

Small socketed axeheads from northern Britain: some finds ‘of more than ordinary interest’

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ABSTRACT

In 2019 a miniature bronze socketed axehead was discovered near Morebattle, Scottish Borders. As such artefacts are rare finds in northern Britain, the opportunity has been taken to draw together the range of unusually small socketed axeheads recorded from Scotland and northern England, and to discuss them in their wider British context. For the first time, scientific techniques are applied to these objects, including optical microscopy, X-ray fluorescence analysis and computed X-radiography, to inform discussions of wear analysis, material composition, manufacture and chronology. The paper concludes with a discussion of the function and meaning of small socketed axeheads and their changing role over time.

INTRODUCTION

In 2019 an unusually small socketed axehead was discovered near Morebattle in the Scottish Borders (Illus 1). Representing a miniature version of a larger axehead type, it is a valuable addition to the range of small axeheads known from northern Britain, where such finds are rare. In marked contrast to Scotland, where the Morebattle axehead is the first such find to be recorded for over 20 years, metal detecting and systematic excavations in England and Wales have resulted in the discovery of a significant

number of miniature axeheads. These have recently been considered in detail by Alex Bliss (2020), who was able to assemble a database of over 150 examples to create a typological and chronological framework, underpinned by finds from datable contexts.

Although comprehensive for England and Wales, Bliss’s (2020) survey did not fully take into account finds of small axeheads from northern Britain, partly because of the criteria applied for inclusion in the database. An incomplete axehead from Kirknewton parish, Northumberland (see catalogue no. 9 below),

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ILLUS 1 The miniature socketed axehead from Morebattle, Scottish Borders. (From the Collections of Scottish Borders Council administered by Live Borders © National Museums Scotland)

represents the most northerly example mapped by Bliss (2020: fig 18) but does not feature in his discussion. In their corpus of bronze axeheads from Scotland and northern England, Schmidt & Burgess recorded two examples of what they termed ‘miniature’ axeheads from Muirfield, East Lothian and Stelloch, Dumfries and Galloway (Schmidt & Burgess 1981: 248, nos 1646–7; see catalogue at end of this paper). At that time, they noted the problems that this very small sample posed for classification and dating, even going so far as to speculate about authenticity. Even if such artefacts remain uncommon, metal detecting since that time has resulted in an appreciable expansion of the record in and beyond the Border counties. We have therefore taken the opportunity presented by the new find to draw together and discuss the range of small socketed axeheads recorded from Scotland and the northernmost English counties; even if not all ‘true miniatures’ (see below), a dataset of 11 axeheads (see catalogue) invites discussion on account of their unusually small size.

In an attempt to address issues relating to their manufacture and functionality, as many axeheads as possible have been subject to wear, x-radiography and qualitative X-ray fluorescence

(XRF) analyses. Unfortunately, secure contextual information is in most cases lacking and dating is dependent on typology. However, drawing on Bliss’s (2020) recent synthesis of miniature axes from England and Wales, the range of finds from Scotland and northern England can now be set in a wider context; despite limitations, they offer scope for consideration in terms of regionality, dating, deposition and functionality, and reflection on their significance.

DEFINING SMALL SOCKETED AXEHEADS: DIMINUTIVES VERSUS MINIATURES

What constitutes an unusually small, diminutive or miniature axehead? Before discussing the dataset, it is important that clearly defined terminology is applied when considering small socketed axeheads. Broadly, they share their morphological form with full-sized Late Bronze Age and Earliest Iron Age socketed axeheads but are less than half the size, frequently only *c* 11–45mm long, and are often considered ‘miniatures’ (Robinson 1995; Kiernan 2009: 114–52; Bliss 2020). However, they are very diverse in length, width, socket character and loop size; this is apparent even within the small dataset presented in this paper and highlights the fact that the terminology applied is varied and can be rather fluid and problematic. Bailey (2005: 29–30), for example, argued for the terms ‘miniature’ and ‘model’ to describe small items based on their proportional accuracy.

Here we propose that small axeheads be classified under two separate terms: ‘diminutive’ and ‘miniature’. ‘Diminutive’ may be taken to refer to axeheads that are recognisably small versions of larger axeheads and were presumably functional. As such, they share the morphological features of their larger counterparts in terms of shape, proportions and style (for example rim form, mouldings and so on), but are roughly half their size or smaller. Crucially, their small size does not preclude the possibility that these were functional small tools. This group thus includes axeheads that may have been produced to emulate larger

axehead types, with sockets that could plausibly have accommodated hafts and cutting edges that may present indicators of wear. However, it excludes classes of functional axeheads that were simply small, such as Yorkshire-type axeheads of the Late Bronze Age, which are typically *c* 70–80mm long, well produced and often show signs of wear (Schmidt & Burgess 1981; Roberts & Ottaway 2003); there appear to be no finds of diminutive versions of these (nor indeed significantly larger ones).

By contrast, here, true ‘miniature’ axeheads follow the definition presented for Iron Age and Roman miniature objects by Kiernan (2009: 2; see also Green 1981: 253; Kiernan 2015): namely, objects that represent small versions of everyday objects but were clearly non-functional, as indicated by their crude design, highly stylised forms, or production in materials unsuitable for use. These are typically considered ‘votive’ or amuletic objects and may possess exaggerated elements of the objects on which they are based, or else remove features entirely (see Kiernan 2009). In the case of socketed axeheads, often the blade width and side loops are exaggerated, and the sockets are frequently too small to have ever contained a haft, or were solid (for example Robinson 1995).

This distinction between diminutives and miniatures is important because small socketed axeheads occur in a wide range of styles and are seemingly deposited across a broad chronological span, from the Late Bronze Age to the Roman period (*c* 800 BC–AD 400) (Bliss 2020). Moreover, while miniature objects of all varieties have often attracted academic attention (for example Green 1978; Bailey 2005; Kiernan 2009; Farley 2011), diminutive object forms are less often considered, highlighting a gap in past research. Indeed, Robinson’s (1995) seminal paper on miniature axeheads defined the group of objects under study as those measuring less than 45mm in length and excluded other types of small axehead that were either of certain diminutive forms and larger than 45mm long, or of ‘true’ miniature dimensions but plausibly functional. The two exclusions thereby encapsulate the defining features of our ‘diminutive’ category. More recently,

Bliss (2020) catalogued 151 miniature examples recorded through the Portable Antiquities Scheme (PAS) in England and Wales, as well as previous studies, setting them within a revised typological scheme, divided by form and style. Again, however, Bliss (2020) only considered those small axeheads deemed non-functional, though as we shall see there is overlap with those that we would define as ‘diminutive’.

Functional diminutive objects have never been the focus of a study, though small examples of typically larger objects are known throughout the Bronze Age, particularly among axeheads. Stuart Needham (1988, 2017), for example, highlighted diminutive Early Bronze Age axeheads that may have been functional tools for fine woodworking, while Cowie & O’Connor (2009: 324–5) drew attention to the range of correspondingly small matrices on several surviving Early Bronze Age stone moulds from Scotland, and noted that few examples of the actual metal tools have been found. Small examples of Middle Bronze Age palstaves, albeit rare (see Cunliffe et al 2019: 147–8), may also have served a similar purpose to earlier possible diminutive tools. In his corpus of socketed axeheads from Ireland, Eogan (2000) drew attention to the variability in size. Eogan’s Class 11 axeheads, for instance, date to the Late Bronze Age and range from 22.5mm to 155mm long, with an average length of 68.22mm (Eogan 2000: 86); rather than considering the small examples non-functional miniatures, however, Eogan (2000: 9) suggested the smaller examples within the whole corpus may have been reserved for fine forms of craftwork. While some are clearly non-functional, the potential functionality of small axeheads as specialised craft tools is often overlooked, especially in the later Bronze Age when the inventory expanded to include more immediately recognisable specialist craft tools, such as gouges, chisels and knives.

THE DATASET

As noted in the introduction, the recent find from Morebattle brings the total number of recorded examples of diminutive and miniature axeheads

from northern Britain to 11 (Table 1, Illus 2–4). Full catalogue entries can be found at the end of this article; where mentioned in the text, the relevant catalogue number is shown in parentheses (for example, Poolewe (1)).

The dataset comprises two miniatures, five diminutives and one unclassified small axehead. Three further axeheads straddle our parameters for diminutive or miniature – a reflection of the fact that such classifications are rarely entirely clear cut. In all, they cover a broad range of forms and come from four Scottish regions and the two northernmost English counties. Ten are single finds, while one (Poolewe) comes from a hoard (Table 1; see catalogue).

The finds from Scotland are held in public collections (principally National Museums Scotland), so for the purposes of this paper we have been able to draw on museum catalogues and archival records in the case of older finds and on the reports now compiled as a matter of course as part of the formal Scottish Treasure Trove process. The axehead from Bellingham (2), Northumberland is a 19th-century find, which was donated to the NMS collection in 1879 but, uncharacteristically, it appears to have been overlooked by Schmidt & Burgess (1981). In the case of the more recent finds from northern England to which we refer in this paper, we have relied on the PAS online database, the artefacts having been returned to their finders and thus not available for study.

CLASSIFICATION AND DATING

TYPOLOGICAL ISSUES

The axeheads in our dataset are diverse. The majority fall within our diminutive category, which is supported, in part, by the wear analysis presented below, as well as by comparison with larger axeheads. Where appropriate, we applied Bliss's (2020) typology for England and Wales (Table 1). All the classifiable axeheads fall within his Class D, defined as 'Miniature axes of realistic style, with thin bodies, variously prominent mouth mouldings and expanding bodies with

curving, chisel-like or crescentic blades' (Bliss 2020: 14). The diminutives fall within this 'realistic style', by virtue of being models of larger axeheads, but do not necessarily fulfil other criteria (such as having thin bodies); moreover, we must acknowledge that Bliss's group was never intended to apply beyond true miniatures. Nonetheless, even among the miniatures, the broad nature of 'Class D' obscures some stark differences: for instance, the small solid-socketed axehead from Stelloch (3) is quite different from the miniature from Morebattle (11), though both fall within this type. Instead of relying on this typology too heavily, here we highlight parallels with larger axehead forms where possible to assist with classification and dating.

DIMINUTIVE AND MINIATURE VERSIONS OF LATE BRONZE AGE OR EARLIEST IRON AGE AXEHEADS

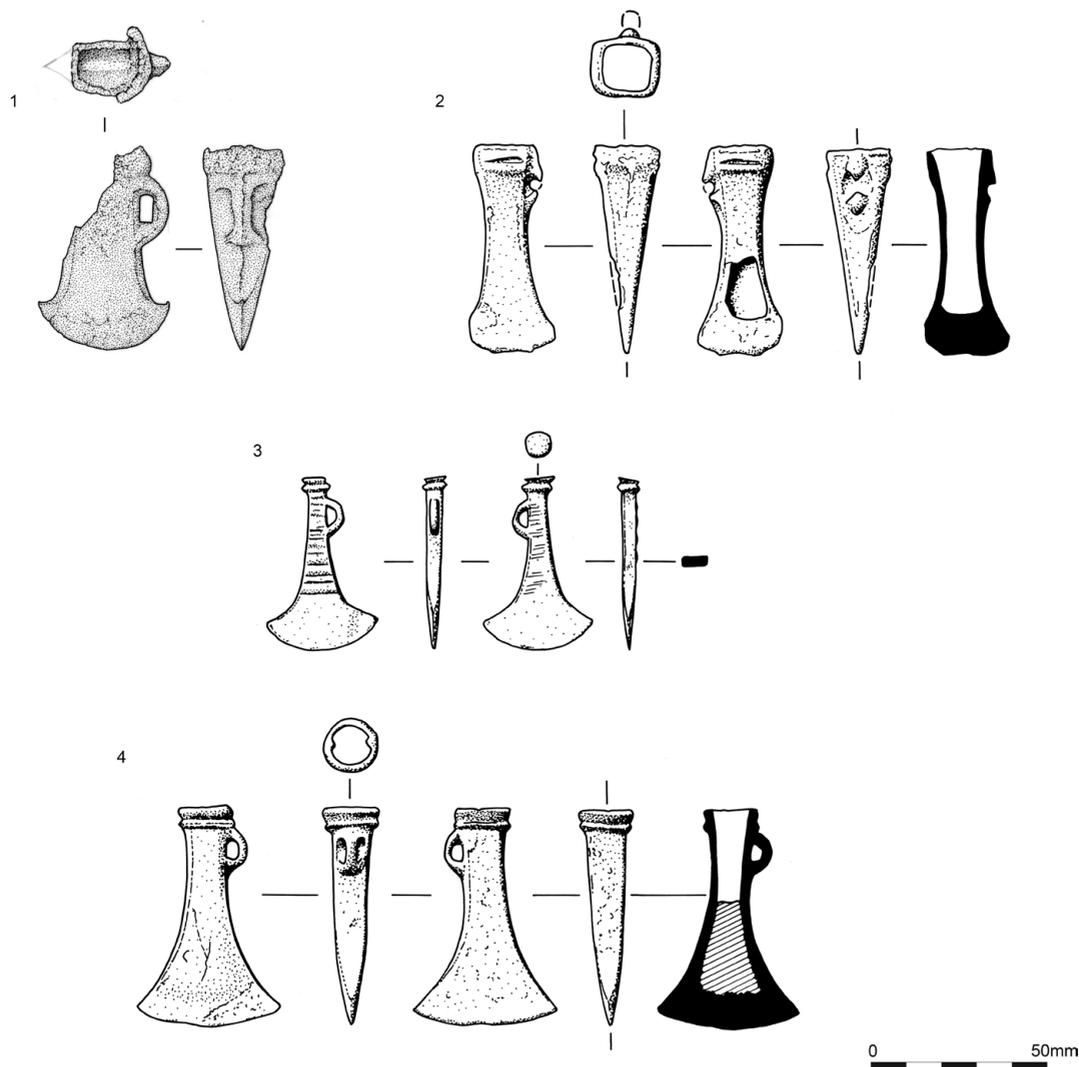
Most diminutive axeheads compare well morphologically with larger axeheads of the Late Bronze Age (1100–800 BC) and Earliest Iron Age (800–600 BC), providing an indication of the broad currency of the smaller axeheads. Although the side loops are proportionally quite large in relation to the size of the axehead, the examples from Muirfield (4), Closeburn (6), Maxton (7), Whittington (8) and Morebattle (11) have circular or square sockets, broad blades and bulbous collars making them morphologically similar to larger Sompting-type forms of the Earliest Iron Age (cf Schmidt & Burgess 1981: plates 100–104). The Morebattle miniature axehead compares particularly well with the full-sized socketed axeheads from Golspie (Highland), Cronan (Perth and Kinross) and Castle Hill (East Yorkshire) (Schmidt & Burgess 1981: nos 1587, 1588 and 1602). While the broad blade, slender body and square socket mouth of the Bellingham axehead (2) are also in keeping with Sompting axes, its features also recall Late Bronze Age forms such as type Meldreth.

Greater chronological precision is possible in the case of the Poolewe axehead (1), a diminutive example of Transitional-type axeheads, which share features of Late Bronze Age and Earliest

TABLE 1

Summary of the axeheads in the dataset (full details in catalogue). (Note: Numbers are plotted on Illus 9. * denotes object whose exact findspot is unknown; ** NGR protected by Treasure Trove (TT) or Portable Antiquities Scheme (PAS); *** object not physically studied by authors. NMS = National Museums Scotland)

No.	Date of discovery	Findspot	Proposed date	NGR	Discovery/ context	Diminutive type or miniature Bliss (2020) type	Collection	Key references
1	1877	Poolwee, Highland	800–600 BC	NG 863 804	Hoard	Diminutive (Transitional)	Private; on loan to Gairloch Museum	Jolly (1880); Knight et al (2021)
2	1879	Bellingham, Northumberland	1100–600 BC	NY 84 83*	Unknown	Diminutive	NMS X.DF 123	SAScot (1879: 310)
3	1885	Stelloch (aka Blairbuiy), Dumfries and Galloway	c 400 BC–AD 200	c NX 37 41	Uncertain – single find?	Miniature Class D	NMS X.DE 51	Maxwell (1885: 42, fig 36); Schmidt & Burgess (1981: 248, no. 1647)
4	1923	Muirfield, Gullane, East Lothian	800–600 BC	NT 49 84*	Chance find while walking	Diminutive (Sompting)	NMS X.DE 126	Cree (1928: 229–30); SAScot (1959: 120, no. 10); Schmidt & Burgess (1981: 248, no. 1646)
5	1977	Newtonmore, Highland	675–450 BC	NN 7147 9870	Found during digging	Diminutive (Armorican type, variant Couville)	NMS X.DE 133	SAScot (1980: 538); Schmidt & Burgess (1981: 249, no. 1655A)
6	1983	Closeburn, Dumfries and Galloway	800–600 BC	NX 908 932	Metal-detected single find	Diminutive/miniature (Sompting)	Dumfries Museum and Camera Obscura DUMFM:1990.61	Unpublished, this paper
7	1995	Maxton, Scottish Borders	800–600 BC	NT 62 30**	Metal-detected single find	Diminutive/miniature (Sompting?) Class D?	Live Borders ETLMS 01.0143	Treasure Trove (COTT 29/97)
8***	2008	Whittington, Northumberland	800–600 BC	NY 99 72**	Metal-detected single find	Diminutive (Sompting)	Finder	PAS NCL-346DE5
9***	2015	Kirknewton, Northumberland	Uncertain	NT 91 30**	Metal-detected single find	Uncertain (diminutive?)	Finder	PAS DUR-E5DB54; Bliss (2020: 27)
10***	c 2019	Ireby and Uldale, Cumbria	800–600 BC	NY 23 38**	Metal-detected single find	Diminutive/miniature (Sompting)	Finder	PAS LANCCUM-70715D
11	2019	Morebattle, Scottish Borders	800–600 BC	NT 75 27**	Metal-detected single find	Miniature (Sompting) Class D	Live Borders	Unpublished, this paper: Treasure Trove (COTT 86/19)

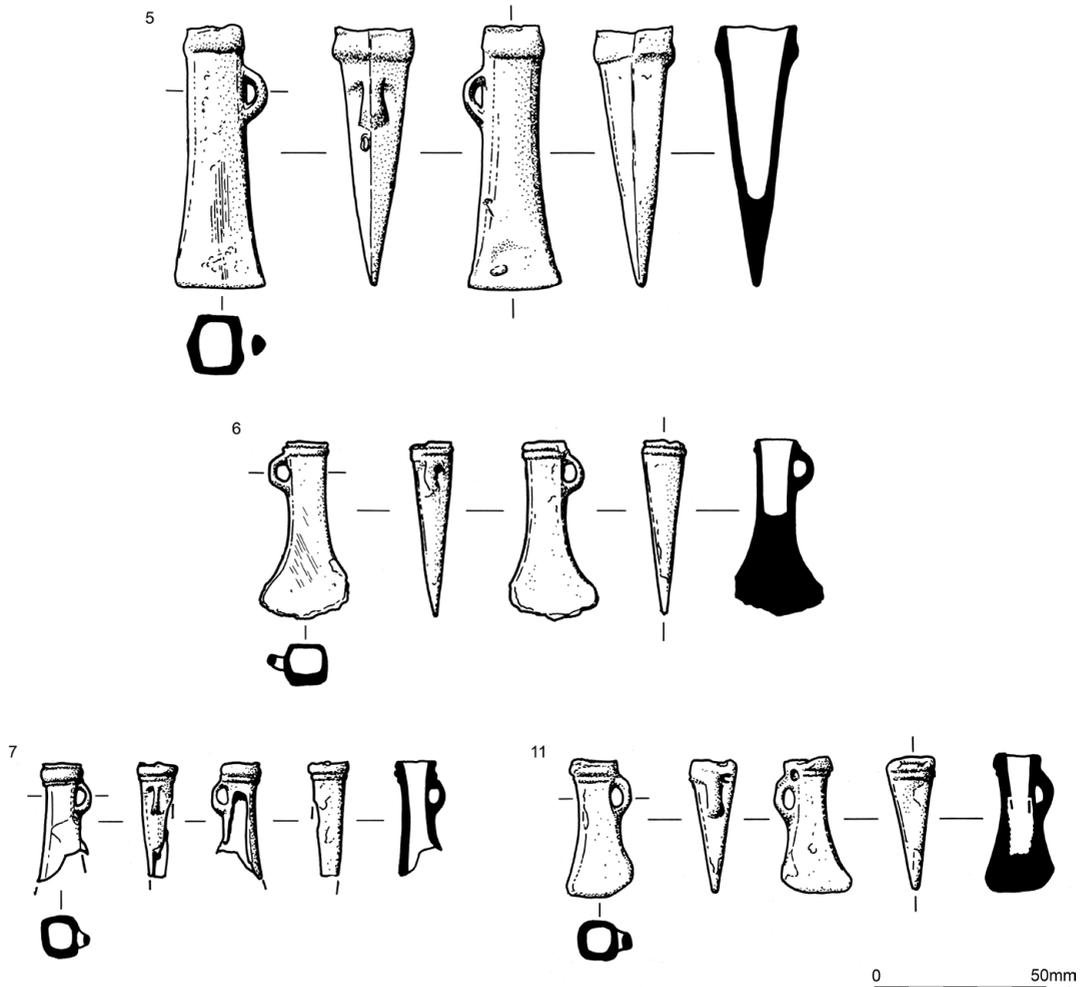


ILLUS 2A Small socketed axeheads from northern Britain (numbers relate to Table 1 and catalogue). (No. 1 drawn by Marion O'Neil; Nos 2–4 drawn by Alan Braby)

Iron Age axeheads (Boughton 2015: 94–101; Knight et al 2021: 6–7). This axehead was associated with full-sized Sompting axeheads, one of which contained the remains of a haft that produced a radiocarbon date 800–560 cal BC at 95.4% probability (790–760 cal BC at 68.2%; 2553±21 BP; SUERC-81222) (Knight et al 2021: 8–9). The Poolewe diminutive axehead was probably produced towards the end of the 9th century BC and deposited during the 8th century BC.

THE ARMORICAN AXEHEAD FROM NEWTONMORE

The Newtonmore axehead (5) fits within the established typology for Armorican-type axeheads, and when first recorded by Schmidt & Burgess, this axehead did not elicit any special comment (1981: 249, no. 1655A). As a class, Armorican axeheads are typically large socketed axeheads (120–140mm), deposited as-cast and unused (Briard 1965: 241–82; Schmidt & Burgess



ILLUS 2B Small socketed axeheads from northern Britain (numbers relate to Table 1 and catalogue; nos 8–10 not available for illustration). (Drawn by Alan Braby)

1981: 248). However, small (70–80mm long) examples are known; specifically, the Newtonmore axehead can be classified as an example of the Couville variant, usually discovered in Brittany (Briard 1965: 262–6; Rivallain 2012: 47–8). Interestingly, Armorican-type axeheads were also produced in miniature forms as well, such as the Maure-de-Bretagne variant with a length in the range of 50–55mm (Briard 1965: 266).

The various small Armorican-type axeheads have been excluded from previous studies of miniature axeheads (for example Robinson 1995;

Bliss 2020), but the small size of the Newtonmore example does bring it within the scope of the present paper. As such, it would be best classed within our diminutive category, despite being non-functional like their larger counterparts. However, as Armorican axeheads rarely seem to have functioned as tools and instead seem to have represented token forms of axeheads no matter their size, in this case the division between ‘diminutive’ and ‘miniature’ becomes academic.

Armorican-type axeheads were probably produced and circulated towards the end of the



ILLUS 3 A group photo of small socketed axeheads, showing the variability in the dataset (numbers relate to Table 1 and catalogue). (© National Museums Scotland)

British Llyn Fawr metalworking assemblage or Hallstatt C2 (*c* 675–625 BC) (O'Connor 2007), but evidence from France suggests their main period of circulation was during the Early Iron Age/Hallstatt D (*c* 625–450 BC) (Gomez de Soto et al 2009; Gomez de Soto 2015). The Newtonmore axehead can thus be broadly dated to the Earliest Iron Age/Early Iron Age (*c* 675–450 BC).

THE MINIATURE AXEHEAD FROM STELLOCH

Finally, the miniature axehead from Stelloch (3) is of a rather different nature to the axeheads presented so far. It is a stylised imitation of a socketed axehead, plain on one face and decorated with transverse ribs on the other. It was included by Schmidt & Burgess in their corpus of Bronze Age axeheads, admittedly with some reservations

(Schmidt & Burgess 1981: 248), but in general, such stylised miniature socketed axeheads might now be considered to date to the Middle–Late Iron Age or early Roman period on the few associations that are known (Robinson 1995; Bliss 2020: 4–5, 11). A good undecorated parallel comes from the Stanwick area, North Yorkshire, found while metal detecting (McIntosh 2009). Although there is no associated dating evidence with the axehead, Stanwick was the location of a large Iron Age fortification during the 1st century AD (Wheeler 1954). A solid stylised miniature socketed axehead of a different form was recovered from a Middle Iron Age burial of a female at Arras W.57, Yorkshire (Greenwell 1906: 303; Stead 1979: 84–5; Robinson 1995: 61, no. 1), and by the Roman period, flattened solid axe-shaped pendants and dress accessories were common



ILLUS 4 Diminutive socketed axeheads from Closeburn, Dumfries and Galloway (6), Whittington (8) and Kirknewton (9), both Northumberland, and Ireby and Uldale, Cumbria (10). (Images: 6, courtesy of Dumfries Museum; 8, Courtesy of the Portable Antiquities Scheme and Museum of Antiquities of the University and Society of Antiquaries of Newcastle upon Tyne, CC-BY-SA-4.0; 9, Courtesy of the Portable Antiquities Scheme and Durham County Council, CC-BY-SA-4.0; 10, Courtesy of the Portable Antiquities Scheme CC BY 2.0, with minor amendments)

(Kiernan 2009: 118–22), though these latter objects bear limited morphological similarities to the axeheads under discussion here. Nonetheless, a Middle Iron Age–early Roman date (*c.* 400 BC–AD 200) seems appropriate for the Stelloch axehead on the available evidence.

WEAR ANALYSIS

In the case of those axeheads available for study, each was examined using optical microscopy to

assess the evidence for manufacture, use and pre-depositional treatment.

In almost all cases, the axeheads were well cast and finished, with any casting seams ground and polished; the same was true around the socket mouths. Small protrusions at the mouth of the Muirfield (4) example represent the slight remains of well-finished casting sprues. The manufacture of some axeheads gives indications of their intended functionality. The solid cast axehead from Stelloch (3), for instance, has decoration on only one face, showing how it

was intended to be viewed; moreover, possible wear on the side loop might relate to it being hung, perhaps as a pendant. The Closeburn axehead (6) is flat in side profile along one face and angled along the other, as well as having a slightly misaligned socket. This suggests it was intended to sit flat on one surface, perhaps as a wedge or hanging as a pendant. Radiography revealed a very short socket (see below), which strengthens the idea that it was not made to be used as a tool.

Several axeheads (for example Stelloch (3) and Closeburn (6)) have a disproportionately large side loop; this might be an abstract or exaggerated feature resulting from miniaturisation (cf Kiernan 2009), but it may be that side loops needed to be a certain size in order to achieve a successful casting within the limits of contemporary technology.

One axehead (Maxton (7)) stands out for its lack of finishing, with traces of two small casting sprues around the socket mouth. Very slight casting seams down the sides were ground, suggesting there was either a deliberate choice to leave the casting sprues or, as this axehead is also missing its cutting edge, the axehead may have broken during finishing processes.

For most of those axeheads examined, wear specifically related to use and working was difficult to identify and interpret, either as a result of post-recovery cleaning (Poolewe (1)) or because the axehead was incomplete (Maxton (7), Kirknewton (9), Ireby and Uldale (10)). Nonetheless, the worn nature of the fragmented cutting edges suggests they may have been used in some capacity (for example Kirknewton (9)). In the case of the Muirfield axehead (4), radiography revealed the edge had been thinned (see below), perhaps the result of hammering in preparation for use, but the finer surface details are obscured by modern consolidant. The two axeheads from Closeburn (6) and Morebattle (11) present scratches around the cutting edges, though these are insufficiently diagnostic to determine if they are the result of polishing or sharpening. However, in both cases the edges are quite asymmetrical and although

post-depositional damage makes conclusive interpretation problematic, it seems probable these edges have been partially reworked. No wear evidence, such as asymmetry or striations, could be identified on one of the miniatures (Stelloch (3)) or on two of the diminutives (Newtonmore (5) & Whittington (8)).

Only the Bellingham axehead (2) presents conclusive signs of working (Illus 5). The edge of the axehead is slightly abraded, but clear, short striations are present, running parallel to the cutting edge and extending back about 20mm; striations like these probably indicate that the edge was polished and/or sharpened (cf Roberts & Ottaway 2003; Dolfini 2011). Other polishing striations can be observed around the socket moulding and along the facets (Illus 6).

Two axeheads (Poolewe (1) and Bellingham (2)) present damage that was probably the result of use. The Poolewe axehead broke across half of the socket down one face, suggesting material failure through use. The Bellingham axehead has spalling on one side where a rough oval of metal has fragmented and been ejected from the inside out, conceivably the result of pressure from a haft insert; the side loop is also broken, which may be a result of tension through hafting. Distinct from those showing damage likely to have been incurred accidentally or in use, the axehead from Kirknewton (9) was possibly deliberately damaged prior to deposition. Although it was not possible to examine the axehead at first hand, it is broken across the body, through the socket and leaving only the cutting edge; this pattern of damage is commonly seen on larger axeheads, often linked with other signs of intentional fragmentation (Knight 2017).

In summary, only the Bellingham axehead (2) presents definitive evidence of wear consistent with its use as a craft tool, though it is probable that the axeheads from Poolewe (1), Muirfield (4) and Kirknewton (9) were also utilised. By contrast, the Closeburn (6) axehead was probably not a functioning tool and the axeheads from Newtonmore (5) and Stelloch (3) were certainly non-functional.



ILLUS 5 Digital microscope image of both faces of the cutting edge of the diminutive socketed axehead from Bellingham (2), showing a worn edge and striations running parallel to the edge, indicating polishing and/or sharpening. (© National Museums Scotland)



ILLUS 6 Digital microscope image of upper body of the Bellingham axehead (2), showing striations indicating working. (© National Museums Scotland)

SCIENTIFIC ANALYSIS with Lore Troalen

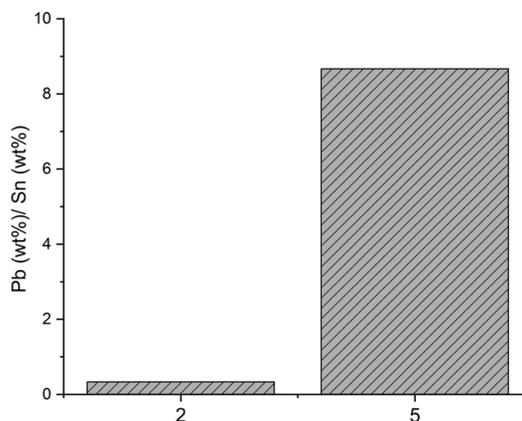
COMPOSITION

Seven of the axeheads were available for investigation using non-invasive X-ray fluorescence (XRF) analysis (see Troalen 2021). The limited possibilities to clean a small surface to expose the bulk alloy for XRF analysis meant that only surface analysis could be undertaken. Although such analyses would not provide a full quantification of the base alloy, it should allow the identification of the alloys and also highlight possible compositional variation between the axeheads.¹ For example, surface analysis would highlight some fundamental differences in compositions that could relate to aspects of chronology; the presence of zinc, for instance, would rule out a Bronze Age date for an object.

All seven were produced using leaded bronze, although the Newtonmore (5) axehead was found to display a significantly higher level of lead combined with a much lower level of tin (see Illus 7). In all the axeheads, largely consistent minor to trace elements of arsenic, silver and antimony were also detected (Table 2). The data obtained for the Newtonmore (5) axehead would be consistent with the type of alloys characterised in Armorican forms (Briard 1965) that can display elevated levels of lead (up to 20 wt%) and significantly lower levels of tin (*c* 5

wt%). Further detailed investigation of the alloy compositions would be necessary to confirm any geographical differences to correlate these observations.

These overall results are unsurprising, as the morphological forms suggest Late Bronze Age/ Earliest Iron Age or Roman dates, which is when lead was a more common addition to copper alloys (Northover 1982: 90–6; Dungworth 1997; Pollard et al 2015). Lead was less commonly



ILLUS 7 Comparing the relative amount of lead (wt%) and tin (wt%) observed in axeheads 2 and 5. Data obtained from semi-quantitative surface XRF analysis clearly show that axehead 5 displays a significant higher level of lead combined with a lower-level tin. (Graphic by Lore Troalen © National Museums Scotland)

TABLE 2

Summary of compositional results from qualitative and semi-quantitative surface XRF analysis of small socketed axeheads – dataset Lore Troalen. (Main elements are typically present in quantities above 1 wt%, while minor elements are typically present in quantities ranging from 0.05 wt% to 1 wt%.) (© National Museums Scotland)

<i>Axe no.</i>	<i>Main elements</i>	<i>[Minor elements]</i>	<i>Type of alloy</i>	<i>Comment</i>
2	Cu, Sn, Pb	[As, Ag, Sb]	Leaded bronze	
3	Cu, Sn, Pb	[As, Ag, Sb]	Leaded bronze	
4	Cu, Sn, Pb	[As, Ag, Sb]	Leaded bronze	
5	Cu, Sn, Pb	[As, Ag, Sb]	Leaded bronze	High lead, low tin
6	Cu, Sn, Pb	[As, Ag, Sb]	Leaded bronze	
7	Cu, Sn, Pb	[As, Ag, Sb]	Leaded bronze	
10	Cu, Sn, Pb	[As, Ag, Sb, Sr]	Leaded bronze	

added to copper alloys during the middle and late 1st millennium BC (Dungworth 1997: 5.3.3; Davis 2014: 49, 53) and none of the axeheads can be confidently placed within this period. Therefore, while these results do not refine the dating, they do reinforce insights gained from a stylistic assessment.

To these analyses, we can add one more. The diminutive axehead from Poolewe (1) was previously drilled and analysed as part of a programme of metallurgical analysis for Late Bronze Age metalwork from Scotland (for details of methodology see Northover in Knight et al 2021: 10–11). The axehead was produced from a low-lead copper alloy, with *c* 9.5% tin and *c* 1% lead; the impurity pattern indicated that some of the copper derived from Continental sources (Northover in Knight et al 2021: 11). This is consistent with the known sources for copper used in Late Bronze Age metalwork production in Britain at the time (Northover 1983). An interesting aspect of the Poolewe example is that while its composition was similar to one of the other objects within the hoard (a full-sized miscast socketed axehead), differences in impurity patterns across the analysed associated objects suggest five sources of metal were utilised for production (Northover in Knight et al 2021: 11). This means that the various objects were probably produced at different times and were perhaps gathered for deposition, including the diminutive axehead (Knight et al 2021: 25).

X-RAY IMAGING

Computed X-radiography (CR)² was undertaken on seven of the axeheads to determine variation in production such as thicknesses of the metal used (see Troalen 2021). X-ray imaging revealed that each of the axeheads available for analysis was well produced, with no significant casting flaws or porosity in the metal apart from the obvious porosity resulting from corrosion processes (Illus 8). It confirmed that several axeheads (Bellingham (2), Muirfield (4) and Morebattle (11)) have sockets sufficiently deep to hold a haft, a useful observation in the case of Morebattle, which remains in a pre-conserved state with

earth still in the socket. By contrast, the socket of the Closeburn axehead (6) is less than half the length of the axehead, which would have been unsuitable for hafting for use. The relative higher density of the Newtonmore (5) axehead on the X-ray plate in comparison to the other axeheads can probably be attributed to a greater thickness and/or to the elevated level of lead characterised by XRF analysis. This axehead also showed no signs of a thinned cutting edge, in contrast to the axeheads from Muirfield and possibly Closeburn, which had visibly thinner edges that may result from hammering and working processes.

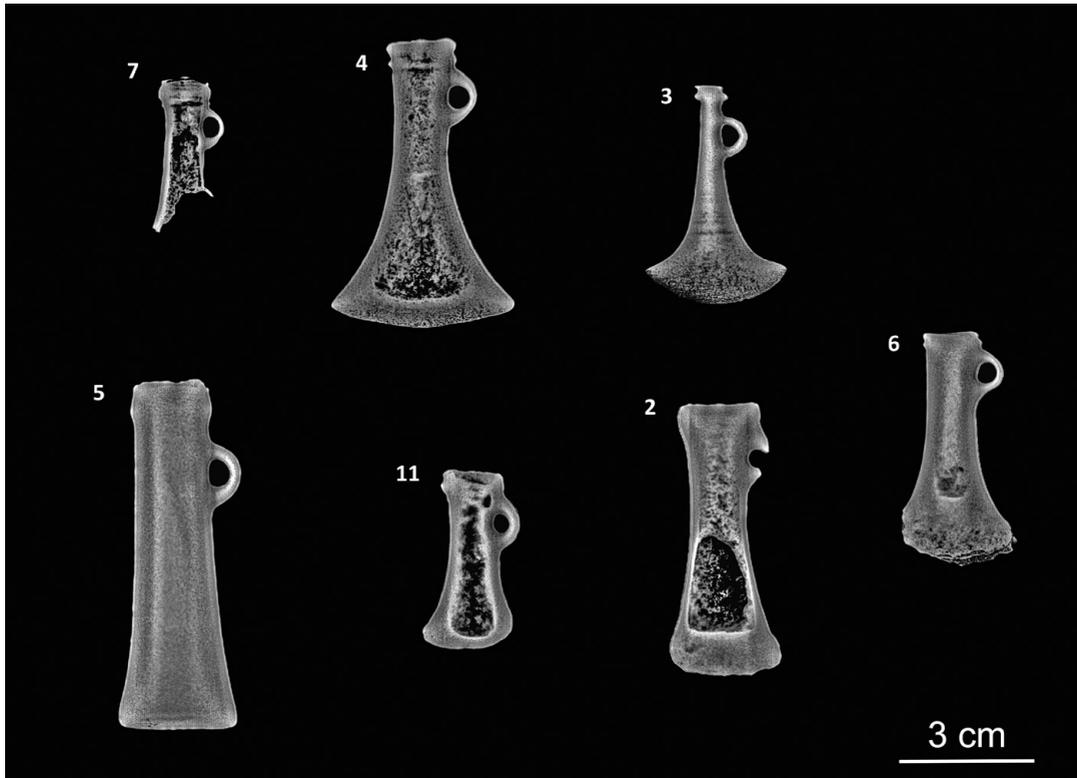
DISTRIBUTION

GENERAL

The distribution of small axeheads is concentrated in southern Scotland and Northumberland (Illus 9). While this may be affected by the varying distribution of metal-detecting activity, only half of the axeheads presented in this paper are metal-detected finds, and the general cluster around the modern Anglo-Scottish border continues the distributional trend presented in Bliss (2020; see especially his distribution map of Type D). The two Highland examples from Poolewe (1) and Newtonmore (5) stand out as significant northerly outliers.

CONTEXTS OF DEPOSITION

Most of the axeheads were recovered as single finds, and details of individual contexts or find-spots are hard to determine, though some were deposited in wetland locations. The miniature Armorican-type axehead from Newtonmore (5) was a single find recovered from a natural spring. The Poolewe axehead (1) was recovered as part of a hoard from a peat bog, perhaps a former lochan (Knight et al 2021: 2). It was found during peat-cutting operations along with four full-sized socketed axeheads, three annular rings (one now lost) and a cup-ended ornament (Illus 10). The Maxton axehead (7) may have also been recovered from a wet depositional context but



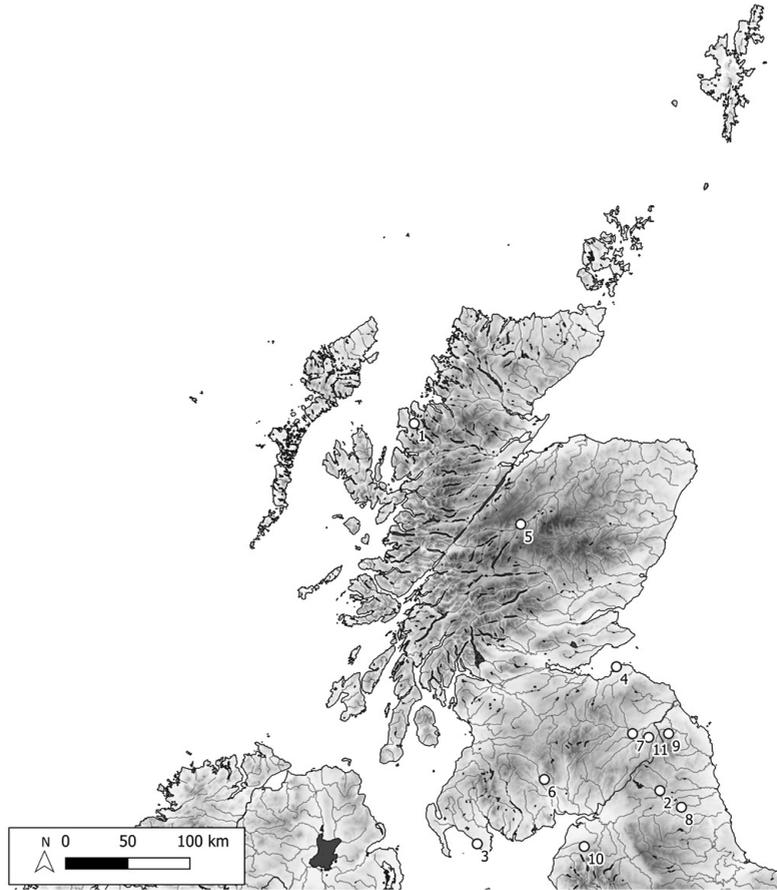
ILLUS 8 Computed radiography (CR) plate of seven small socketed axeheads highlighting typical variations in thicknesses due to copper-alloy corrosion and the internal construction of the axes (numbers relate to Table 1 and catalogue). (X-ray by Lore Troalen © National Museums Scotland)

unfortunately details surrounding the discovery are scarce. A fragment of a miniature socketed spearhead was recovered from the same field at a later date; it is not clear how close together the objects were found, but the rarity of finds like this in Scotland suggests they may have been associated.

The Stelloch axehead (3) may also come from a context of associated objects; Maxwell (1885: 41–2, fig 36) describes it as recovered ‘from the farm of Stelloch, in Glasserton’. There is no date given for the finding of the axehead, although we might suppose that it was recovered in a similar manner to a Roman statuette of Mercury discovered on the same farm, though not necessarily in the same field, during ploughing in 1871 (SAScot 1876: 123; Curle 1932: 376–7).³ The relationship of these objects to one another – if any

– is speculative, but both appear to plausibly be of a Roman Iron Age date. They have seen minimal publication but Hunter et al (2018: 195–6) suggested these two finds may represent ‘a locus of votive deposits’ during this period. The diminutive axehead from Whittington (8) was recovered from a field that had previously produced only Roman and medieval artefacts (Collins 2008), though its morphological similarities to Late Bronze Age forms suggest it could be a much earlier deposit or else an object that remained in long circulation.

The Muirfield axehead (4) was found in 1923 by the son of James E Cree, who considered it ‘to be of more than ordinary interest’ (Cree 1928: 229–30), from which we derive the title of this paper. The findspot is described as a sandy ravine east of Gullane, about 5 metres north of



ILLUS 9 Distribution map of small socketed axeheads from northern Britain. Numbers correspond to Table 1 and catalogue. (Contains OS data © Crown copyright and database right 2022)

a burial presumed to be Bronze Age. There is, however, no evidence to suggest this axehead came from a mortuary context; the proximate burial has no concrete dating and the dynamism of a sand dune environment means that the likelihood of cross-period contamination of finds and contexts is high.

SMALL SOCKETED AXEHEADS IN BRITAIN

We can now consider the broader implications of this range of axeheads and in particular how it relates to the wider dataset in the rest of Britain presented by Alex Bliss (2020). As we have adopted

a broader definition and hence more diverse range of small axeheads than Bliss's sample population, this comparison is based mostly on form rather than dimensions or functionality. The two true miniatures (Stelloch (3) and Morebattle (11)) presented here fall within Bliss's Class D, which aligns well with their northerly distribution, with most Class D axeheads coming from Yorkshire and only three from southern England (Bliss 2020: 27, fig 22). Bliss (2020: 16) highlighted the overall concentration of miniatures recovered from Lincolnshire and Yorkshire, though we should remember that Class D is a fairly diverse morphological group, perhaps encompassing objects produced over a long period of time. The bulk of this paper's dataset comprises diminutive



ILLUS 10 The Poolewe hoard with diminutive axehead towards centre of the group. (© National Museums Scotland)

forms which, although they cannot be strictly classified according to Bliss's classification, do bear similarities to Type D in form, though not in functionality. Further south, there is a seemingly genuine concentration of more coherent miniature types in Wiltshire and Hampshire with a scattering in surrounding counties (Bliss 2020: 16); these comprise a range of Bliss's typological classes though *exclude* Class D types. This suggests that miniatures of a more 'realistic' nature were more widely produced, circulated and deposited in northern Britain than in southern Britain. This is borne out by the number of diminutives among our data.

Our approach of comparing the forms of smaller and larger axeheads warrants some further interrogation. Many of the axeheads presented in this paper can be considered diminutive or miniature examples of Sompting and

Transitional types, dating to the period 800–600 BC. Boughton's (2015) survey of Earliest Iron Age axeheads in Britain (see also Knight et al 2021: fig 10) noted no Earliest Iron Age axeheads from County Durham or Northumberland, 23 single finds of various types from Yorkshire, and nine from hoards and two single finds in Cumbria (Boughton 2015: 305). The majority of these are Sompting forms (ibid: 306). From Scotland, single finds of axeheads are largely concentrated in the lowlands, in the south and east, comprising a mix of Sompting and Transitional types (Knight et al 2021: 15–17, fig 10). Thus, the distribution of miniatures and diminutives is broadly similar to that of their larger morphological parallels. This distributional overlap is important because we must assume that typologically distinctive smaller socketed axeheads were produced with knowledge of the full-sized

examples, most likely during or shortly after a time when larger examples were produced and circulated. In the case of Armorican-type axeheads, a similar situation appears to apply: small versions were produced and circulated around the same time as their larger counterparts, often within similar regions (Briard 1965: 262–6; Rivallain 2012: 47–8).

As implied by their name, Armorican axeheads are overwhelmingly found in Brittany (Briard 1965: 263, 265, fig 99), making the small axehead from Newtonmore (5) the most northerly recorded example of this class as a whole. In southern Britain, larger examples typically occur as single finds and in hoards, such as Fawley, Hampshire (Meddens in Molloy 2021: 23–4; see Northover 1988a: 76–9, fig 41). A number of examples are now known from midden sites: full-sized Armorican-type axeheads occur alongside Sompting types at Llanmaes, Vale of Glamorgan (Gwilt et al 2016), and smaller Couville-variant Armorican axeheads have been found at Mount Batten, Devon (Northover 1988b: 54, fig 30) and Worth Matravers, Dorset (O'Connor 2018: 192–4, fig 180). Interestingly, Northover (1988a: 77–9) noted signs of wear on two examples found at Mount Batten, one having an asymmetrical cutting edge and the other showing signs of hammering. This stands in contrast with the majority of Armorican-type axeheads, which generally seem to have remained unused.

A scatter of Armorican-type axeheads has been recorded from southern Scotland and northern England (Schmidt & Burgess 1981: nos 1648–54), including two single finds of Couville-variant axeheads from Yorkshire (ibid: nos 1653–4), but overall very few by comparison with further south. In some cases, moreover, the circumstances of discovery are unclear and the possibility that some may reflect modern antiquarian collecting activity cannot be ruled out (as in the case of a supposed hoard of three Armorican axeheads reported from Lamancha, Peeblesshire (Boughton 2015: 315)). However, despite standing apart geographically, the Newtonmore axehead appears to have a secure local context.

Lastly, the example from Stelloch (3) warrants brief consideration. There is no other

axehead like it from northern Britain, though we mentioned above its similarities with an example from the Stanwick area, North Yorkshire (McIntosh 2009). In general it is hard to parallel, but we may situate it broadly alongside later Iron Age traditions, such as the Middle Iron Age stylised example from the grave at Arras W.57, Yorkshire (Stead 1979: 84–5). Overall it situates well within Bliss's Class D and accords with the northerly distribution of this type, dating to the later end of the typo-chronological spectrum.

SCALING DOWN: FUNCTIONALITY AND MINIATURISATION

SMALL AXEHEADS AS FUNCTIONAL TOOLS?

Let us now turn our attention to the function and meaning of these small objects. In terms of utilitarian functionality, a number of axeheads presented in this dataset have sockets that could plausibly hold a haft as well as presenting signs of working or damage conceivably related to use. These also appear to be some of the earliest small forms produced. Thus, the production of some small axeheads was, in some cases, an act of making small functional tools, albeit not to be used as 'axes' in the traditional sense despite mimicking larger counterparts. For instance, there are no clear signs of notching along the edges that may indicate these objects were used to chop. They more probably served as small craft tools, for example for wood planing or leather working, fitting within a wider toolkit repertoire of small tools towards the end of the Bronze Age, such as socketed gouges and tanged leather-working knives (cf Eogan 2000: 7–9).

However, some were clearly never intended to function as tools at all. This idea of being 'functional' is further complicated by the changing socio-economic value of the full-sized axehead types produced at the end of the Bronze Age into the Iron Age, which compare well with several of our small axeheads. Large hoards of full-sized and miniature Armorican-type axeheads deposited as-cast in north-west France (and to a lesser extent in southern Britain), for instance,

have been broadly interpreted as ingots rather than functional tools (Briard 1965: 241–82). However, the value of socketed axeheads was clearly changing at this time, with forms sometimes manufactured in iron and high tin–bronze alloys (Manning & Saunders 1972; Roberts et al 2015). Rather than functioning economically or as utilitarian items, many of these Earliest Iron Age axeheads appear to be symbolic tokens designed solely for consumptive depositional activities (Roberts et al 2015; Fontijn 2019: 98–103). The act of miniaturising axeheads or producing diminutive versions may have been part of these changing values and some may have been intended only for deposition. Indeed, what is significant about some of the smaller socketed axeheads is that they may have been produced at a time when the value of those larger forms was shifting in light of new axe technologies during the Early Iron Age (cf Waddington 2007; Waddington & Sharples 2011: 64). Small and large axeheads transformed from functional tools into symbols.

WHEN DO DIMINUTIVE AND MINIATURE AXEHEADS APPEAR IN THE ARCHAEOLOGICAL RECORD?

Throughout the Bronze Age unusually small axeheads were produced more or less contemporaneously and close in form to their larger counterparts. During the Early and Middle Bronze Age, we find evidence of the occasional production of smaller versions of flat axeheads and palstaves, which closely resemble larger examples and were produced within the same manufacturing traditions (for example Needham 1988, 2017; Cunliffe et al 2019: 147–8). Referring in particular to small axeheads and other miniaturised items deposited in Early Bronze Age graves, Needham (1988: 243) has suggested these served as tokens of larger objects, perhaps driven by economic conservatism.

By the Late Bronze Age/Earliest Iron Age, however, the number and range of diminutive and miniature axeheads increases significantly across Britain and they often take more stylised forms (Bliss 2020). Examples from Late Bronze

Age–Earliest Iron Age midden sites in southern Britain highlight some chronological contemporaneity between large and small socketed axeheads (Waddington 2007, 2009: 285), confirming that the earliest small socketed axeheads were produced at this time. A miniature bag-shaped example was recovered from the midden site at Potterne, Wiltshire, which produced a sequence of Late Bronze Age–Earliest Iron Age layers providing four radiocarbon dates spanning 990–400 cal BC (Lawson 2000: 40, 191–5, table 1), and this may be the earliest dated example known in Britain. The exact context of discovery of the axehead is unclear from the excavation report, though the author notes it as deriving from the midden deposit and attributes a Late Bronze Age date (Lawson 2000: 191).⁴ Regardless, this example bears limited resemblance in form to most of the axeheads presented in this article.

Many of these were diminutives, as seen in our dataset, but abstract miniaturised forms were also produced early on, even when full-sized contemporaneous counterparts were probably accessible. The midden site at Whitchurch, Warwickshire, exemplifies this. Here, 18 miniature axeheads and fragments of a further two were found from unstratified contexts across the midden (Waddington 2007, 2009; Waddington & Sharples 2011: 35). Although dates at this site extend into the Iron Age and Roman periods, Waddington & Sharples (2011: 35) suggested that the general lack of Iron Age and Roman metalwork makes it more probable that the miniature axeheads date within the Late Bronze Age–Earliest Iron Age phases of midden formation. A complete full-sized Late Bronze Age socketed axehead and six fragments of socketed axeheads were also recovered from the site (Waddington & Sharples 2011: 32–3); while these larger objects may have been a source of inspiration, the miniature axeheads are clearly non-functional, crudely made, and bear limited morphological similarity. Although it is tempting to date socketed axeheads on the basis of their morphological similarity with larger examples, this remains difficult, and even where they appear in later contexts, we cannot rule out the possibility of long-term curation or rediscovery of earlier objects (Bliss

2020: 4–5, 22). Nonetheless, where diminutives and miniatures clearly represent larger forms (for example, miniature Sompting-type axeheads) the similarities offer a useful and probable *terminus post quem*.

Securely dated miniature axeheads in the Iron Age and Roman periods are rare, though these are the periods to which many are typically attributed and examples are known from settlements and graves, and from fields or sites where Iron Age or Roman material has also been recovered (Robinson 1995; Farley 2011; Bliss 2020: 4–5, 11). Most, if not all, of these are certainly non-functional in a utilitarian sense, being true miniature abstract representations of larger socketed axeheads, such as the Stelloch axehead (3). By around 600 BC, full-sized socketed axeheads had largely ceased in production, so the inspiration for producing these smaller versions probably derived from remembered or rediscovered objects (cf Robinson 1995; Stead 1998; Hingley 2009; Farley 2011; Kiernan 2015), or miniature axeheads were curated and circulated over long periods of time (Bliss 2020: 4–5, 11). Alternatively, they resulted from an embodied long-lived tradition through which miniature socketed axeheads inspired the production of more miniature socketed axeheads. In support of the former suggestion, we can point to earlier forms of objects rediscovered in later contexts, including hoards and settlements (see Hingley 2009; Farley 2011; Boughton 2019). The multi-period hoard from Salisbury (also known as the Netherhampton hoard), containing objects dating from the Early Bronze Age to the Middle Iron Age, including miniatures, suggests that, on occasion, material was actively collected over a long period of time (Stead 1998; Boughton 2019); this hoard was probably deposited in the 2nd century BC, nearly two millennia after the earliest object was produced (Garrow et al 2009: 83, 88). The Salisbury hoard contained models of shields and cauldrons, which were stylistically very reminiscent of their larger forms, as well as two miniature socketed axeheads, that were more crudely, less accurately, produced (Robinson 1995: 62, 64; Stead 1998: 114–18). The larger socketed axeheads, and other already ancient objects, may

have been seen as something otherworldly or foreign as they fell outside the known cultural repertoire (cf Davies 2019), and thus miniature socketed axeheads were produced in an abstract form. By contrast, the miniature shields and cauldrons were produced with the knowledge of the meaning of their larger counterparts and thus were reproduced with greater accuracy to serve as realistic tokens or models (cf Stead 1998: 117–18; Farley 2011; Kiernan 2015: 47–51). The same can be observed with miniature weaponry deposited at the Iron Age settlement at Nettleton Top, Lincolnshire, a site from which a stylised miniature socketed axehead and a hafted axe model were also recovered (Farley 2011).

THE CHANGING ROLE OF THE AXEHEAD: FROM TOOL TO SYMBOL

How these later miniature axeheads specifically functioned and what they meant is unclear. Iron Age and Roman miniatures are often interpreted as votive offerings, no doubt because they are occasionally found in ritualised contexts, such as temple sites or burials (Green 1981; Kiernan 2009, 2015; Farley 2011; Bliss 2020: 22–3). Some axeheads certainly do appear to have had a ritual element to their deposition. We noted above the votive aspect to the deposition of the Stelloch axehead, while the watery contexts of the axeheads from Poolewe and Newtonmore fit with later prehistoric practices of casting objects into water, which may have served a religious purpose (Bradley 1998; Bradley et al 2015). Increasingly, evidence is confirming the notion that many may have been wearable amulets or pendants, which have become accepted as plausible functions for small socketed axeheads in the Late Iron Age and early Roman periods (Kiernan 2009: 119). For example, at Arras W.57, a miniature axehead was buried in a Middle Iron Age grave of a female and reportedly connected to a blue glass bead by a pin, possibly as a pendant or earring (Greenwell 1906: 303–4; Stead 1979: 84; Kiernan 2009: 119). Another miniature axehead found during metal detecting at Calne, Wiltshire, was attached to a gold ring passing through the side loop, which was also considered to be either

an ornament or votive offering (Hill 2001: 22; Kiernan 2009: 119). Analysis of the gold suggests a Roman date for the ring although not necessarily the axehead (Hill 2001: 22–3). Bliss (2020: 7) noted another example, from Hampshire, with a copper-alloy possible suspension ring, and two further possibly suspended miniature axeheads. Our study of the Closeburn axehead (6) indicates that it may have been intended to hang flat against something, perhaps as an ornament, and the decoration on only one face of the Stelloch axehead (3), as well as possible wear on the side loop, suggests this was designed to be an ornament too. With the exception of the Closeburn axehead, all are quite abstract representations of socketed axeheads and if these examples were hung as ornaments, it suggests these objects took on entirely different meanings as personal items.

This discussion of function serves to highlight an important point, which is that miniature socketed axeheads clearly transformed in their nature over time. Ascribing a singular function and meaning is inevitably impossible given their variation and seemingly long period of manufacture and circulation. The majority of our dataset broadly date to the Late Bronze Age–Earliest Iron Age periods, but the evidence across Britain highlights that these could potentially have continued in some form of production and likely circulated or were curated into the Roman period, as Bliss (2020: 22) also noted. Further, as we have indicated, the process of miniaturisation or, more accurately for our paper, scaling down of larger object types is not a phenomenon reserved solely for axeheads over the course of this period in Britain. Such processes have been argued to emphasise the tactile and symbolic elements of objects in miniature and to enable such items to perform and behave in ways larger counterparts could not (Bailey 2005; Waddington 2007, 2009; Kiernan 2009, 2015; Farley 2011). Thus, the process of miniaturisation became a mechanism for not only evoking larger objects, but also creating new meanings (Waddington 2007; Farley 2011). This is difficult to argue for the dataset of small socketed axeheads on the current limited evidence of dating and contextual analysis but it is worth emphasising that, over the period in question,

small socketed axeheads are the most numerous small object forms known (Bliss 2020). These clearly held a broader cultural value that seems to span a long period of time and functioned as tools, ornaments and objects for deposition. Kate Waddington (2009: 292) has suggested that the miniaturisation of axeheads specifically, when few other objects were also being miniaturised, emphasises the value of the socketed axehead. This is particularly true in the Late Bronze Age–Earliest Iron Age when non-functional full-sized versions were also being produced, but even in later periods miniature socketed axeheads differed from other miniatures. Iron Age miniature weaponry and vessels, including swords, shields and cauldrons, are examples of *realia* (Farley 2011; Kiernan 2015), while miniature socketed axeheads occur in crudely manufactured or highly abstract forms drawing inspiration from archaic objects that may no longer have been fully understood. Diminutive axeheads thus may mark the beginning of a scaling-down process in the Bronze Age which developed through the Iron Age and into the Roman period, when small axeheads become increasingly symbolic and non-realistic, produced as wearable symbols and tokens of an earlier history.

CONCLUDING THOUGHTS: THE MEANING OF THE MOREBATTLE MINIATURE AXEHEAD

By way of conclusion, we return to the miniature axehead from Morebattle – the recent find that prompted this study. Analysis revealed it to be a well-cast piece, possibly used as a small tool and sharing morphological characteristics with larger socketed axeheads around 800–600 BC. Such a detailed analytical approach to this object type means we can interpret its meaning more clearly. The worn cutting edge lends to the idea that this was produced as a small tool for fine craftworking, though it seems important that it emulated the larger forms, an act of scaling down. In turn this suggests it was produced with knowledge of these larger examples that were in general production and circulation in the early 1st millennium BC. Seen as part of the broader picture of small socketed axeheads, the Morebattle example

represents part of a longer temporal trend where small forms steadily ceased to relate to the larger tools they were based on and instead became objects of meaning in their own right.

ADDENDUM

Since submitting the paper, an additional diminutive axehead has been reported to the Treasure Trove Unit (ref. 25022) from East Tinwald, Dumfries and Galloway. Its form fits well with diminutive versions of Late Bronze Age full-sized axeheads, strengthening the idea that these were often small tools, and adds to the overall picture discussed here.

CATALOGUE OF SMALL SOCKETED AXEHEADS FROM NORTHERN BRITAIN

This catalogue provides descriptions of the small axeheads studied for this paper and their circumstances of discovery. All objects are copper alloy and, where possible, have been studied under optical and digital microscopy. They are ordered according to their date of discovery.

* Denotes when an exact findspot is unknown and the national grid reference and/or findspot have been suggested by the authors.

** Denotes a grid reference protected by Treasure Trove or Portable Antiquities Scheme (PAS).

*** Denotes objects that could not be physically studied as they were returned to finders after discovery.

1. Poolewe, Gairloch, Highland (Ross and Cromarty), Scotland

NGR: NG 863 804

Canmore ID: 11986

Collection: Privately owned; on loan to Gairloch Museum

Key publications: Jolly (1880); Knight et al (2021)

Description: An incomplete, small socketed axehead, broken across half of the socket and down one face of the axehead. It has a single bulbous collar moulding, below which an intact side loop survives, and the body is plain with a broad crescentic cutting edge. It has been cleaned post-recovery, removing most of the original surface and leaving a bronze patina and pitted surface. However, the casting seams and sprues about the socket appear to have been removed in antiquity and the cutting edge is slightly asymmetrical, suggesting preparation and use. There is evidence of casting material surviving on the inside of the socket.

Length 57.7mm; cutting-edge width 37.2mm; weight 40.61g. Socket dimensions are not observable.

Circumstances of discovery: Found while peat cutting in 1877 with a hoard of copper-alloy objects, including larger complete and incomplete axeheads, rings and a cup-ended ornament (Knight et al 2021).

2. Bellingham, Northumberland, England

NGR: NY 84 83*

Collection: National Museums Scotland (NMS X.DF 123)

Key publications: SAScot (1879: 310)

Description: A small, slender axehead with a waisted body and slightly expanded socket and cutting edge. The socket is square and has a rough collar moulding, with two ribs defined by grooves on one face and one rib on the other. The grooves between the ribs appear to have been incised and filed, rather than cast. The side loop is broken, possibly pre-deposition, and one face has a large oval hole. There is evidence the casting seams have been filed, though not polished, and the asymmetrical blade has signs of being hammered. Sharpening or polishing striations are visible running parallel to the cutting edge as well as around the socket moulding and facets.

Length 59.9mm; surviving cutting-edge width 24.2mm; external socket width × height 18.0 × 18.8mm; internal socket width × height 13.0 × 14.0mm; weight 27.92g.

Circumstances of discovery: Unknown. Donated to the National Museum of Antiquities of Scotland in 1879 by Sir Walter Elliot (SAScot 1879: 310), but there are no details of the date of the find nor further details of its findspot.

3. Stelloch (also known as Blairbuy), Glasserton, Dumfries and Galloway (Wigtownshire), Scotland

NGR: c NX 37 41

Canmore ID: 69801

Collection: National Museums Scotland (NMS X.DE 51)

Key publications: Maxwell (1885: 42, fig 36); Maxwell (1889: fig 35, p 221); SAScot (1889: no. 48, p 150); Schmidt & Burgess (1981: 248, no. 1647, plate 104)

Description: Small, thin and solid-sectioned axehead, with a narrow ‘socket’ and greatly expanded cutting edge. It has a single side loop which is disproportionate to the body of the axe. The cutting edge is very thin and has slight traces of hammer blows on one face. There is no trace of a casting seam but evidence of a thick sprue at the socket. One face is decorated with faded ribbed decoration while the other is apparently plain. The axehead was seemingly cleaned post-recovery and there are no clear signs of ancient wear on the edge. The object has a dark green patina; a lighter rectangular patch on one face is evidence of an old label once affixed to it and an inked capital ‘M’ is visible slightly lower down the body.

Length 48.5mm; cutting-edge width 31.3mm; ‘socket’ width × height 6.1 × 6.5mm; weight 11.35g.

Circumstances of discovery: Uncertain. Maxwell (1885: 42, fig 36) describes the axe as recovered ‘from the farm of Stelloch, in

Glasserton’. There is no date given for the finding of the axehead, although it may have been recovered in a similar manner to a Roman statuette of Mercury discovered on the same farm during ploughing in 1871 (SAScot 1876: 123; Curle 1932: 376–7). The 19th-century records refer to the findspot for this axehead interchangeably as ‘Stelloch/Stellock’ and ‘Blairbuy’. When a farm is specified the location is given as the former; the latter is provided in the NMS Donations Lists and appears to be the name for the local area rather than the farm. This creates some confusion as Blairbuy is also the name of another farm adjoining to Stelloch Farm. To the best of the authors’ knowledge, Stelloch Farm is the findspot of both the Mercury statuette and the miniature axehead.

4. Muirfield (also known as Gullane), Dirleton, East Lothian, Scotland

NGR: NT 49 84*

Canmore ID: 55084

Collection: National Museums Scotland (NMS X.DE 126)

Key publications: Cree (1928: 229–30); Coles (1960: 68); Schmidt & Burgess (1981: 248, no. 1646, plate 104)

Description: A well-proportioned, small axehead, with a narrow body which expands moderately to a broad, curved cutting edge. The socket is narrow and circular with evidence of two filed casting sprues and remains of the casting core still inside the socket. It has a single rib moulding, below which is an intact side loop. There is no evidence of a casting flash down the sides of the axehead and no decoration on the body. The cutting edge is blunt and slightly uneven, though appears to have been hammered. A combination of corrosion and consolidant covering the axehead makes it difficult to identify finer signs of use, but about 20mm above the cutting edge on one face there are several striations parallel to the cutting edge. Just above these striations, there is visible damage on one face of

the body – apparently blunt impact – and it is uncertain if this is the result of ancient damage or occurred during/after recovery. A smooth green patina covers the axehead.

Length 62.9mm; cutting-edge width 40.0mm; external socket width × height 15.5 × 15.1mm; internal socket width × height 11.1 × 10.7mm; weight 35.35g.

Circumstances of discovery: This axehead was found in 1923 by the son of James E Cree, described as having come from ‘one of the sandy ravines east of Gullane’ (Cree 1928: 229–30). Although no grid reference has been recorded for this find, the four-figure reference given here is suggested with some confidence based on Cree’s description.

5. Newtonmore (also known as Tom na Tilleadh), Kingussie and Insh, Highland (Inverness-shire), Scotland

NGR: NN 7147 9870

Canmore ID: 25199

Collection: National Museums Scotland (NMS X.DE 133)

Key publications: SAScot (1980: 538); Schmidt & Burgess (1981: 249, no. 1655A, plate 105)

Description: Small socketed axehead with a narrow body with broadly parallel sides which gently expand to the straight cutting edge. The socket can be described as ‘back-to-front’ (ie higher than it is wide) and has a thick mouth moulding with an intact loop just below it. It is an example of a miniature Armorican-type axehead, variant Couville. There is a small casting flaw next to the side loop. There is no clear evidence of use or damage. A small copper lump on one face towards the cutting edge is likely a casting bubble. The whole object is covered in a smooth, dark green patina.

Length 74.9mm; cutting-edge width 26mm; external socket width × height 17.8 × 24.3mm; internal socket width × height 14.1 × 18.2mm; weight 90g.

Circumstances of discovery: This axehead was recovered from the back of a well (a natural spring) during digging in 1977 by Mr J M Macpherson. It was subsequently purchased from the finder by the National Museum in 1978 (museum records; SAScot 1980: 538). There are no prehistoric features immediately around the findspot.

6. Closeburn, Dumfries and Galloway (Dumfriesshire), Scotland

NGR: NX 908 932

Collection: Dumfries Museum and Camera Obscura (DUMFM:1990.61)

Key publications: Unpublished

Description: A small socketed axehead with a narrow, plain body with broadly parallel sides before diverging to a widely expanded cutting edge. The socket mouth is uneven and the socket itself is oval and set eccentrically within a square rim. The rim moulding appears to have been created by incising or casting rough grooved lines around the upper part of the axehead though these are also uneven. The alignment of the socket is not central so one side is thicker than the other. A side loop is positioned below the socket moulding. Signs of manufacture, such as casting flash, have been filed/removed and the object is covered in a smooth, dark green patina. The cutting edge is broad and uneven, having abraded on one side probably as a result of post-depositional damage. This damage makes it difficult to identify certain signs of wear, but under a microscope there are no clear signs of hammering or sharpening.

At the point of discovery, no attempt was made to clean out the socket by the finder, but examination of its contents by Mrs Helen Dalrymple/Garland of the National Museum of Antiquities of Scotland Laboratories revealed no features of interest, such as a haft.

Length 51.9mm; cutting-edge width 25.2mm; external socket width × height 13.1 × 12.2mm; internal socket width × height 7.5 × 10.5mm; weight 22.43g.

Circumstances of discovery: Found while metal detecting at a depth of about 4 inches in ploughed ground on a rise in the field in 1983.

7. Maxton, Scottish Borders (Roxburghshire), Scotland

NGR: NT 62 30**

Treasure Trove: TT 29/97

Collection: Live Borders (ETLMS 01.0143)

Key publications: Unpublished

Description: An incomplete socketed axehead, broken across the lower body, missing its cutting edge. The body is narrow with faceted sides and sub-rectangular in section. The socket is irregularly oval, with a bulbous mouth moulding defined by grooves. There is a proportionally large circular side loop situated immediately below this. The core of the socket appears to be slightly misaligned (ie the body of the axehead is quite thick in places on one side and thin on the other). There are very slight casting seams visible on both sides of the axehead, but casting sprues survive on the socket mouth. The rest of the axehead appears to be well finished and, apart from some scratches and loss of an area on one side below the mouth, the axehead is covered in a smooth dark brown patina. The break across the lower half of the axehead is irregular and appears to be accidental, either in prehistory or possibly occurring post-deposition.

Surviving length 33.3mm; external socket width × height 11.8 × 12.4mm; internal socket width × height 7.6 × 8.2mm; weight 5.8g. Cutting edge not surviving.

Circumstances of discovery: Found while metal detecting in 1995. In 1997 a fragment of a copper-alloy Bronze Age spearhead (TT 24/97) was recovered from the same field. This spearhead is missing its tip and socket but also appears to be diminutive in size, being quite slender and surviving at 26.9mm long and 12.2mm wide. It is possible it was once part of a small side-looped spearhead, though originally seems to have been

a very diminutive object, no longer than about 60mm long. As such it is difficult to date.

In addition, a blade fragment of a later Bronze Age sword or knife was recovered from Maxton by the same detectorist (TT 12/98; Hunter 1999),⁵ though it is unclear whether this is from the same field as the spearhead and axehead. The extent of any association between the Maxton axehead and spearhead (and possibly the blade fragment) is unclear, but the presence of two potentially diminutive/miniature objects in the same field might be suggestive of a relationship through place of deposition.

8. Whittington, Northumberland, England***

NGR: NY 99 72**

PAS: NCL-346DE5 (Collins 2008)

Collection: Private, returned to finder

Description (adapted from PAS record (Collins 2008) and enhanced by authors): A complete small socketed axehead with a slender faceted body and a broad, slightly curved, cutting edge. The socket is sub-rectangular and it has a bulbous collar moulding with a rib beneath. The small side loop is positioned just below the socket moulding. The axehead appears to have been well cast and there are no signs of casting sprues or flash. The surface is largely covered in a smooth olive-green patina, though there is some corrosion pitting towards the cutting edge. The edge appears worn and slightly abraded as a result of the corrosion.

Length 48.47mm; cutting-edge width 35.69mm; external socket width 13.97mm; weight 23.1g (dimensions from PAS record).

Circumstance of discovery: Found during metal detecting in 2008. It was recovered from a field that had also produced Roman and medieval finds.

9. Kirknewton, Northumberland, England*****NGR:** NT 91 30****PAS:** DUR-E5DB54 (Cox 2015)**Collection:** Private, returned to finder**Key publications:** Bliss (2020: 27)

Description (adapted from PAS record (Cox 2015) and enhanced by authors): An incomplete small socketed axehead or tool, broken across the body, leaving the cutting edge and lower blade. The body and surviving socket are sub-rectangular in section and the cutting edge is rounded and seemingly worn. The lower blade expands out from the surviving body, and the sides of the axehead appear to be smooth and any signs of casting removed. The break occurred in antiquity and the overall object is covered in a smooth green patina.

The small, slender nature of the fragment makes it difficult to determine if this is a true miniature or diminutive, or simply an incomplete small axehead or tool. The seemingly worn and abraded nature of the cutting edge suggests this may have been a functional object. From the image, it is difficult to identify any marks that may indicate how the object broke, though the metal appears to be relatively porous. The surviving state of the artefact does not readily compare with complete forms, but the way in which it has broken is comparable with various Late Bronze Age socketed axeheads and tools. It is included here for completeness.

Length 31.41mm; cutting-edge width 27.10mm; thickness 10.27mm (assumed to be maximum thickness across the broken body); weight 20.2g (dimensions from PAS record).

Circumstances of discovery: Found while metal detecting in 2015.

10. Ireby and Uldale, Cumbria, England*****NGR:** NY 23 38****PAS:** LANCUM-70715D (Prosser 2019)**Collection:** Private, returned to finder

Description (adapted from PAS record (Prosser 2019) and enhanced by authors): A complete small socketed axehead with a narrow, plain body with diverging sides to an expanded cutting edge. The socket is sub-square with a thick bulbous collar moulding. A side loop is positioned on one side below the moulding. The cutting edge is worn and fragmentary. The axehead appears to have been well cast and there are no signs of casting sprues or flash. The axehead is covered in a smooth brown patina though some patches have delaminated through corrosion.

Length 55.15mm; cutting-edge width 26.2mm; weight 19.99g (dimensions from PAS record).

Circumstances of discovery: Found while metal detecting.

11. Morebattle, Scottish Borders (Roxburghshire), Scotland**NGR:** NT 75 27****Treasure Trove:** TT 86/19**Collection:** Live Borders**Key publications:** Knight (2020)

Description: Complete, miniature socketed axehead. This socketed axehead is very small with a circular socket and a bulbous moulding around the socket mouth and a horizontal moulding beneath this. There is a side loop on one side, the top of which aligns with the horizontal moulding. The socket mouth is incomplete and this may be related to a casting defect, indicated by a sizeable casting hollow in one side of the axehead next to side loop. Overall, the axehead appears to be well cast and any casting flash has been removed.

The body of the axehead is plain. The sides of the axehead gradually curve out to an incomplete

broad straight cutting edge. One tip of the cutting edge is rounded and seemingly quite worn, which may be use-related, though there is some degradation from corrosion. There are no signs of use-wear on the socket or loop under optical microscopy, and while the cutting edge is uneven, there are no signs of hammer marks or striations and the cutting edge appears to be thick and blunt.

Length 39.0mm; cutting-edge width 20.1mm; external socket width × height 14.0 × 12.9mm; internal socket width × height 9.0 × 9.1mm; weight 14.89g.

Circumstances of discovery: Found while metal detecting in 2019.

NB: Morebattle, as one of several nearby settlements, was the name given to the axehead when reported to the Treasure Trove Unit. The actual findspot lies in the parish of Eckford.

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All remaining imperfections should be attributed to the authors.

NOTES

- 1 X-ray fluorescence analysis was undertaken using an Oxford Instruments ED 2000 with Oxford Instruments software ED 2000SW version 1.31. The analysed area was irradiated with a primary X-ray beam produced by a Rhodium target X-ray tube. The primary beam was collimated to give an analysed area of about 4mm × 2mm. Secondary X-rays were detected with a silicon (lithium) solid state detector. Qualitative analyses were undertaken at an operating voltage of 45kV and a current of up to 1000µA (set automatically for a 45% dead time) without a primary beam filter to ensure detection of all elements of atomic number 19 or above. Additional semi-quantitative surface analysis was undertaken using a Bruker CRONO XRF system. The analysed area was irradiated with a primary X-ray beam produced by a Rhodium Target X-ray tube and collimated to give an analysed area of about 1mm × 1mm. Secondary X-rays were detected with a silicon drift detector with large area (50mm² SDD with CUBE technology) and energy resolution <140 eV for Mn K α with input count rate of up to 500,000 cps. Spectra were collected at an operating voltage of 45kV and a current of 75µA without a primary beam filter to ensure detection of all elements of atomic number 19 or above of interest in copper and lead alloys. Analytical time was 40 seconds. The detection limit varies depending on the elements, matrix and analytical conditions, but is typically in the range of 0.05–0.2%. As the analytical technique has a limited penetration depth, the reported compositions may not be representative of the bulk of the alloy if there is a chemically distinct surface layer.
- 2 The axeheads were X-rayed using a Hewlett-Packard Faxitron® unit, with a Rh tube working in the range of 10–115kV at a current of 2–2.75mA, with a working distance in the unit of approximately 65cm from the exit of the tube and a focal point of 0.5mm. The X-rays were undertaken

at 90kV, 2mA for 1 minute, without any filtration of the primary beam. The capture was undertaken using phosphor Computed Radiography plates and developed with a CRxVision scanner set-up at 70 microns resolution. Post-processing of the X-ray was undertaken with the Rhythm software and PhotoShop Elements.

- 3 There is some confusion around this findspot, which is occasionally referred to as 'Blairbuy', though this probably refers to the larger area. See catalogue for more details.
- 4 There are discrepancies in the published reports of the context of the Potterne axehead. Robinson (1995: 62, no. 8) notes the axehead as deriving from Zone 7 of the Potterne midden, which has been radiocarbon dated to the Late Bronze Age–Earliest Iron Age, 990–560 cal BC (Lawson 2000: 40, table 1). However, the context given for the axehead in the excavation report is described as “‘off’ Zone’ (Lawson 2000: 195).
- 5 This object is reported as a possible spearhead (Hunter 1999), but examination of the find indicates it is almost certainly a fragment of a double-edged blade, such as a sword.

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