The Antiquaries Journal, **104**, 2024, pp 19–39
doi:10.1017/S0003581524000131 First published online 13 May 2024

FROM THE HEAT OF THE FIRE: A BIOGRAPHY OF AN EARLY BRONZE AGE BATTLE-AXE FROM CHURCH LAWTON, CHESHIRE

Malcolm Reid, FSA, Amber Roy and Rob Ixer, FSA

Malcolm Reid, 10 Jan Palach Avenue, Nantwich, Cheshire, CW5 7DJ, UK. Email: mgs.reid@outlook.com

Amber Roy, Department of Archaeology and Classical Studies, Stockholm University, 106 91 Stockholm, Sweden. Email: amber.roy@arklab.su.se

Rob Ixer, UCL Institute of Archaeology, 31–4 Gordon Square, London, WC1H 0PY, UK. Email: r.ixer@btinternet.com

A battle-axe made of picrite from the Cwm Mawr rock source, near Hyssington, Powys, UK, was discovered during the archaeological excavation of two Early Bronze Age barrows at Church Lawton, near Alsager in Cheshire, UK, in 1982–3. It had been subjected to intense heat and then placed in a pit, next to the cremated remains of an adult, possibly a female. The heating has radically altered the appearance of the axe. Originally very smooth and dark grey-green, it now has a more granular and dusty feel, together with a mottled orange-reddish appearance. The Church Lawton battle-axe is particularly notable as it is among a small number of such artefacts in Britain to have been recovered from a barrow excavation conducted according to modern standards, as well as being directly associated with an interment dated by radiocarbon: 1893–1740 cal BC (3490 ± 29 BP). It is also the first implement from the Cwm Mawr rock source to be dated in this way. An initial examination of the battle-axe was conducted in the 1980s. A more exacting analysis of the object has now been undertaken, focusing on its petrology in relation to the rock source, its manufacture and use, and its heating. The new examination included the use of stereoscopic and metallographic microscopes. This paper details the new work and provides an enhanced understanding of the implement's history and significance, emphasising the likely connections between the Early Bronze Age community at Church Lawton and others in the wider region.

Keywords: Bronze Age; stone tools; petrology; burials; artefact studies

THE CHURCH LAWTON BARROWS

A barrow cemetery at Church Lawton consisted of three known mounds, positioned roughly in a north–south linear arrangement, with Monument B (see below) at the centre of the group lying at SJ 80835582. The cemetery occupied a marginal position on the Cheshire and Staffordshire Plain, close to its eastern edge and near the Cheshire/Staffordshire border. To the east the land rises, forming the lower fringes of the southern Pennines. One barrow was destroyed in the late 1950s without investigation, although there is evidence to suggest that in the nineteenth century, Bronze Age cremation burials were found there. The other two barrows were excavated by the

University of Liverpool Rescue Archaeology Unit, under the direction of Robina McNeil in 1982–3.[1]

Monument A took the form of a sandy mound, about 22m in diameter and 1m in height. Beneath the mound, at its centre, were the burnt remains of a roughly rectangular turf stack associated with fragments of clay daub and pieces of timber. A small amount of cremated human bone and several Early Bronze Age cinerary urn fragments were recovered from associated deposits. The evidence suggests that the turf stack acted as some sort of platform, which had collapsed and had been burnt prior to the construction of the barrow mound. Before its destruction, this feature may have served as a mortuary house, perhaps where corpses were left exposed to aid their decomposition and where the disarticulation of the bones took place.

A ring of nine glacial boulders surrounded the barrow mound. It is unclear whether this stone ring pre-dated or post-dated the barrow mound. If earlier, it would have acted as a free-standing stone circle – an extremely rare feature in an English lowland setting. In any case, the use of stone to enhance a Bronze Age barrow in the lowlands of central western England is very unusual. A radiocarbon date indicates that the structural sequence of this monument began sometime in the late third to early second millennium cal BC.

Monument B was a two-phased construction. The initial phase took the form of a sandy mound, 15.5m by 18m, and 1.5m in height, surrounded by a shallow, irregular-shaped ditch. In the second phase, the mound was enlarged to about twice its original extent, consisting of a deposit of sand interspersed with turves and overlain by a turf layer.

At the centre of the phase 1 mound was an elliptical-shaped pit with organic staining on its base. The sandy fill of this feature was covered by a large piece of heavily charred timber, which had clearly been burnt prior to its positioning. This wooden cover was radiocarbon dated to 2027–1621 cal BC (3490 ± 80 BP) (HAR-5537). The size and form of this pit suggest that it may have once contained a crouched inhumation, and its position would seem to indicate that it served as the original focal point of the monument.

Urned and un-urned cremations were discovered in the barrow mound. The majority – all of the urned cremations and most of the un-urned cremations – were placed in pits, while several un-urned cremations were found within shallow depressions. The evidence concerning the cremations – the weights of the individual cremation deposits, the degree of bone fragmentation and the colour of the remains – indicate the degree of efficiency of the cremation process. It is likely that in most cases temperatures in excess of *c* 600 degrees centigrade were reached.

Two funerary vessels, a Collared Urn and a Cordoned Urn, were decorated similarly, indicating that they may have been made by the same, or related, potters. A few of the graves contained artefacts (items of equipment and those of personal adornment[2]), all of which had been heated to some degree or other, presumably as part of the cremation process. The most notable of these objects was a stone battle-axe (figs 1 and 2a–b) that had been placed horizontally at the side of a pit (dug through the phase 1 mound), next to the cremated remains of an adult, possibly a woman, of about 30+ years of age, closely dated by radiocarbon to 1893–1740 cal BC (3490 ± 29 BP)

1. Reid *et al* 2014, noted as Monument A and Monument B in that paper.
2. Woodward and Hunter 2015, 4.

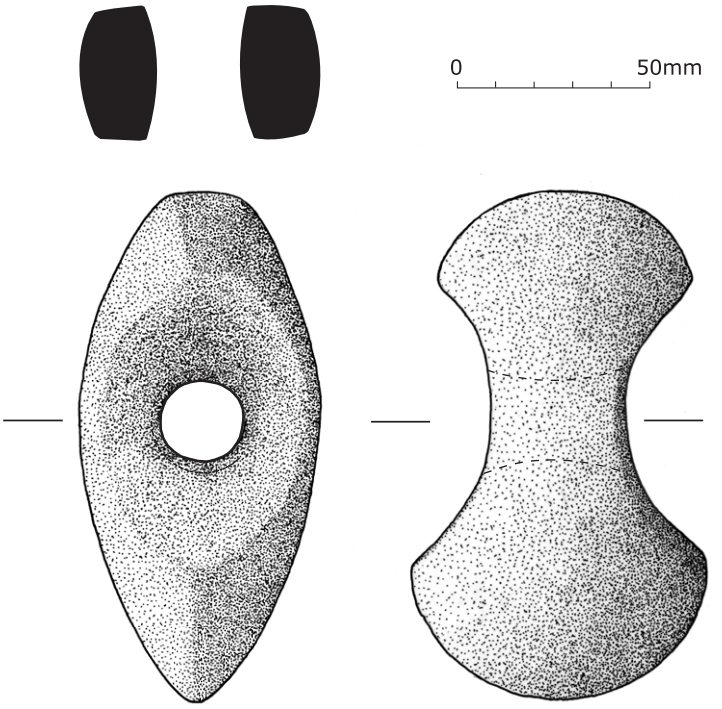

Fig 1. The Church Lawton battle-axe. *Drawing*: Bevis Sale and Cheryl Quinn (from Reid *et al* 2014).

(OxA-26841).[3] The cremated remains were in a discrete pile, suggesting their containment in some sort of organic container (similar evidence of such a practice was found in another grave, which also included a neatly flaked plano-convex knife made of flint or chert). Other artefacts deposited in the graves were: a flint or chert scraper, worked along one side; and bone points, which were probably used as ornaments rather than tools (eg hair pins, or elements of headdresses). Two bone points were found among the cremated remains in the pit containing the battle-axe.

Associated with the burials were a series of shallow scoops and pits, 0.75–1.8m in length and 0.6–0.75m in width, filled with ash, charcoal and a little cremated human bone. In addition, the remains of numerous stakes were found – the stakes had been driven into the bases and sides of these depressions. Termed 'fire pits', these features appear to have been used for the cremation of corpses (possibly de-fleshed and disarticulated). The form of these features strongly suggests that they functioned as under-pyre draught pits, where the angled and vertical stakes provided a suitable mechanism for the passage of air to facilitate combustion, as well as helping support the pyre itself.

Radiocarbon dates obtained from the cremations and associated deposits indicate that individuals were being interred within this barrow from the late third millennium or early second millennium cal BC until the middle of the second millennium cal BC.

3. Bayesian modelling was used to tighten the calibrated date range associated with the radiocarbon determination.

(a)

(b)

Fig 2. The Church Lawton battle-axe viewed, from the blade (a) and from the butt end (b). *Photographs*: Malcolm Reid.

THE BATTLE-AXE, ROCK SOURCE AND THE MANUFACTURING PROCESS

The battle-axe[4] (figs 1 and 2a–b) was originally examined by Fiona Roe in the late 1980s. Her description of the object was included in the paper published on the Church Lawton barrows in 2014 and is repeated here:

> It survived in relatively good condition, despite signs that it had been heated, possibly as part of the cremation process. This and subsequent weathering have left the battle-axe covered in a soft, reddish material, probably iron oxides, so that no trace of the original surface can be seen. Despite this, the shape of the object has remained apparently unaltered. It is 133mm long and has a maximum breadth of 61.5mm. The depth is 34mm at the shaft-hole, increasing to 76mm at the widely expanded 'blade' end, and to 65mm at the butt end. The butt is flattened off from top to bottom, although it tapers in both directions. The shaft-hole has an hour-glass shaped profile, but this is not pronounced. The minimum diameter in the central part of the hole is 21mm, and it is possible to make out traces of rings left by the boring process. The weight is 600g.[5] There are no clear signs of use, although there may be minimal traces of battering at the butt end, while the blade seems to be slightly chipped. The battle-axe was thin sectioned and has been assigned the number CH 70 in the Council for British Archaeology Implement Petrology series. The stone has been identified as picrite (Group XII in the implement petrology series) from Cwm Mawr near Hyssington on the Shropshire/Powys border.[6]

The picrite at Cwm Mawr is an olivine pyroxenite – a hard, dense, coarse-grained, intrusive (plutonic), ultrabasic igneous rock.[7] When freshly exposed, at the hand specimen level, it is commonly a uniform grey-green, well-jointed, indurated rock, locally showing sub-parallel banding comprising more feldspar-rich layers. In a hand-sized specimen (fig 3), aside from local layering, a ground and polished slab shows it to be uniformly grey-green but with fine mottling comprising small darker green areas. The specimen was left to weather, and after nine months the lighter grey-green olivine within the rock had changed to yellow-brown (the olivine becoming iddingsite – a mixture of limonite and chlorite). The exterior of the specimen is covered in the same substance – caused by its prolonged exposure to the elements. The distinctive appearance of picrite in a weathered state, with its golden, rusty coating, is likely to have aided its recognition on the ground. The superficial resemblance to metal might also help to explain, if considered ideologically, why this particular rock type was chosen for the manufacture of battle-axes and axe-hammers in the Early Bronze Age. All the colours noted in the specimen contrast strongly with the orange-red colour of the Church Lawton battle-axe. In thin section, the dominant minerals of picrite are olivine, augite, plagioclase feldspar and chlorite.[8] With the exception of chlorite, all these minerals are present in the thin section taken from the battle-axe (fig 4).

4. Cheshire West and Chester Council Museums Service, acc. no. NOCMS 1982.3547.15.
5. The battle-axe has been re-weighed and found to be slightly heavier than originally reported, at 619g.
6. Artefact description by Roe in Reid *et al* 2014, 253.
7. Stone and Wallis 1951, 127; Earp and Hains 1971, 45.
8. Stone and Wallis 1951, 127; Shotton *et al* 1951, 159–60.

Fig 3. Picrite from the Cwm Mawr Farm quarry, near Hyssington, Powys. A portion of the freshly exposed rock has been ground and polished to demonstrate the appearance of the Church Lawton battle-axe when new and in pristine condition. The length of the rock sample is 120mm, compared to the battle-axe, which is 133mm long. *Photograph*: Malcolm Reid.

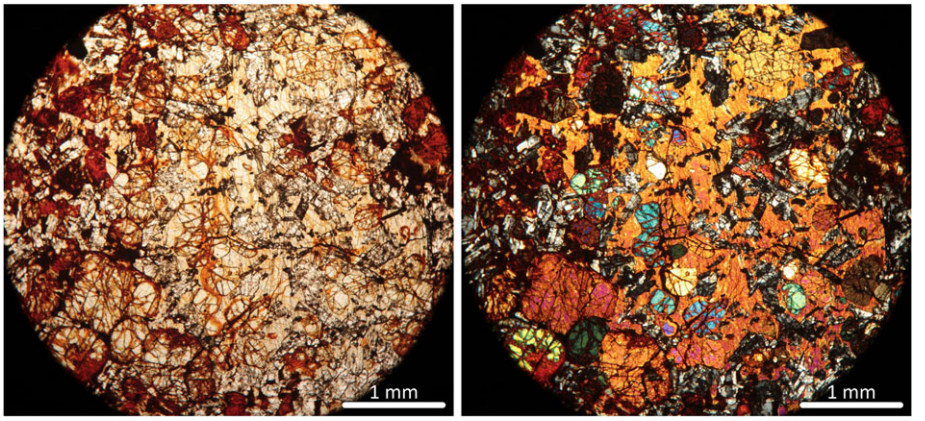

Fig 4. Group XII, CH (Che) 70. A composite photomicrograph in plane polarised (left) and crossed polarised light (right). Rounded, altered olivine (bright colours) and small twinned lath-shaped plagioclase (black and white stripes) enclosed within coarse-grained pyroxene (orange-yellow), all in crossed polarised light. The thin section is stored at the Lapworth Museum of Geology, University of Birmingham. *Images*: Mik Markham.

Fig 5. An unfinished battle-axe (155mm long). Apparently made from picrite (Group XII rock), but this has not been verified by petrological analysis. Its form suggests it is broadly contemporary with the Church Lawton battle-axe. The implement has been pecked into shape, but not ground and polished, and the shaft-hole has not been drilled. Donated to the Powysland Museum, Welshpool, Powys, in 1875 (Jones 1881, 276). Powysland Museum acc. no. A124C. *Photograph*: Malcolm Reid.

The extent of the rock outcrop at Cwm Mawr is about 25ha and is limited to a small, low hill, centred on SO 30509490.[9] This rock source lies 80km south-west of Church Lawton. Although Group XII extraction sites dating to the Early Bronze Age have not been positively identified, it is thought that blocks of picrite (cobbles) in stream beds near to the hill were most probably used for the production of axe-hammers and battle-axes.[10] Such cobbles would have been closest in size and shape to the intended products, thereby helping to reduce effort during manufacture. They would also have had the advantage of being 'flaw tested' through the action of rocks hitting one another caused by the movement of water.[11]

The methods employed to produce perforated stone implements (those with a shaft-hole for a haft) are well understood.[12] First, the rock was shaped by pecking – the removal of small amounts of stone through the use of cobbles as hammer stones (fig 5). The form of the implement was then refined through grinding. This was done by rubbing it against a grained surface, such as sandstone, aided by the application of water (acting as a lubricant). The addition of sand or fine grit would also help in this process. A device, such as a bow- or strap-drill, would be used in conjunction with a grinding agent (eg sand) and possibly water to drill the shaft-hole. Once the desired shape of the implement had been achieved it could be polished by using a fine-grained rock or sand and buffed with leather. Use may necessitate the object's whole, or partial, regrinding.

Experimental work has shown that most battle-axes and axe-hammers could be produced from suitably-sized cobbles in twenty to twenty-five hours – about two or three days of intensive work. While a certain level of skill and a lot of patience were obviously

9. Earp and Hains 1971, 45; Cave and Hains 2001, 112; British Geological Survey Geology Viewer; Jones and Burrow 2011.
10. Jones and Burrow 2011, 298; Steve Burrow, pers comm, 1 Feb 2023.
11. Jones and Burrow 2011, 298.
12. Hodges 1976, 98–9, 105–7; Fenton 1984; Wickham-Jones*et al* 1985, 168–9.

needed to make these implements, it has been suggested that specialist manufacturers may not have existed.[13]

USE-WEAR ANALYSIS OF THE BATTLE-AXE

Method

The examination of the battle-axe involved a combination of low and high-power microscopy. A Huvitz HSZ stereomicroscope and a GXCAM-U3-18 camera were used for low-power analysis, followed by high-power analysis with a Leica DM2700 MH RL metallographic microscope and MC170 HD camera. Analysis at low magnifications allows for the evaluation of use-wear attributes, extending from the manufacture of the implement to its use and subsequent treatment (eg regrinding). This includes identification of linear patterns, such as striations, pits and grain extraction, levelling, the presence of polish or sheen on the blade edge and tip, and any residues surviving from the implement's use. In addition, edge modification or damage can be identified. This includes fractures, crushed grains, micro-fractures from impact, edge rounding and abrasion.[14] Analysis at high magnifications enables identification of the type of polish associated with use and, therefore, the contact materials. The characteristics of the polish include the form of the polished grains, texture, location, directionality, linkage, brightness, distribution and the presence and type of striations.[15] Using a multi-scale approach of low and high-power microscopy enables a broader range and accuracy of results.[16]

Results

Analysis at both low and high-power microscopy revealed traces of use-wear across the implement, despite the damage caused by the object's heating. Traces relating to the manufacture of the axe are present across the battle-axe and are most obvious in three principal locations: the shaft-hole, the butt end and the blade.

The drilling of the shaft-hole had resulted in angular pits around the top and bottom of the perforation, as well as parallel striations running around its circumference. The stone grains within these striations are rounded (fig 6a–b).

The butt end is the least damaged area of the axe and shows developed manufacturing traces (fig 6c). These include levelling and the high topography of polished stone grains, associated with overlapping, parallel striations due to grinding and polishing. Sparse, angular pits caused by pecking, rather than grinding, are also visible (fig 6d). Analysis under high magnification revealed granular and flat polish, with overlapping and parallel striations, most probably the result of grinding and polishing with stone and a granular material (fig 6e–g).

13. Fenton 1984, 230.
14. Plisson 1991; Adams 1993, 2002, 2003, 2010, 2014; Dubreuil 2004; Hamon 2008; Hamon and Plisson 2008; Adams *et al* 2009; Liu *et al* 2010; Dubreuil and Savage 2014.
15. Plisson 1985; Fullagar and Field 1997; Dubreuil 2002, 2004; van Gijn and Houkes 2006, 168; Borel *et al* 2014, 273; Dubreuil and Savage 2014.
16. Dubreuil *et al* 2015, 124.

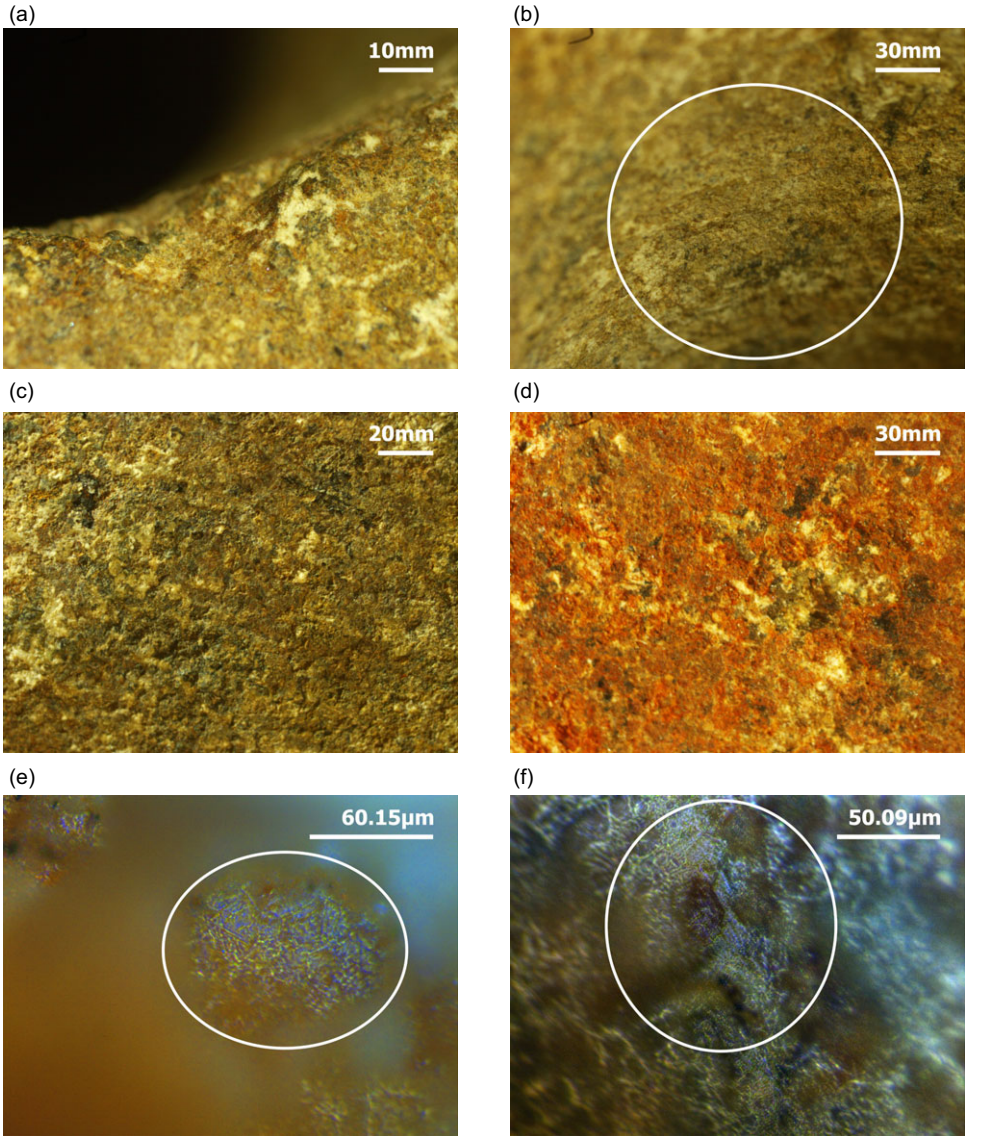

Fig 6. Photomicrographs demonstrating the manufacture (a–i) and possible use-wear (j) across the body and blade of the battle-axe. Stereoscopic microscope images: a, b, c, d, h. Metallographic microscope images: e, f, g, i, j. *Images*: Amber Roy.

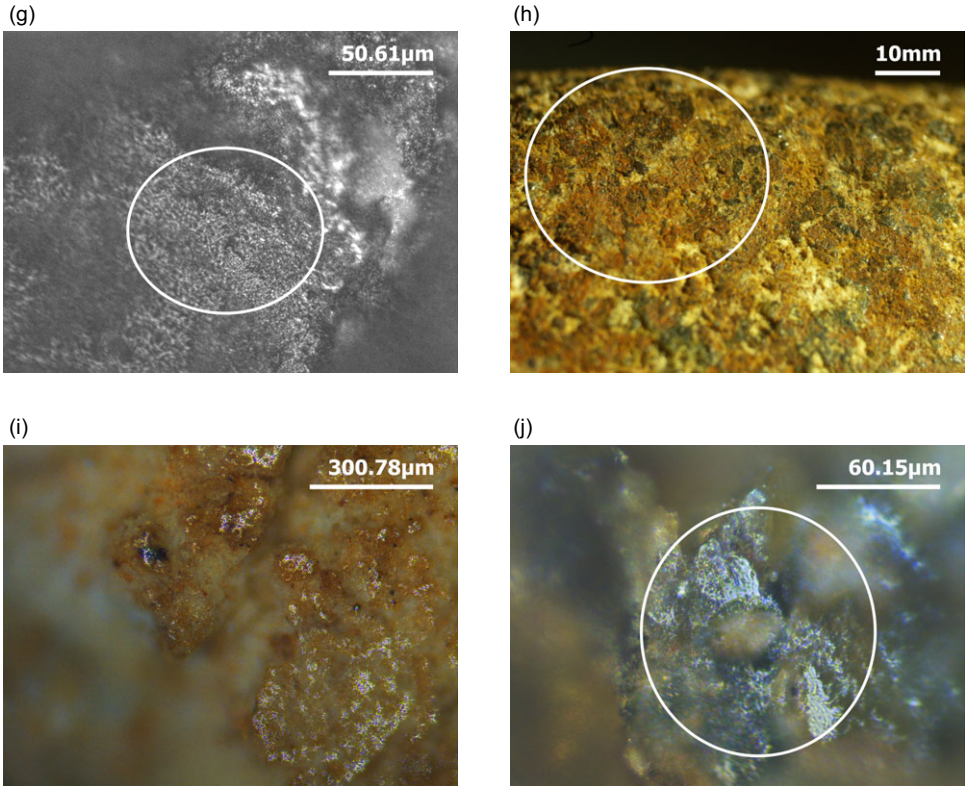

Fig 6. (Continued).

On the blade, overlapping parallel striations and levelled and polished stone grains from grinding and polishing are present (fig 6h–i). As these traces also appear on the body (sides) of the axe, it suggests that they are from manufacture, not use. However, use followed by a regrinding event (which would create use-wear corresponding to the manufacturing traces) cannot be entirely ruled out. If the battle-axe was used before it was re-ground, it is possible that two very small patches of rounded and polished stone grains on the blade tip could be attributed to use. Under high magnifications these areas presented a domed polish (fig 6j), with directionality and associated parallel striations through the domed areas – this is commonly caused by contact with wood.[17] As no associated use-wear traces are visible around these patches, because of heat damage, a physical use (utilitarian or otherwise) remains a possibility.

Heating has weakened the surface of the battle-axe. This has resulted in the removal of stone grains (spalling from the surface) and has widened fractures attributed to manufacture or use, with deep cracks on and close to the blade – see the following section and fig 7. Any traces from handling and storage (ie traces that may be visible at variable states of development across the implement, including polish, abrasion and residues) cannot be discerned because of the damage that resulted from heating. Nor is it

17. Roy 2022.

Fig 7. Primary layering within the picrite is picked out by sub-parallel, diagonal (trending top left to bottom right) pale/white feldspar-rich bands (left hand side). An irregular unidentified black surficial staining is superimposed on the mottled burnt surface. Fine pitting on the surface (right hand side) seen as deeper red spots may be the spalling of altered olivine crystals. A fracture (bottom left), but emanating from a small nick on the blade, may be heat related as it is jogged (has sharp angular changes in direction). *Photograph*: Malcolm Reid.

possible to be totally definitive about the function of the battle-axe: whether it was never deployed in a physical manner; or utilised and then re-ground sufficiently well to remove traces of its past use. If the battle-axe was used, there is a slight indication it may have had some limited contact with wood. The lack of clear evidence regarding function accords with Fiona Roe's view following her visual examination of the implement (see above). In relation to the weathering noted by Fiona Roe, it is now evident that the battle-axe was not subjected to any physical alteration following its heating.

A CONSIDERATION OF THE PRE-DEPOSITIONAL HEATING OF THE BATTLE-AXE

The colour of the axe, although uniform, shows both fine-scale colour variations (mottling) and whiter bands that show the original igneous compositional layering. Its overall colour is a moderate red to moderate red-brown (5R 4/6 to 10R 4/6 on the Geological Society of America Rock-color (*sic*) chart), but has an irregular black (N1) area on its surface. It should be noted that this orange-reddish colour is in very stark contrast to the grey-green colours of most Early Bronze Age axe-hammers and battle-axes now in museum collections, and the similar grey-green colours of the picrite at the outcrop. Layering is seen by sub-parallel pale-coloured, probably feldspar-rich, planar bands that are part of the original crystallisation of the picrite. It is a primary feature of the rock. At high

magnification, small, rounded red altered olivine is enclosed within pale pyroxene/feldspar. Specific areas of fine-scale crazing/spalling are considered to be heat induced. A thin fracture on the blade, emanating from what appears to be an impact nick, may also have been exacerbated by heating (fig 7). It is worth noting that the uniformity of the colour suggests that the artefact was not resting on a cool surface and all surfaces were heated equally.

Further evidence of the effects of heating is provided by the thin section petrography (fig 4). Thin sections of the picrite from the outcrop show abundant green chlorite surrounding colourless olivine, even in limonite-stained weathered samples. This feature was emphasised by Shotton *et al.*[18] In this case, CH (Che) 70 in plane polarised light, has rounded olivine phenocrysts extensively altered to an orange-brown phase. Stubby plagioclase laths and rounded altered olivine crystals are totally surrounded (poikilitically enclosed) within an unaltered pyroxene matrix. Green chlorite is not recognised and now may be the (heat altered) orange material.

The effects of intense heat on the implement, across its surface and within the thin section, demonstrate that it was totally engulfed by fire. It therefore follows that, if the battle-axe was submitted as part of the cremation process, it would have been placed at or near the centre of the pyre – definitely not at the periphery or on the original land surface.

Analysis of the cremated human remains of the mature individual interred with the battle-axe (noted above) has shown that they were efficiently cremated. The evidence from this burial, like the majority of interments from the barrow, indicates that a temperature in excess of *c* 600 degrees centigrade was reached during the cremation process.[19] However, experimental work on pyre construction and burning has shown that temperatures over 1,000 degrees centigrade can be attained and maintained in parts of a pyre for up to three hours.[20] It is, therefore, very likely that the battle-axe was heated to a temperature of somewhere between *c* 600 degrees centigrade and *c* 1,000 degrees centigrade.

THE BATTLE-AXE FROM THE ROCK SOURCE TO THE GRAVE – A DISCUSSION

No evidence has been found for Early Bronze Age extraction at the Group XII source, hence nothing can be said with any certainty about how the production of battle-axes and axe-hammers from the rock source was organised. It is not possible to assess, for example, if there were any restrictions on procuring the raw materials, in manufacturing these implements and on their initial distribution. Despite the indications from experimental work regarding the time to manufacture such items, it is uncertain whether or not their production was undertaken by specialist workers. Nevertheless, it is apparent that the Church Lawton battle-axe was skilfully made. This is evident from its geometrical proportioning and the remnants of its finishing.

The system devised by Fiona Roe for classifying battle-axes has now been superseded by a new approach devised by Stuart Needham.[21] Based only on examples from known contexts, and taking account of associated radiocarbon dates, this new approach uses a combination of four independent attributes: body profile, butt profile, shape in plan and

18. Shotton *et al* 1951, 160.
19. Walsh 2013a, 210–13, 2013b, 172–3, 2014, 272–3; Reid *et al* 2014, 253.
20. McKinley 1997, fig 2, 133–4.
21. Roe 1966; Needham 2011.

the position of the perforation along the long axis. According to Stuart Needham the example from Church Lawton is a Class 6 battle-axe. He states that the principal characteristics of a battle-axe of this class are strongly waisted and continuously curved profiles between the expanded ends. He also notes that, in plan, the forms can be truncated-lenticular (as in this instance), boat-shaped or tear-drop shaped. The perforation is usually central, but may be slightly offset towards the butt, as is the case in the Church Lawton example. Strongly convex butt profiles are frequent within the class.[22] Class 6 battle-axes with associated radiocarbon dates, including that from Church Lawton (1893–1740 cal BC (3490 ± 29 BP)), suggest that this type of implement was current between 1900 and 1700/1650 cal BC.[23] The Church Lawton example adds to the small group of northern British battle-axes dated in this way,[24] and is the first implement (either battle-axe or axe-hammer) from the Cwm Mawr (Group XII) rock source to have a directly associated radiocarbon date.[25]

In Early Bronze Age Britain there was a flowering of decorative craftsmanship, accompanied by the development of novel techniques of manufacture, utilising a host of raw materials. Many of these elegant and finely made artefacts were widely distributed, and included battle-axes and axe-hammers. During this time, the acquisition of rare and exotic things would have been tightly controlled by those in society who were able to obtain and control knowledge, and exercise power. In this world, networks, whether involving the transmission of objects, people, ideas or services, increased dramatically and were fundamental in helping to shape the identities of individual communities.[26] However, to what extent perforated stone implements were regarded as special is a matter of debate, given the general apparent lack of organisation in obtaining suitable stone, the degree of skill and the time involved in their production, plus indications of their practical uses.[27]

At Church Lawton, the artefactual and structural remains from the barrow cemetery provide a crucial insight into the social connections operating in the western and central parts of the northern English Midlands during the early second millennium BC. This sense of connectivity is emphasised, above all, by the battle-axe from the central barrow – Monument B.

Petrological analysis has shown that the output from the Group XII source was confined to axe-hammers and battle-axes (there being no known exploitation of the source in the Neolithic period) and that these products were mainly distributed throughout mid Wales and the West Midlands (fig 8). There is a thinner scatter of these artefacts throughout the rest of Wales, southern England and the East Midlands, plus a northern outlier in Fife.[28]

In the West Midlands, high numbers of perforated stone implements occur in western Shropshire, north Staffordshire and around Coventry, with fewer found in the central area of the region.[29] The spatial distribution of battle-axes and axe-hammers made from Group XII stone and the other main rock source in the region, XIV (the latter located near Nuneaton, Warwickshire), is very noticeable, with clear concentrations close to the source

22. Discussion by Needham in Reid *et al* 2014, 266.
23. Ibid.
24. Roy 2020, 238 and fig 4, 241.
25. Jones and Burrow 2011, 297, where it is stated that no radiocarbon dates exist for products from the Group XII source.
26. Clarke *et al* 1985; Needham 2008; Cunliffe 2012, 219; Woodward and Hunter 2015.
27. Fenton 1984; Roy 2020.
28. Clough and Cummins 1988, map 11, 275; Jones and Burrow 2011, fig 3, 299–300.
29. Jones and Burrow 2011, fig 3, 299; Garwood 2011, fig 2.15, 74–5.

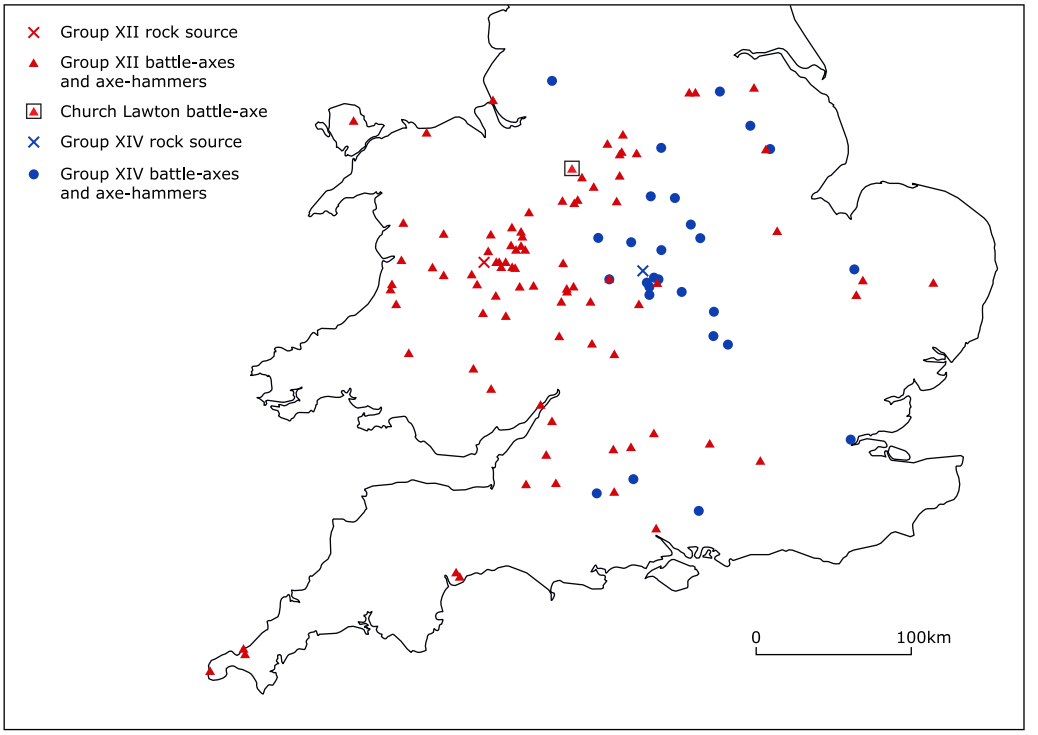

Fig 8. Map showing the distribution of Early Bronze Age Group XII and Group XIV products, confirmed by petrological analysis, in relation to the rock sources. For clarity, in relation to Church Lawton, a findspot of a Group XII implement near – to the south-east of – the barrow cemetery has been omitted. After Jones and Burrow (2011, fig 3); data derived from Clough and Cummins (1988). *Map outline*: Vemaps.com. *Drawing*: Stephen Reid.

areas.[30] The mapped extent of the items from these two sources across the West Midlands suggests separate exchange and alliance networks, or perhaps ethno-cultural distinctions.[31]

The eastern distribution of Group XII products includes a distinct band running north-eastwards from the Cwm Mawr area through central and northern Shropshire, northern Staffordshire and western and central Derbyshire, suggesting a firm connection (possibly facilitated by extensive routeways) between the rock source and the southern part of the Peak District. The site of the Church Lawton barrow cemetery lies on the outer (northern) edge of this linear distribution. The liminal location of the Church Lawton battle-axe is also emphasised by its uniqueness in Cheshire; it is the only implement made of the Group XII rock to be discovered in the county.[32] Church Lawton lay in the extensive greywacke (petrological Group XV) utilisation zone to the west of the Pennines.[33] In addition, more axe-hammers than battle-axes have been found in the area extending northwards from

30. Jones and Burrow 2011, fig 3, 299; Garwood 2011, fig 2.15, 74 – although the distribution of the Group XII implements presented on that figure is incomplete.
31. Garwood 2011, 75.
32. Coope *et al* 1988.
33. Longley 1987, 73–8; Coope *et al* 1988.

Cheshire to south-west Scotland, suggesting the preferential use of axe-hammers throughout that region.[34]

Social connections indicated by the eastern distribution of the Group XII products are given added weight by the presence at Church Lawton of bone points, found incorporated with the human remains (two in the burial that accompanied the battle-axe) and some of the pottery vessels from the site. Bone points are most commonly represented in well-furnished graves dating to the Early Bronze Age in the Peak District and the Yorkshire Wolds.[35] However, the apparent concentrations of this artefact type in these two regions may simply be a reflection of the high number of reported excavations in each locality. Peak District associations are also demonstrated by two of the funerary vessels found within Monument B – one of the Collared Urns and a Cordoned Urn. Ann Woodward notes that the decoration of these particular vessels is very similar, suggesting they may have been made by the same or related potters.[36] She also makes the point that Cordoned Urns are particularly common in the Peak District, where a close parallel for the Church Lawton example was found at Darley Dale, Derbyshire.[37]

The rarity of stone, in the form of a ring of boulders, to enhance a funerary monument in the lowlands of central western England has been highlighted in the introductory section of this paper. It is in the Peak District, the western upland fringes of the West Midlands and in mid and northern Wales, where the clearest and closest structural parallels to the ring of boulders at the southernmost barrow in the Church Lawton cemetery – Monument A – are to be found.[38] From the distribution of Group XII products in the West Midlands, it is apparent that their concentration coincides with a cluster of Late Neolithic and Early Bronze Age ceremonial monuments – stone and pit circles on the western upland fringes of the region, close to the Group XII source.[39] This association is extended and given further emphasis by the discoveries at Church Lawton.

The methodologies for advancing the study of Early Bronze Age perforated stone implements, including the analysis of use-wear, have been advocated by Roy.[40] Examining battle-axes and axe-hammers in northern Britain and the Isle of Man, these studies indicate that both implement types were deposited in monuments associated with funerary activities, but with many more battle-axes than axe-hammers found in such settings. The analysis of wear and experimental tests demonstrate that both artefact types were used for similar activities, such as chopping and splitting wood, digging, including clearing land of roots, plus animal slaughter/butchery. It is possible that some of these tasks were ceremonial in nature rather than purely practical applications. If so, the proceedings are likely to have involved formalised/regulated (choregraphed) actions in order to help amplify firmly held beliefs.

From a wider perspective it is interesting to note that experimental studies and use-wear analysis of Dutch late Neolithic battle-axes suggest that these implements were particularly useful in clearing woodland – not in chopping and splitting wood, but in the uprooting of trees by chopping through the roots. The importance of this type of activity is seen alongside other major technological and economic developments linked to a changing landscape across north-west Europe, starting in the late fourth millennium BC and continuing throughout the third

34. Stuart Needham, pers comm, noted in Reid *et al* 2014, 266; Roy 2020.
35. Woodward and Hunter 2015, 547.
36. Discussion by Woodward in Reid *et al* 2014, 264.
37. Vine 1982, 340, no. 447.
38. Barnatt 1990; Burl 2000; Lynch 2000.
39. Woodward 2007, fig 12.1, 184, fig 12.3, 186–7; Garwood 2011, fig 2.9, 52–3.
40. Roy 2020, 2022.

millennium BC. Actions to clear woodland were presumably based not only on practical considerations, but on ideological grounds as well.[41]

This new investigation of the Church Lawton battle-axe, while not providing a definitive answer about the implement's use, because of the heat damage, suggests it might have been utilised in the performance of a physical task, albeit in a limited manner. The micro-wear evidence, although very slender, may point to contact with wood on a superficial basis, for example chopping or percussive motions. As indicated above, such operations could have been purely functional/utilitarian and/or imbued with symbolism. In a region that appears to have been largely wooded until the Late Bronze Age/Early Iron Age,[42] including the area surrounding the Church Lawton barrow cemetery,[43] actions to clear woodland might have involved ceremonies where special tools, symbolising group identity and ancestral ties, were required.[44] If unused, the possibility exists that the Church Lawton battle-axe was manufactured specifically for its burial.

The penultimate, discernible event in the history of the battle-axe concerns its heating. All the evidence points to its placement within the pyre, perhaps at its very centre. It is uncertain, however, whether this highly symbolic act was carried out prior to the deceased being cremated, with the battle-axe being put on or under the body, or placed in the embers of the fire following the cremation. One thing that is clear is that items found in other graves within the barrow (Monument B) had also been heated, indicating that the practice of burning objects and burying them with the deceased was a fairly regular, but selective, practice. Such transformational acts must also be seen alongside others where fire was involved at Church Lawton: namely, the use of a large piece of charred timber to cover a pit that had possibly contained a crouched inhumation, at the centre of Monument B; and the burning of the turf and timber platform that stood in the middle of Monument A. With reference to other Early Bronze Age funerary sites,[45] the inclusion of burnt items with the deceased can be seen as a widespread, but again it should be stressed, selective practice. This point is further emphasised by the research undertaken by Roy, who examined a small number of axe-hammers and battle-axes from northern Britain that had been damaged by heating, several of which came from funerary monuments. These include the battle-axes from cremations excavated according to modern standards at Cairnderry and Bargrennan, both in Dumfries and Galloway.[46] The burning of grave goods at Church Lawton, and elsewhere, is suggestive of the need to maintain the close association of the individual with key artefact(s) throughout the funerary process.[47]

Following its altered appearance, the Church Lawton battle-axe was carefully placed in a horizontal position next to the cremated remains of an adult of about thirty years or more in age, possibly a woman, near the base of an oval-shaped pit, 0.7m deep. The human remains and two bone points, held together in some sort of organic container, and the battle-axe were then covered by a deposit of ash and charcoal from the pyre. The incorporation of objects within graves was a selective, and a seemingly uncommon, practice in the north of the West Midlands region and the surrounding areas during the Early Bronze Age.[48] The findings at Church Lawton fit with this picture. The reasons for the selection of certain items to be

41. Wentink 2020, 121–6.
42. Leah *et al* 1997, 1998; Reid *et al* 2014, 260–1.
43. Innes *et al* 2014, 257–60.
44. Roy 2020, 255 and table S3 in supplementary material.
45. Noted in Reid *et al* 2014, 265, 267; Cooper *et al* 2022, 244–50.
46. Roy 2022, table 2, 7–9, 23–5.
47. Stuart Needham, pers comm, 12 Aug 2023.
48. Mullin 2003, 124, 2007, 84.

buried with the deceased are bound to have been numerous. Underlying these expressive and evocative acts that linked the living with the dead (the recently deceased and their ancestors), were the associations relating to the identities, positions and roles during life, and the connections that people had with particular objects and places.[49]

In relation to this discussion about the Church Lawton battle-axe, it is worth quoting Stuart Needham. His ideas about Neolithic stone axes can also be applied to a different material category:

> The notion that axes, or some axes, might serve to valorise a given personal classification (eg a social role, position or other identity) within society is attractive for helping to explain why it was not always sufficient to have an axe made of *any* available and suitable stone, but rather one that conformed to certain understandings of what that symbol should constitute materially and metaphorically.[50]

SIGNIFICANCE OF THE BATTLE-AXE IN LIFE AND DEATH

It is hard to come to a firm conclusion about the use, and hence the importance, of the Church Lawton battle-axe while it was in circulation. It may have conveyed a sense of importance, and possibly power, while it was in use, although a mundane, functional existence, prior to its treatment during the funerary process, cannot be entirely ruled out. Its significance is certainly indicated by its ceremonial treatment during the funeral. The same can be said about the two bone points buried with the individual, which probably functioned as items of personal adornment, whether as hair pins, within headdresses or embellishments for clothing or costume. The evidence suggests that these objects were worn during religious or ritual activities.[51] Through the burial of particular artefacts, like the people interred with them, the importance or power they may have had during life was transferred to the earth. Certain objects may also have evoked strong emotions, emphasising a sense of place and belonging. In such ways, social cohesion was strengthened, and group identity, with established links to the land, was maintained.[52]

It is extremely likely that the person interred with the battle-axe and the bone points was regarded as special, or exercised a degree of influence, among the local community. This may have been a position of authority, a shaman or someone who possessed a knowledge of medicines and medical procedures.[53] It is also possible that this individual performed or oversaw arboreal activities, particularly those that were highly ritualised and deeply symbolic in nature, relating to the clearance of woodland. The reasons leading to such positions of influence could be numerous. It is not inconceivable that this individual had a direct link, genealogical or otherwise, with the Group XII rock source area, including an association with the ceremonial monuments nearby.

49. Woodward and Hunter 2015; Roy 2020; Cooper *et al* 2022.
50. Needham 2008, 318.
51. Woodward and Hunter 2015.
52. See also the discussion in Needham *et al* 2015 concerning the ritual deposition of bronze metalwork in the region around the Group XII rock source in the Early Bronze Age.
53. Woodward and Hunter 2015, 2.

CONCLUDING REMARKS

It is particularly rare in a British prehistoric context to be able to reconstruct the history of an artefact from its inception, knowing the exact location of the source material, through to its deposition and its link at that point to a particular person. The Church Lawton battle-axe has provided an opportunity to do this. Through an exacting analysis of the object, involving visual and microscopic examinations, it has been possible to focus on certain key aspects/events in the history of the implement. These principally concern its production and its treatment during the funeral of the associated individual, with some limited evidence relating to its possible use beforehand. A greater appreciation of the implement from a social perspective has also been gained by viewing it from a range of standpoints, underpinned by geological information and the associations apparent at the place of its burial.

ACKNOWLEDGEMENTS

The project to re-examine the Church Lawton battle-axe was initiated by Malcolm Reid. He wishes to thank the two co-authors of this paper for their significant contributions, for all the discussions we have had and for their thought-provoking comments. The three of us are extremely grateful to: Elizabeth Montgomery, senior curator at West Cheshire Museums, for allowing the temporary custody of the battle-axe so that it could be re-examined; Eline Van Asperen, technician at the Wolfson Archaeology Laboratory, Newcastle University, for facilitating the microscopic examination of the implement; Mik Markham from the Implement Petrology Group for providing the photomicrograph of the thin section of the battle-axe; Gemma Esvelt, assistant manager of the Powysland Museum, Welshpool, for permission to photograph perforated stone implements in the museum's collection; Steve Burrow at the National Museum of Wales for providing a sample of picrite from Cwm Mawr; Stephen Reid for assisting with image presentation; and Gill Dunn for proofreading drafts of this paper. Additionally, Malcolm Reid would like to acknowledge Sam Walsh. Her analysis of the human remains and the artefacts from the Church Lawton barrows, reported on previously, was crucial to the writing of this account. The authors are most grateful to Stuart Needham and the two reviewers for their comments leading to the completion of this paper.

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