups, one inverted over the other and soldered in place, although they have long since become separated. There is no suggestion that the Scremby Cup was part of a larger composite vessel; its rounded rim is very well preserved and polished, and there is no evidence of a soldered join, unlike on the base. There is also no indication that a horizontal handle was ever attached to the rim (which would make it a pan). Indeed, the Scremby vessel lacks the slight but pronounced foot often seen on handled vessels such as the Ilam and Amiens pans (Breeze, 2012a: 2; Jackson, 2012: 43). Consequently, we are confident that it is a handle-less cup.

The cup is ornamented with inset motifs that were cast into the vessel's surface, before being infilled with coloured enamelling. It is particularly distinctive for the arrangement of its design into vertical rather than horizontal panels, as is usual on pans and cups found in British contexts. Two alternating panels are present (Figure 3). The first consists of seven shields, or half-moons, flanked on either side by five inward-turned trumpets. The second is formed from a column of four hearts, or stylised palmettes, with flanking triangular infills. These sit atop a single horizontal panel of inverted elongated triangles above the base. The insets are filled with red, aquamarine, and deep blue/purple glass and, although generally these are in an alternating pattern, sometimes certain colours appear together in adjacent cells.

Parallels for this decorative arrangement, or even individual elements within the scheme, are hard to find within the British corpus. A somewhat cruder version of a trumpet design appears within the crenelated gaps of the Rudge Cup (Allason-Jones, 2012: 23) but, beyond this, there are few similarities between the two vessels. Likewise, no real parallels exist in the assemblage of mould fragments excavated at Castleford in Yorkshire. Among this waste from the manufacture of cast enamelled copper-alloy vessels dated to *c*. AD 85–95, only two mould fragments, Pattern 9 and Pattern 12, have an element in common with the

Scremby Cup, namely the stylized heart; otherwise, they are stylistically entirely different (Bayley & Budd, 1998: 212–13). Moreover, all the moulds from Castleford were for creating horizontal designs and not vertical panels. Only one vessel from Britain shares more than a single design element, the Selborne Cup mentioned earlier (Grossi, 2020: 126). This vessel has trumpet and heart-shaped cells, along with triangular infills, although these are arranged in a continuous mosaic pattern rather than in distinct and ordered panels.

Closer parallels for the decorative scheme of the Scremby Cup can be found on three vessels with a French provenance. The best known is a vase, now in the Metropolitan Museum of Art (Inv. 47.100.5), found at La Guierce (Charente) in 1849 (Figure 4), where it had been deposited containing a hoard of coins dating to AD 260–70 (Forsyth, 1950: 303–07). It is a composite vessel formed from two main elements, the lower portion being cup-shaped. The body of this vessel is decorated with two alternating vertical panels. The first is very similar to Scremby and consists of inward-facing trumpets. The second consists of a pelta pattern, not precisely the same but still quite close to the hearts on the Scremby Cup. Like Scremby, the enamelling is in red, deep blue, and aquamarine.

Another composite vessel with close parallels to the Scremby Cup is a complex flask or 'wine thief' from Ambleteuse in the Pas-de-Calais (Figure 5), recovered in the early nineteenth century in association with coins of Emperor Tacitus (AD 275–76) and now in the British Museum (BM 1843, 0623.1). This vessel's form and function has recently been re-evaluated (Bailey, 2003). Although arranged very differently, the body of this vessel, and its lower portion are decorated with patterns of hearts, shields, and infilled triangles, again in vertical panels. Although most of the original enamel has long since disappeared, a few surviving elements indicate that the cells were infilled with red and deep blue glass.

A final parallel is a cup now in the Musée d'Archéologie nationale in Saint-Germain-en-Laye (Inv. 31672). Although unprovenanced, it is likely to be a French find, and its shape is remarkably similar to the Scremby Cup. The principal scheme revolves around decorative roundels, with the space between these filled with trumpets and hearts almost identical to those on the Scremby Cup (Forsyth, 1950: fig. 14; Grossi, 2020: 127).

It is possible to reach some cautious conclusions concerning the origins of the Scremby Cup and its original function. Whilst it is tempting to suggest a British origin, based on the concentration of enamelled vessels found in central and eastern England, it differs from all other examples in its form and decoration. Somewhat better, if by no means exact, parallels can be found with vessels recovered in France, suggesting a possible origin on the European continent. If the association of two of the French examples with coins of AD 260–

70 is to be trusted, a date of manufacture around the third quarter of the third century can tentatively be suggested. This is somewhat at odds with the late first to early second-century date usually given to such vessels in Britain; such dating is, however sometimes based on little contextual evidence (e.g. Moore, 1978: 235; Künzl, 2012: 18). The cup's original function is, perhaps, easier to define. Hunter (2012: 92–94) has highlighted the clear association between both pans and cups and drinking. This seems to be confirmed by a fragment of enamelled pan handle from Gunthorpe (Norfolk) which incorporates the motto *bebe sese* (drink – live long) within its decorative scheme (PAS NMS-7BC635).

Method of Production and Composition

A microscopic materials analysis of fragments of the body and base of the cup were undertaken using a Leica DM 2700P polarized microscope and a Hirox RH-2000 3D digital system. The grain structure clearly shows that both the body and base of the cup were cast and not subsequently worked, beyond fine finishing, as the grains are well formed and there is no evidence of twinning or other grain distortion (Scott, 1991: 8–9) (Figure 6a). Intergranular corrosion is also visible in the cup's body and base (Figure 5b).

Three-dimensional imaging, using an Artec Spider (providing point accuracy of up to 0.05 mm and with texture removed), clearly showed striations on the outer surface of the cup, suggesting that the exterior of the artefact had been polished after casting and before adding the enamel, which has been applied in a champlevé technique (Dolfini & Crellin, 2016; Crellin, 2018: 866–67; Barnes, 2019) (Figure 7a–b). The inside of the cup was not polished and retains a rough surface indicative of the surface of the mould used to create it. No casting lines are visible on the interior and, as previously noted, there is no indication that a handle or other attachment had been fixed or soldered to the cup's body. Furthermore, the 3D analysis also suggests that the cup has not been repaired or suffered pre-depositional damage; most of the wear visible on the cup, such as the evident surface erosion and mineralisation, resulted from prolonged exposure to the burial environment, rather than wear while in use.

Two possible bronze casting strategies consistent with known Roman practices could have been used to create the cup's body. A lost wax or investment process is possible, where a wax version of the cup's body was crafted around a solid inner core and coated in clay layers. The wax would have been melted out of the mould, and bronze poured into the space, leaving no casting seams on the cup's surface. Alternatively, a mirror of the outside surface pattern of the cup was carved or stamped into clay pieces that were then fitted around an inner core as a multi-part mould; this would usually result in visible casting seams (Bayley &

Budd, 1998: 207; Crellin, 2018: 861). As discussed, the design on the cup's body is in vertical panels above a single horizontal panel of inverted elongated triangles circling its base. The spaces between each vertical panel do not easily line up with spaces between the elongated triangles surrounding the bottom, and there is no visible evidence that the pattern of elongated triangles has been interrupted. These details suggest that the cup was created by lost wax technique; a multi-part clay mould would require the decorative spacing between the vertical top panels and horizontal bottom panel to line up to avoid an interruption in the overall pattern.

The base of the cup, a very thin circular disk of bronze, was soldered onto the body with lead, after the cup had its enamel applied. The base was added later because the metal making up the body of the cup expanded and contracted as it was heated and cooled during the champlevé enamelling process (Barnes, 2019: 37). Micrographic analysis of the base shows a higher concentration of slag and other impurities from casting on one side of the base's surface. These impurities generally accumulate at the top of a melt's surface, indicating that the base of the cup was created using a horizontal mould (Scott, 1991: 92) (Figure 8a & c). Furthermore, the smaller grain structure of the base suggests a faster cooling process (Scott, 1991: 5). Together this suggests that an open-cast process with a horizontal circular mould was used to create the base.

The body and base of the cup have been characterized using a portable ThermoScientific Niton XL3t-980 GOLDD X-Ray Florescence (pXRF) device (Table 1; Supplementary Material 1). The quantities of lead detected in both the body and base of the artefact were well above the solubility level of lead within copper at approximately 8 wt% (Davis, 2001: 34–35; NIST, 2013). The presence of lead in quantities of up to 5 wt% benefited the casting process as it acted as a lubricant and improved plasticity, allowing the metal to fill the cast more efficiently while allowing the gas to escape (Davis, 2001: 46-51). However, copper and bronze have a higher melting point than lead, and as a leaded copper alloy cools and solidifies, any lead that has not mixed into the melt accumulates at grain boundaries and solidifies into lead globules. The size and number of these globules depends on how much lead was added to the alloy (Scott, 1991: 24; Davis, 2001: 46–51; NIST, 2013). The high levels of lead detected by pXRF and the presence of multiple lead globules visible at the grain boundaries of the cup suggest that the metalworkers who created this vessel deliberately added a significant amount of lead to the melt mixture (Figure 7b). It is also possible that deposits on the metal's surface, such as trace amounts of solder or the presence of corrosion, have contributed to the observed lead levels in excess of the element's solubility limit in copper alloys (Moffatt et al., 1997).

Arsenic was detected in the bronze in amounts between 1 and 2 wt%. Arsenic increased the metal's hardness and improved a bronze alloy's toughness (Charles, 1967: 23; Lechtman, 1996: 492). The addition of tin, up to 8 wt%, produced a stronger and harder metal with improved ductility and corrosion resistance, qualities that are directly linked to the amount of tin present within the alloy mixture (Lechtman, 1996: 502). However, above 8 wt%, the alloy becomes brittle (Budd & Ottaway, 1991: 132; Lechtman, 1996: 502). The red and green corrosion visible on the surface of the samples indicates that the cup has spent a significant amount of time buried, and that some of the copper had leached during this time, leaving a tin-rich corrosion phase. The levels of tin identified in the body and base of the cup thus appear greater than is likely to have been present in the original object (Oudbashi, 2015: 1138) (Figure 7c).

The alloy composition employed to produce the cup would have offered advantages, namely the improved castability provided by the lead, the increased hardness offered by the arsenic and tin, and the corrosion resistance of the tin (Lechtman, 1996: 492–502; Davis, 2001: 46–51). The various reasons for the elevated levels of arsenic and tin observed in the Scremby Cup's chemical composition range from the use of arsenical ores, metal recycling processes, and the intentional introduction of alloy elements by the metalworkers who prepared the melt.

While Roman metalworkers would not have been able to easily control the precise amounts of alloying elements they introduced into their work, the specific elements and quantities detected suggest that they understood the value and benefit of alloying from a craft, production, and usage standpoint. The cup's elemental composition also suggests a broad timeframe and region for the artefact's manufacture. The trace amounts of zinc in the quaternary leaded gunmetal alloy (Cu-Sn-Pb-Zn) that makes up the body of the cup are consistent with the alloys being produced in Roman Britain in the third century AD. The mix of elements is also consistent with the Roman practice of recycling metals which resulted in mixed compositions, as seen in the Scremby Cup (Dungworth, 1997; Pollard et al., 2015: 703). The presence of antimony is particularly associated with Roman copper alloys, and although the presence of silver and antimony together in leaded alloys is common, Blades (1995) suggests that over eighty per cent of Romano-British copper alloys can be characterized by a solo antimony marker. Therefore, the composition of the Scremby Cup, which contains no detected silver, suggests that it may have been manufactured in Britain, although other centres in the north-western Roman empire cannot be ruled out (Bray, 2020: 245-50).

Organic Residue Analysis

Micro-excavation of the cup's interior during conservation revealed organic residue in the lowest levels of the soil just above the base. One sample of this material underwent organic residue analysis, along with a soil sample from the immediate burial environment as a control. To determine the origin of this residue, absorbed lipids were extracted from both sample residue and soil sample (~300mg) using an acidified methanol extraction, following Correa-Ascencio and Evershed (2014), and characterized by Gas Chromatography Mass Spectrometry (GC-MS) (Supplementary Material 2).

After acidified methanol extraction the residue sample yielded a relatively high concentration of lipids (38165.18 $\mu g\ g^{-1}$), with a value of 5 $\mu g\ g^{-1}$ being deemed the lowest lipid concentration that can be reliably interpreted in archaeological samples (Evershed, 2008). The soil sample, collected from the immediate burial environment, was also extracted using acidified methanol and yielded much lower concentrations of lipids than the organic sample (46.7 $\mu g\ g^{-1}$). This gives confidence that the high concentration of lipids in the sample is not due to contamination from the burial environment. GC-MS revealed a simple lipid profile comprised mainly of saturated fatty acids. This profile is typical of degraded animal fats characterized by an equal dominance of palmitic ($C_{16:0}$) and stearic acids ($C_{18:0}$) in addition to relatively low concentrations of unsaturated fatty acids, minor odd-chain branched fatty acids ($C_{15:0}$ and $C_{17:0}$), and a series of short-chain α,ω-dicarboxylic acids (diacids), ranging from carbon lengths C_7 to C_{10} (Figure 9a). This profile is typical of degraded animal fats characterized by an equal dominance of palmitic ($C_{16:0}$) and stearic acids ($C_{18:0}$) in addition to relatively low concentrations of unsaturated fatty acids ($C_{18:1}$).

To further understand the origin of these lipids, the extract was analysed by Gas Chromatography-Combustion-Isotope Ratio Mass Spectrometry (GC-C IRMS) to determine the stable carbon isotope value of the major fatty acids ($C_{16:0}$ and $C_{18:0}$) (Supplementary Material 2). The $\Delta\ ^{13}C$ value ($\delta^{13}C_{18:0}$ - $\delta^{13}C_{16:0}$) of the residue sample is shown against the approximate range for modern porcine, ruminant carcass, and dairy fats (Figure 9b) (Dudd & Evershed, 1998; Copley et al., 2003). The $\Delta^{13}C$ value > -1.0 ‰ indicates a non-ruminant fat source and the enriched $\delta^{13}C_{16:0}$ (-27.24‰) value is typical of a porcine fat origin (Copley et al., 2003). Mixtures of organic contents can skew these values, but there is no clear evidence of mixing in the absence of other biomarkers.

A significant deposit of pig fats within the cup confirms it retained an active role as a container. Traditionally, when containers, usually in ceramic, have been encountered in Anglo-Saxon burials, they are thought to have held food offerings, and the survival of pig fats might on first inspection suggest the presence of a particularly meat-rich stew. In the absence of characteristic heating markers in the lipid profiles (Supplementary Material 2), it is not possible to confirm whether these fats sustained heating indicative of cooking or not. However, if raw fats were indeed the original contents, then products other than cooked foods can be considered.

The analysis of the contents of a second-century AD Roman cosmetic container from London demonstrated the use of ruminant (cattle/sheep) fats within the preparation of what was interpreted as a 'moisturiser' (Evershed et al., 2004), although a similar cosmetic function for the contents of the Scremby Cup seems doubtful, given the lack of cosmetic ingredients other than fat. It is more likely that the fat had a medicinal purpose. The fifth–sixth-century Byzantine physician Anthimus observed that raw bacon fat was considered beneficial by the Franks for bowel and intestinal complaints and the expulsion of worms; he also noted that raw bacon placed on wounds was believed to cleanse putrefaction and speed healing (Grant, 1996: 57). While the uncritical transposition of this sixth-century Frankish practice into an English context would be simplistic, it nonetheless remains a tantalising possibility.

Biography of the Cup

The incidence of Roman and earlier material in Anglo-Saxon graves is a well-documented phenomenon, first comprehensively outlined by White (1988, 1990) and re-evaluated more recently (Werthmann, 2020). Whilst discussion in the Anglophone world has primarily focused on early Anglo-Saxon cemeteries, this is far from a uniquely British phenomenon. Martin (2004) has observed the frequent presence of Roman coins in Merovingian burials, reused as amulets, placed in belt bags and even the mouths of the dead. Excavations of Migration Period cemeteries in continental Europe have also often encounter burials that contain intact Roman vessels. For example, the sixth- to early seventh-century cemetery at Rosmeer in Limburg (Belgium) revealed graves furnished with complete Roman coarseware bowls and even a complete glass prismatic bottle, all several centuries old upon their final deposition (Roosens & Janssens, 1978: 10).

Such Roman items are commonly interpreted as objects put to new uses or repurposed in the early medieval period by people who had no former connection to them. White (1990: 146) suggests that the choice to reuse existing material culture was made primarily for functional reasons; Roman objects could make suitable replacements for items already in use in the Anglo-Saxon milieu. While that may have been the case with objects that could still fulfil their original purpose or be easily modified, most Roman metalwork found in Anglo-Saxon graves consists of partial or fragmented pieces. In some cases, such as in the use of pierced coins incorporated into necklaces, there was still a clear decorative, if non-functional, reason to do so.

For the less diagnostic scrap, other explanations are required. A more ritualistic explanation for the presence of Roman objects in Anglo-Saxon burial assemblages was proposed by Meaney (1981: 115). She suggested that a more amuletic or apotropaic function might be inferred when old items were found in association with other naturalistic elements such as fossils; these items were often contained in female bag assemblages, an argument developed by Dickinson (1993) in her discussion of a so-called 'cunning woman' from Bidford-on-Avon. Both aspects are present in the Scremby Cup: it was still clearly a functional object, but its placement in the ritual context of a burial meant that it must have been imbued with some symbolic value, further enhanced by its distinctive 'otherness'.

As to how the cup might have been acquired in the sixth century, the condition of the cup may offer a clue. Despite the density in Lincolnshire of Roman remains known to have survived into the early medieval period, albeit in ruinous state (see Green, 2020: 25–36), the condition of the cup suggests that it was not a casual and fortuitous find recovered from the ploughsoil or debris of a decayed building. This was already recognized by Eckardt and Williams (2003: 159), who stated that the ‘recovery of complete (*Roman*) pots or metal objects probably relied on the opening of more closed contexts: hoards and graves.’ If we follow this line of argument, while a grave or a hoard are both possibilities for the Scremby Cup, a burial would seem the more plausible. In such a scenario, it would have been actively sought (‘scavenged’?) before being deposited for a second time during the funerary ritual.

When considered in its immediate context, any meanings and values the cup may have held are complex to define. The presence of metal, or occasionally glass, vessels might be assumed to indicate a higher-status burial since they are a comparatively rare grave good during the sixth century (Lucy, 2000: 55–57). But such simplistic high-status attribution is contradicted by the remainder of the burial assemblage of Sk18. As mentioned, the only other artefacts were pairs of annular brooches and wrist clasps; and within the context of the

Scremby cemetery this grave would ordinarily be viewed as comparatively poorly furnished, were it not for the presence of the cup.

Should a single artefact, however unusual, define and potentially elevate the status of an individual when all the other artefacts point to a very ordinary, indeed relatively poor, burial? This is certainly not a call to return to the rather crude employment of 'wealth scores' fashionable some decades ago (e.g. Arnold, 1980); a more subtle approach is needed, starting with the vessel's use in the funerary context. The Scremby Cup was placed at the head end of the grave, and it functioned as a container for food or possibly medicinal products. Only two other containers were excavated from the forty-nine graves at Scremby. Both were plain ceramic vessels without internal deposits and were from well-furnished male graves, which included shield fittings, spears, and knives. The burial of Sk18 is thus different from other female graves, in that the deceased was given a rite otherwise only afforded to males. Next, we must consider the use of an antique vessel. Eckardt & Williams (2003: 160–61) have observed that Roman material occurs more frequently in the graves of females, and sometimes children, than in those of males; this is perhaps inevitable if one accepts (see discussion of White (1990) and Meaney (1981) above) that the majority of scavenged material culture either took the form of largely complete female dress accessories, or it performed a more amuletic function, which also seems to have been the preserve of females.

Other levels of meaning might be applicable here. Although focusing on later seventh-century, or ‘conversion period’, cemeteries, some of Sherlock’s (2016) observations are relevant. While he reaffirms the established narrative that reused artefacts appear to be predominantly found in female graves and indicate elevated status, he states that the intentional reuse of old material culture may have conferred ‘status, faith and antiquity through the female line’ (Sherlock, 2016: 260). While in an earlier pre-Christian context at Scremby the use of a Roman cup probably had different connotations, a clear message was being conveyed through its use in the funerary rite given to this young female. In this regard it is not unique; indeed, as Eckardt & Williams (2003: 155) suggest, Roman vessels may have been deliberately sought out to fulfil ceremonial functions in early Anglo-Saxon funerary contexts and this would have perhaps been even more evocative if those who attended the funeral knew that the vessel had come from an earlier grave.

Thus far, the interpretation of the Scremby Cup has centred on the assumption that it was a 'scavenged' object and thus totally divorced from its original cultural context. There is, however, another intriguing possibility, that is, that the cup had been carefully curated since its manufacture in the third century. The notion that earlier objects found in Anglo-Saxon contexts might be considered 'heirlooms', handed down from generation to generation across the traditional Roman/early medieval divide, has been largely rejected by recent authors (e.g. White, 1990: 125–26; Eckardt & Williams, 2003: 155; Costello & Williams, 2019: 115). The Scremby Cup, being a relatively fragile object, indeed seems unlikely to have remained in active use for several hundred years. As already noted, it bears no signs of damage or repair; however, the same evidence can be used to argue the converse. The cup's extremely fine soldered base remained intact and was firmly in place at the time of its burial in the sixth century, and there is no obvious damage from an earlier episode of deposition. Based on the results of this current analysis, the suggestion that it had not been previously buried is at least as likely as a scenario that supposes it to have been scavenged from a Roman grave. If this was the case, the cup must have been actively curated for several centuries.

If we are to entertain the heirloom hypothesis and the possibility that the individual buried with the cup had a relationship with the object that stretched back into the Roman period, it is important not to conflate this with simplistic notions of a surviving pre-Anglo-Saxon ethnic identity. Indeed, the of annular brooches and wrist clasps in the burial of Sk18 belong to traditional forms of Anglian dress; there is nothing uniquely 'British' about the burial. Given this, any notion that the Scremby Cup might be an 'ethnic marker' of a residual British lineage within an Anglo-Saxon cemetery can be dismissed. It may nevertheless be possible that the Scremby Cup was a possession that had been transferred through a succession of generations, even if its meanings and use had shifted out of all recognition by the time of its final deposition.

Whether a scavenged object or a possession passed through a family, we argue that it is misleading to view the cup purely through a typological lens. Rather than being perceived as 'Roman', 'British', or indeed 'Saxon' by its sixth-century audience, the fact it was clearly of some age is where its real social relevance lay. The placement of the cup, its potential symbolic associations, and its contents represent a ritual not seen in any other female grave in the cemetery. This surely conveyed a powerful message, but one that ultimately is hard to elucidate today. Only through exploring this more nuanced biography, even if this can only be partially understood, can the true significance of the Scremby Cup be fully appreciated.

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Supplementary Material

To view supplementary material for this article, please visit

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Le gobelet de Scremby : biographie d'un objet de table romain dans une sépulture d'époque anglo-saxonne

La présence de matériel romain dans des sépultures d'époque anglo-saxonne en Angleterre est bien connue mais il est extrêmement rare de trouver un objet intact. C'est le cas du gobelet de Scremby, un récipient de table romain en alliage de cuivre émaillé découvert lors de fouilles récentes dans un sépulture féminine de la nécropole de Scremby (Lincolnshire) datée du VIe siècle apr. J.-C. Son inclusion dans une tombe représente un cas unique de réemploi d'un objet ancien dans contexte funéraire du haut moyen âge. Cet article présente les analyses typologiques et métallurgiques du gobelet et le compare à certains exemplaires découverts en

Angleterre et en France. Les auteurs examinent le dépôt du gobelet et son rôle de récipient funéraire contenant des graisses d'origine animale ainsi que les mécanismes qui ont permis à cet objet de survivre pendant plusieurs siècles après sa création. Translation by Madeleine Hummler
Mots-clés : époque romaine, époque anglo-saxonne, émail, bronze, lipides, biographie

Vom römischen Tisch zum angelsächsischen Grab: Biografie des Bechers von Scremby

In England sind römische Funde in frühangelsächsischen Gräbern gut belegt, aber ein intakter Gegenstand kommt sehr selten vor. Letztens haben Ausgrabungen in Scremby in Lincolnshire ein weibliches Grab des 6. Jahrhunderts aufgedeckt, welches einen vollständigen, kupferlegierten und emaillierten Trinkbecher enthielt. Der Becher ist nicht nur ein seltener Fund, sondern auch ist die Deponierung eines römischen Gefäßes in einem frühmittelalterlichen Grab ein einmaliges Beispiel der Wiederverwendung eines antiken Gegenstandes in einem Bestattungskontext. Der Artikel betrifft die Ergebnisse der typologischen und metallurgischen Untersuchungen des Bechers und eine vergleichende Diskussion von ausgewählten Exemplaren aus England und Frankreich. Der Deponierungskontext und die Rolle des Bechers als Behälter von Tierfett in einem Bestattungsmilieu sowie die Umstände seines Überlebens über mehrere Jahrhunderte nach seiner Entstehung werden auch diskutiert. Translation by Madeleine Hummler
Stichworte: Römerzeit, angelsächsische Periode, Email, Bronze, Lipide, Biographie

Figures

Figure 1. *Burial Sk18 from Scremby (Lincolnshire).*

Figure 2*. The Scremby Cup.*

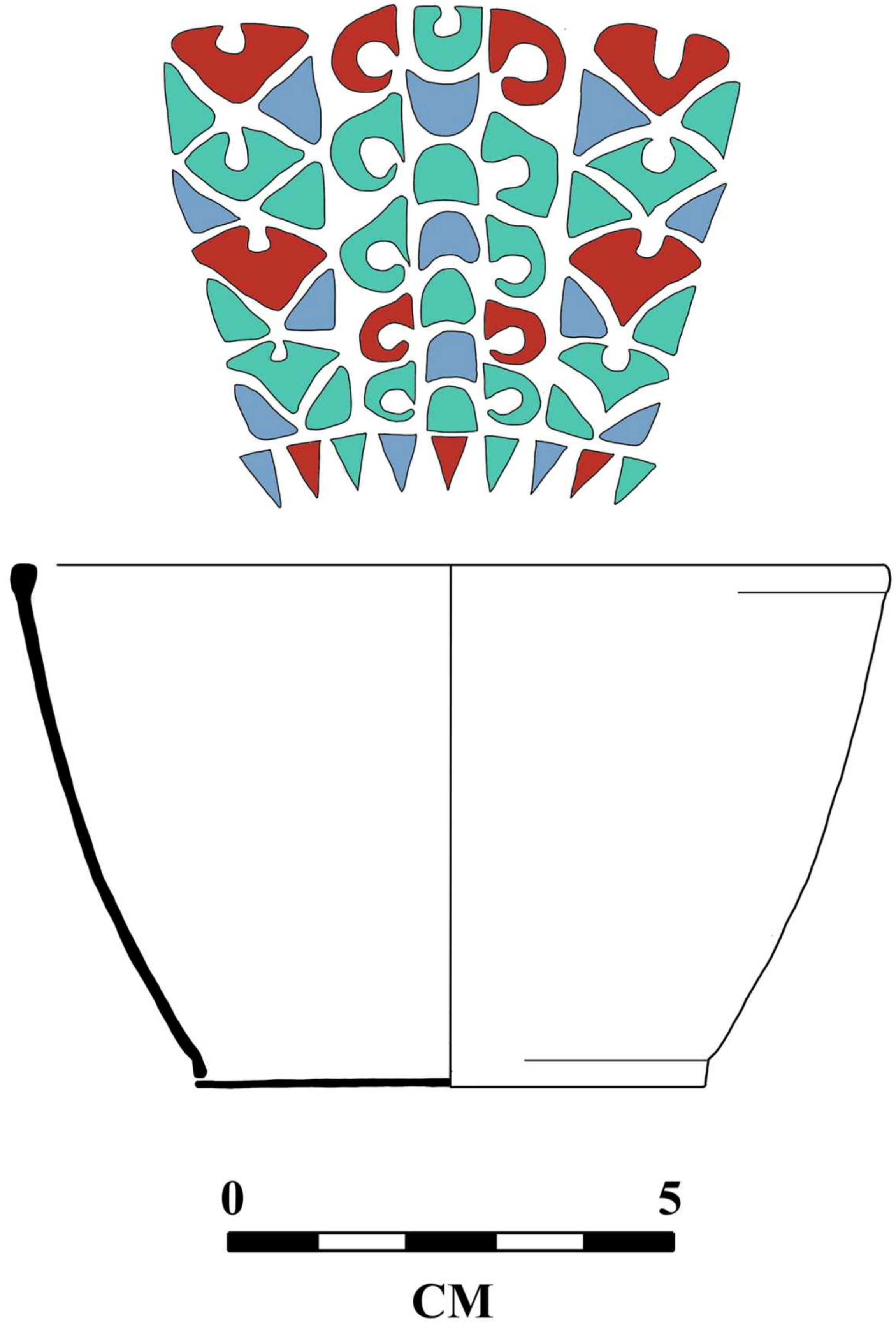


Figure 3. *Cross-section of the cup and its decorative scheme.*

Figure 4*. Vase from La Guierce (Charente, France).*

Reproduced by permission of the Metropolitan Museum of Art, New York.

Figure 5. *Complex flask or 'wine thief' from Ambleteuse (Pas-de-Calais, France).*
Reproduced by permission of the Trustees of the British Museum.

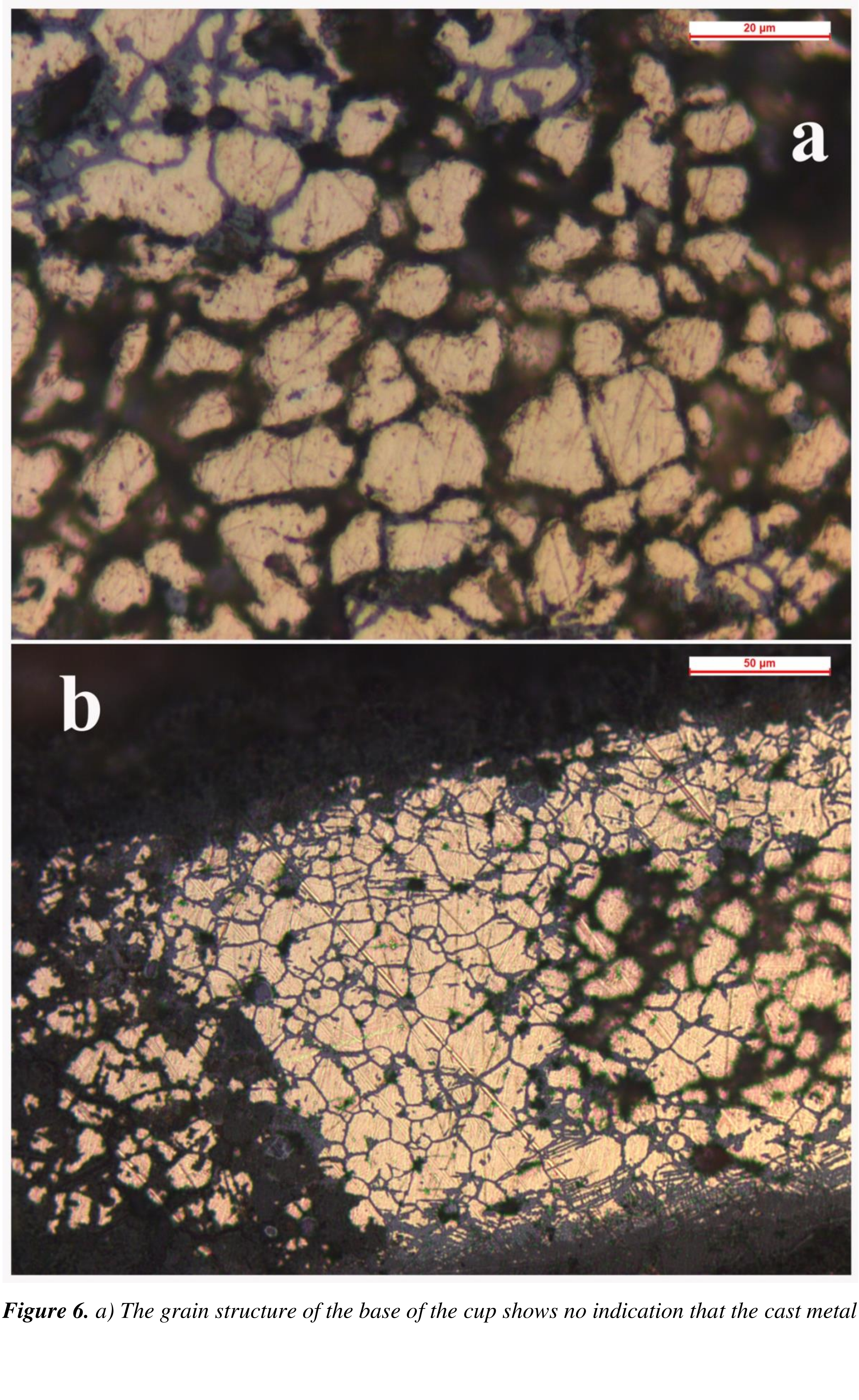


Figure 6. *a) The grain structure of the base of the cup shows no indication that the cast metal*

has been subsequently worked. Image originally captured at 1000× magnification. b) The grain structure of the base of the cup shows no indication that the cast metal has been subsequently worked. Additionally, intergranular corrosion is visible throughout. Image originally captured at 400× .

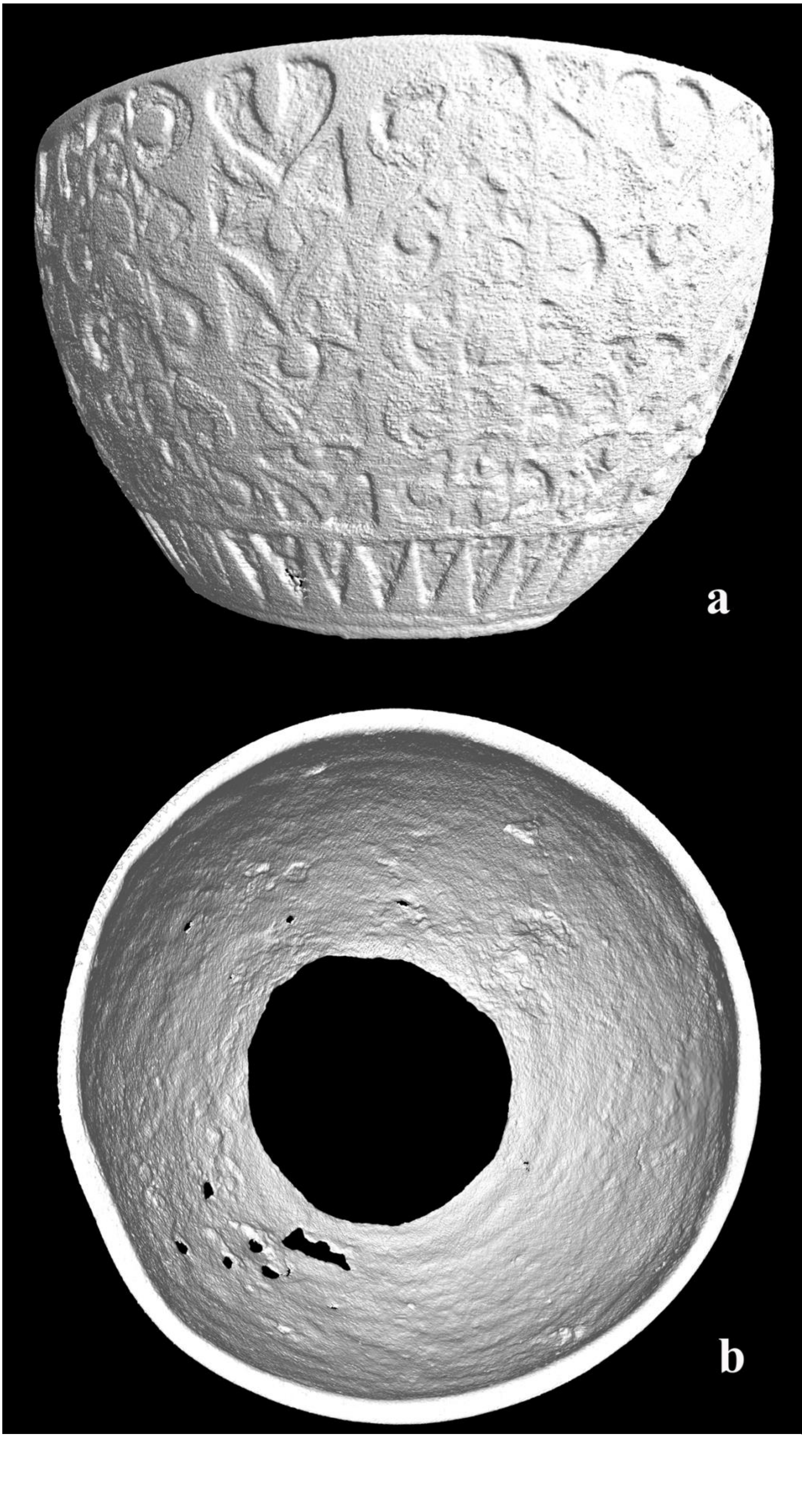


Figure 7.

Artec Spider 3D scan view of the cup. a) Exterior showing polishing striations. b) Interior, which has not been polished.

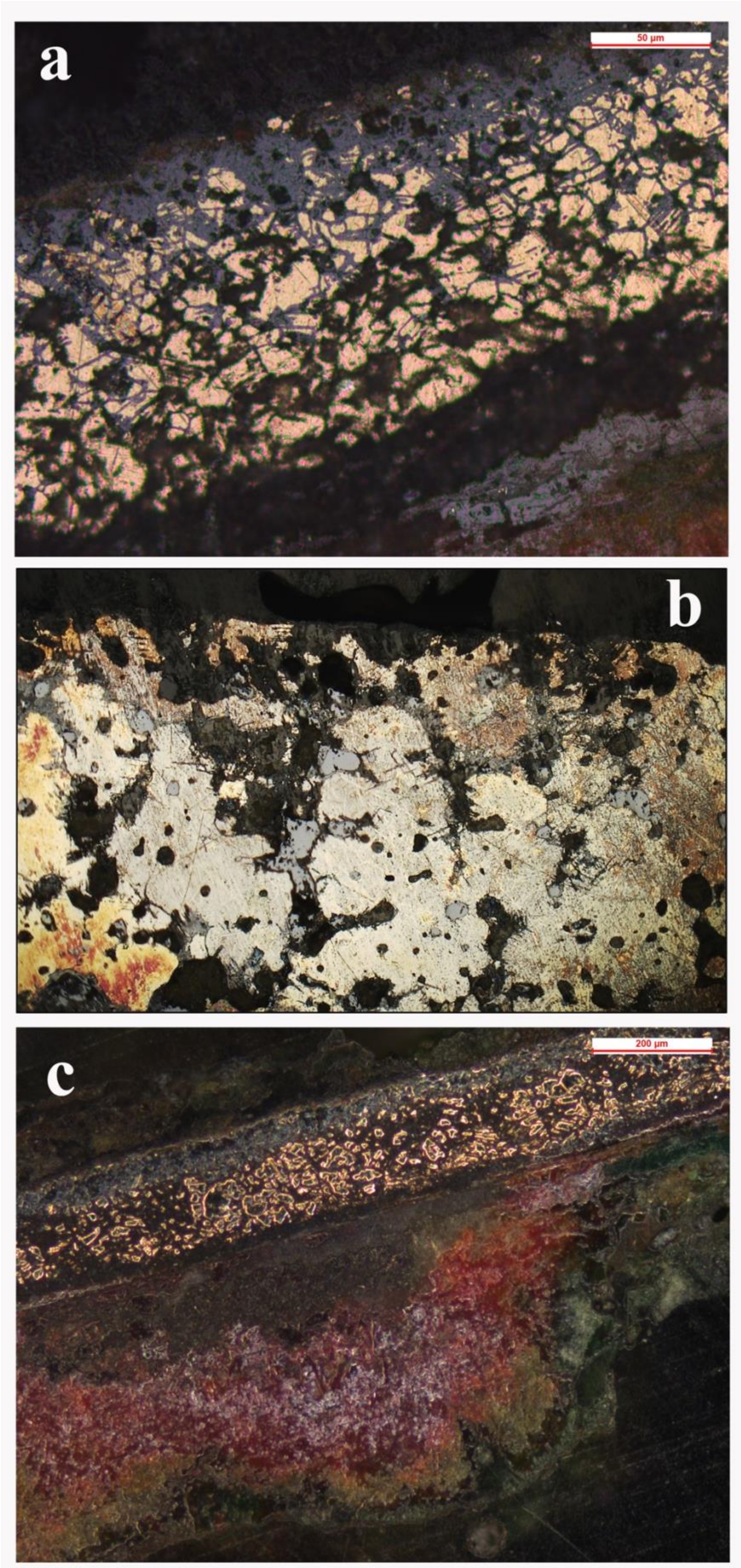
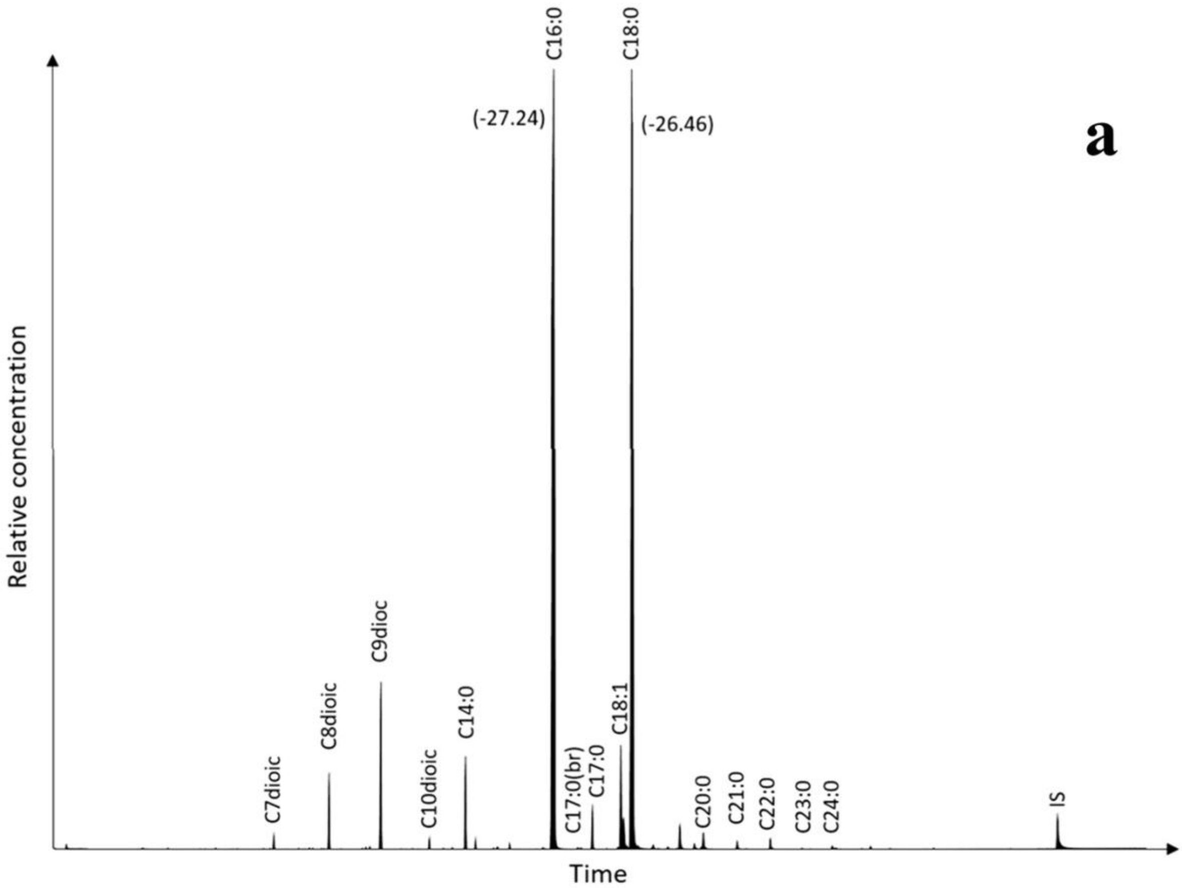


Figure 8. *a) Cross*

section view of the base of the cup, showing the casting impurities accumulated on one side of the cast surface. Image originally captured at 400× magnification. b) Image of the body of the cup showing high distribution of lead globules, visible as round grey inclusions, spread throughout the alloy. Original image captured at 350× magnification. c) A darkfield image showing red and green corrosion on the base of the cup, indicating that copper leaching has occurred. Additionally, it is possible to see that the casting impurities have accumulated on one side of the base's surface. Image originally captured at 100× magnification.



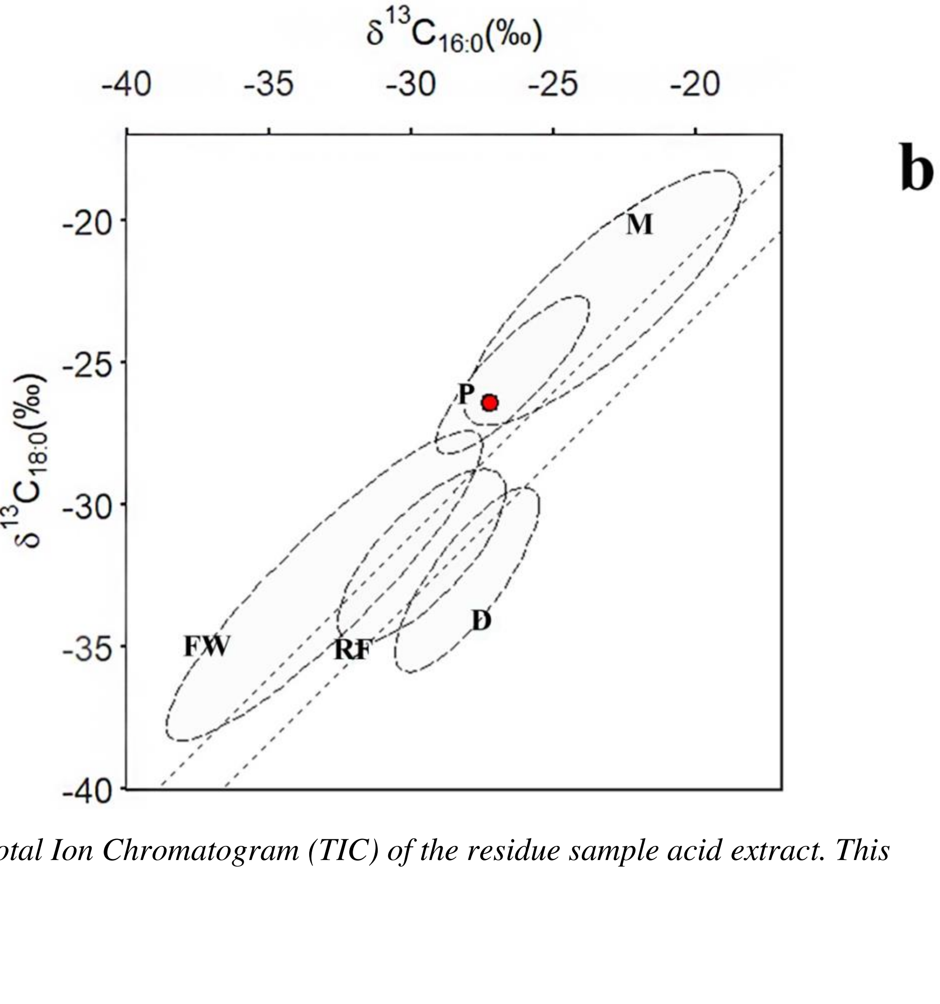


Figure 9. *a) Total Ion Chromatogram (TIC) of the residue sample acid extract. This*

chromatogram shows the main fatty acids identified, diacids refer to α,ω-dicarboxylic acids, and the internal standard (IS). The $\delta^{13}C$ values, obtained using GC-c-IRMS, of $C_{16:0}$ and $C_{18:0}$ fatty acids are also shown. b) Plot of $\Delta^{13}C$ against $\delta^{13}C_{16:0}$. Values less than −3.3‰ are typically associated with ruminant dairy fats, values between −3.3‰ and −1.0‰ are associated with ruminant adipose and above −1.0‰ can be considered as non- ruminant fats (Dudd & Evershed, 1998; Copley et al., 2003).

Table

Table 1. *Handheld portable XRF analysis of the cup's body and base. ND: not detected.*

Location	Sb (%)	Sn (%)	Ag (%)	Zr (%)	Pb (%)	As (%)	Zn (%)	Cu (%)	Fe (%)	Cr (%)	V (%)
Body exterior	0.116	10.802	ND	0.013	47.643	ND	0.484	38.399	2.524	ND	0.017
Body interior	0.175	13.963	ND	ND	25.524	1.803	0.866	57.016	0.653	ND	ND
Base	0.119	14.986	0.361	0.003	12.49	1.097	2.818	65.524	2.442	0.082	0.077

From Roman Table to Anglo-Saxon Grave: An Archaeological Biography of the Scremby Cup

HUGH WILLMOTT, LENORE THOMPSON, JASMINE LUNDY AND COURTENAY-ELLE CRICHTON-TURLEY

SUPPLEMENTARY MATERIAL

SUPPLEMENTARY MATERIAL 1

Niton XL3T X-Ray Fluorescence analyzer accuracy statement

Analysis was conducted using a Thermo Scientific Niton XL3T-980 GOLDD X-Ray Fluorescence XRF Analyzer. The device was used in handheld mode set to 'General Metals', with a total sample cycle time of 45 seconds; 30 seconds of sample time on the main filter and 15 seconds on the low filter.

Accuracy was determined across a range of compositions using Bureau of Analysed Samples Ltd Certified Reference Materials (CRMs hereafter). Specifically, BAS 344, a brass, and BAS 207/2, a gunmetal, were used. These CRMs were chosen for their relation to heritage manufactured copper and copper alloys, as the main elements deemed useful for categorising alloys are Cu, Zn, Sn, Ni, As, and Pb. Arsenic was determined through an uncertified in-house prepared material that is measured at 7 wt% As. All replicates of the arsenic sample are within 10% CV (coefficient of variation).

Accuracy is expressed as %error and is dependent on element concentrations. For the certified reference materials, achieved accuracy as %error is shown in Table S1. Error associated with lead (Pb) is 23.18% when measured as a trace element, though Niton pXRF measurements are within 0.2% difference to the CRM.

Table S1. *The reference materials showing certified and measured results using a Niton XL3T portable XRF device.*

		Cu (%)	Sn (%)	Zn (%)	Pb (%)	Ni (%)	Fe (%)
BAS 344 70/30 Brass	Certified	68.98	0	30.98	0	0	0
	Measured	69.25	ND	30.69	ND	ND	0.04
	Accuracy (%error)	0.39	0	0.93	0	0	200
BAS 207/2 Gunmetal	Certified	87.35	9.74	1.6	0.7	0.28	0.029
	Measured	85.25	10.4	1.71	0.88	0.29	0.09

	Accuracy (%error)	2.43	6.55	6.99	23.18	4.59	108.7

SUPPLEMENTARY MATERIAL 2

Organic residue analysis methods

The acidified methanol extraction (AE) method is now the most commonly used method in extracting lipids from archaeological samples that favours both high extraction yield and direct methylation for stable carbon isotopes measurements (Correa-Ascencio & Evershed, 2014). In brief, methanol and concentrated (96%) sulfuric acid were added to ~ 300mg of the residue sample and a soil control before heating at 70°C for 4 hours. After centrifuging, the supernatant was extracted and transferred to a clean labelled hatch tube. The lipid extract was separated from the acid in hexane and passed through a filter pipette with potassium carbonate. The extracts were transferred to a hydrolysis vial and dried under a gentle stream of nitrogen. The extracts were then resuspended in hexane and transferred to an auto-sampling vial for analysis. Prior to extraction 10µg of internal standard (alkane $C_{34:0}$) was added to the sample and, before analysis by gas chromatography techniques, 10µg of a second standard (alkane $C_{36:0}$) was added.

Gas Chromatography analysis

Both acidified methanol extracts (residue sample and soil control) were screened by gas chromatography fitted with a flame ionisation detector (GC-FID) for quantification and general screening of preservation. An Agilent 7890A Series gas chromatograph was fitted with a DB1-High temperature (HT) column (15 m × 0.32 mm × 0.1 µm). 1 µl of sample was injected via a splitless injector maintained at a temperature of 300°C. The temperature of the column was kept at 100°C for 2 minutes and then increased by 20°C every minute until a final temperature of 325°C was reached. 325°C was then held for 2 minutes. Helium was used as the carrier gas at constant flow. The detector was kept at 300°C with hydrogen flow of 30 ml min^{-1}. This was a short temperature programme for 20 minutes.

Both extracts were analysed using Gas Chromatography Mass Spectrometry (GC-MS). The GC component was an Agilent 7890A series chromatography attached to an MS Agilent 5975 Inert XL mass selective detector with a quadrupole mass analyser (Agilent technologies, Cheadle Cheshire, UK). A DB-5MS (5%-phenyl)-methylpolysiloxane column (30 m × 0.250 mm × 0.25 µm; J&W Scientific, Folsom, CA, USA) was used. The GC column was inserted directly into the ion source of the mass spectrometer. 1 µl of sample was injected via a splitless injector maintained at a temperature of 300 °C. Helium at constant flow was used as the carrier gas. The ionisation energy of the spectrometer was 70eV and spectra were obtained by scanning between *m/z* 50 and 800. The temperature of the column was kept at 50°C for 2 minutes and then increased by 10 °C every minute until a final temperature of 325°C was reached.

With the primary aim to screen for *ω*-(*o*-alkylphenyl) alkanoic acids (APAAs) which are formed through thermal transformation of mono- and polyunsaturated fatty acids present in plant, terrestrial and aquatic oils (Cramp & Evershed, 2014; Bondetti et al,. 2021). Acidified methanol extracts were analysed on the GC-MS using a DB-23 (50%-cyanopropyl)-methylpolysiloxane (60 m × 0.25 mm × 0.25 µm; J&W Scientific, Folsom, CA, USA) column. The temperature of the column was kept at 50 degrees for 2 minutes and then increased by 10 degrees every minute until 100 degrees. The temperature increased then until 140 degrees by 4 degrees every minute, then until 160 degrees by 0.5 degrees every minute and finally until 250 degrees by 20 degrees every minute. A selected ion monitoring (SIM) method was used to target ions *m/z* 74, 105, 262, 290, 318, 346 for the detection APAAs with carbon lengths C_{16} to C_{22} ($APAA_{16-22}$).

The residue extract was further analysed by Gas Chromatography-Combustion-Isotope Ratio Mass Spectrometry (GC-C IRMS) to determine the stable carbon isotope value of the major fatty acids ($C_{16:0}$ and $C_{18:0}$). This approach has been shown to be helpful in distinguishing ruminant adipose (i.e. carcass fats), non-ruminant adipose ruminant dairy fats (Dudd & Evershed, 1998; Copley et al., 2003), as well as marine and freshwater resources based on their $\delta^{13}C$ values compared to modern reference values (Craig et al., 2013). An Isoprime 100 (Isoprime, Cheadle, UK) with a Hewlett Packard 7890B series GC (Agilent Technologies, Santa Clara, CA, USA) and an Isoprime GC5 interface (Isoprime Cheadle, UK) was used. A DB-5MS Ultra inert fused silica column (US, 60 m × 0.25 mm × 0.25 µm) was fitted. 1 µl of sample was injected via a splitless injector at a temperature of 300°C. Helium at a constant flow was used as the carrier gas. An Agilent 5975C mass spectrometer detector was attached to the column and half of the gas eluting from the column was directed to and ionized in the mass spectrometer. The other half of the gas eluting from the column was directed to the reactor tube to oxidize carbon species in CO_2. The ionization energy of the mass spectrometer was 70 eV and ion intensities of *m/z* 44, 45 and 46 were recorded. IonOS software was used to compute the $^{13}C/^{12}C$ ratio of the peaks in the extracts (details can be found in previously published works (Craig et al., 2013)).

Heating markers

The absence of heating markers in the lipid profiles of the residue, such as ketones (Evershed et al., 1995) or ω-(o-alkylphenyl) alkanoic acids (APAAs) (Bondetti et al., 2020), does not allow us to confirm whether these fats had been heated before entering the copper-alloy vessel, were in the copper-alloy vessel itself, or if they were not processed at all. Ketones are only formed through the heating of fats at high temperatures (>350 °C) or after multiple heating events (Evershed et al., 1995; Evershed, 2008). APAAs, on the other hand, have been shown to form more readily at lower temperatures (<270 °C); here, they were not identified despite the use of sensitive techniques for their detection (Cramp & Evershed, 2014). Note, however, that APAAs can only form in the presence of a clay matrix containing metal ions and would not form if heated directly in the metal vessel (Evershed et al., 1995; Raven et al., 1997; Bondetti et al., 2020).

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