
An exceptional polished flint axe-head from Bolshan Hill, near Montrose, Angus

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Introduction

In 1995 the axe-head described in this note was found by Mr David Marquis lying on the surface of cultivated land in Crossgate Field (NGR NO 6230 5320) on Willanyards Farm. The field lies immediately north of Bolshan Hill in Kinnell parish, Angus, on the higher ground between the valleys of the South Esk to the north and the Lunan Water to the south. The land at the find spot, at approximately 55 metres above Ordnance Datum, slopes down to the north from Bolshan Hill. The site lies some 7.5 km from the modern coast at Lunan Bay to the east, and the same distance from the Montrose Basin to the north-east.

Mrs Eileen Marquis reported the find to Montrose Museum and Art Gallery, where Rachel Benvie in turn notified the secretariat of the Treasure Trove Advisory Panel at the Archaeology Department, National Museums of Scotland. The axe-head was in due course claimed by the Crown under the *bona vacantia* procedure and allocated to Angus Council Cultural Services (Saville 1997), being deposited at Montrose Museum and Art Gallery, where it is now on display.

The axe-head (Illus 1 and Colour Illus 3)

This is an all-over-polished flint axe-head of exceptional quality, in very good condition except for a modern chip from one corner of the cutting edge. There are some superficial surface marks from soil and iron-pan staining and from pebble abrasion, and a series of short, near-parallel indentations on one surface, perhaps caused by farm machinery.

The dimensions are: length 193 mm; maximum breadth 61 mm; maximum thickness 28 mm; and the weight is 394 grams.

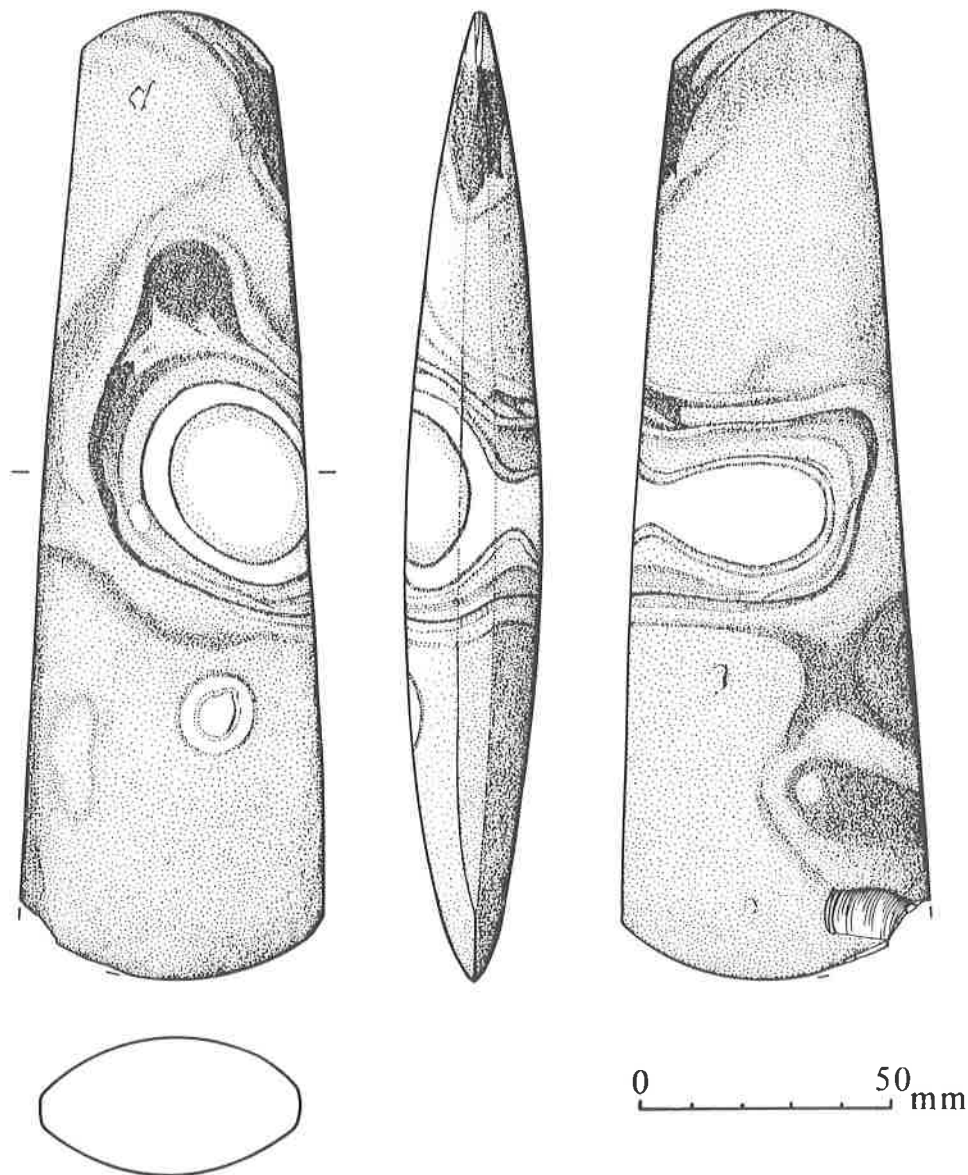
In both plan and profile the axe-head is near symmetrical. It has a regularly convex cutting edge in plan, echoed at the butt by a similarly convex, semi-circular edge. In profile the butt end is

bevelled but blunt, with a facet 1.5 mm deep between the dorsal and ventral faces, unlike the cutting edge which is sharply biconvex. The sides of the axe-head taper, in very slightly convexly curved lines, from cutting edge to butt, the breadth reducing to 37 mm at the butt end. The transverse cross-section is a narrow, flattened oval, with pronounced but narrow side facets (maximum depth 7 mm), which are slightly convexly curved rather than being sharply angular. On both edges the facets continue the whole length of the axe-head.

The surface of the the axe-head has a high gloss polish which gleams as it catches and reflects the light. Traces of the original flake scars from shaping the axe-head remain in a couple of tiny areas at the butt end. Otherwise, grinding prior to polishing has removed all signs of the flaking stages of manufacture. Under magnification the surface can be seen to be covered with grinding striations and pitting, but to the naked eye the effect is of continuous gloss.

Apart from the gloss effect, the immediately striking feature of the axe-head is its marbled colouration. The predominant colour is light grey (lighter stipple on the drawing: Illus 1), with narrower bands of darker grey, grey-brown, and almost black (denser stippling), which in the central area of the axe-head concentrically encircle a larger cream-coloured zone and a smaller grey-cream patch (both left unstippled).

Where the axe-head is chipped, the exposed interior is medium grey in colour and it is uncertain how much of the marbled effect could be the result of post-Cretaceous modification. The cream area, which is opaque, is probably an original inclusion within the flint when formed, but some other discolouration effects of the translucent flint could be post-formation. It is hard to assess if any colour modifications arose after the axe-head was produced and/or after its deposition, but the superficial light-grey colouration is probably a post-manufacture effect. When first made, the axe-



Illus 1. The Bolshan Hill flint axe-head (scale 2:3. Drawn by Marion O'Neil).

head would undoubtedly have exhibited a marbled effect, but the opaque cream and grey-cream areas would perhaps have been surrounded by subtle contrasts of medium and dark grey and grey-brown, rather than the greater contrast now provided by the light grey.

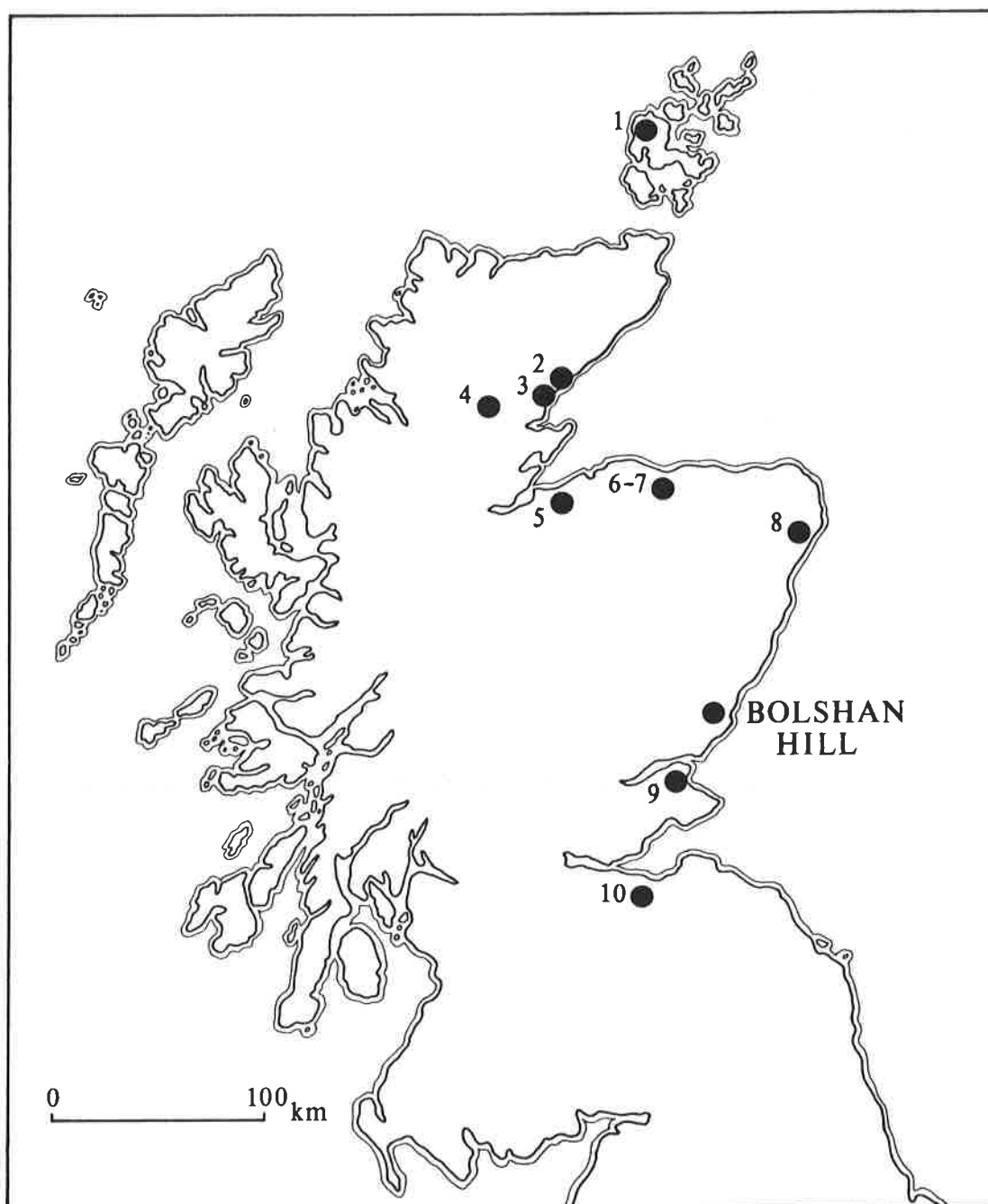
Discussion

When tapped this axe-head has a 'ring' like fine china, which adds to the intuitive feeling that this is a prestige item, never intended under normal circumstances to function as the blade of an ordinary working tool. The unusual raw material, the quality of finish, the investment of craft skill in production, and the fine condition, all point towards a non-utilitarian purpose. The very feature which makes the flint of this axe-head so striking, its variegated composition, may actually represent a weakness in terms of operational

strength, which gains from a uniform consistency of raw material.

Of course, the identification of prehistoric axe-heads as having a prestige, ceremonial, or other special function is extremely complex (Olausson 1982, 9-30), especially when dealing with surface finds lacking a context, and over-simplistic interpretation should be avoided. Nevertheless, the attributes of the Bolshan Hill axe-head do strongly suggest enhanced value, sufficient to presume particular significance within prehistoric society (cf Clarke et al 1985).

In fact, the Bolshan Hill find is an example of a specific type of high-quality flint axe-head which has long been recognized in mainland Britain (Evans 1872, 99). These all-over-polished axe-heads have side facets, a symmetrical form, near-straight tapering edges, and usually a semi-circular butt. They tend to be of above average length, and are frequently of flint made distinctive by fossil inclu-



Illus 2. General location of the Bolshan Hill axe-head find spot and of other axe-heads of similar type found in Scotland, as listed by Sheridan (1992, 209). Key: 1. Folsetter, Orkney; 2. Brora, Sutherland; 3. Dunrobin, Sutherland; 4. Invershin, Sutherland; 5. Craggie Farm, Nairn; 6-7. Smerrick, Enzie, Banffshire; 8. Easter Auquharney, Aberdeenshire; 9. Leuchars, Fife; 10. Gilmerton, Edinburgh (drawn by Marion O'Neil).

sions, an unusual colour or, more significantly perhaps, a variegated colouration, often marbled as here. The type was defined by Moore (1979, 86) as his class 7 axe-head, with lengths in excess of 230 mm (as in the case of the example from Helpringham Fen, Lincoln (Moore 1979, fig 2)), but his definition requires emendation to accommodate smaller but otherwise classic examples, as in the present case.

Pitts (1996, 342) has more recently termed this group of flint axe-heads the 'Crudwell type', after a cache of three all-over-polished axe-heads found

at Crudwell in Wiltshire in 1862; he has examined at least 29 examples of the type from Britain. It is not always clear, however, without individual publication of the axe-heads involved, if like is really being compared with like, especially where the marbled and high-gloss effects are concerned. It is often possible to be more confident about the attributes of axe-heads from antiquarian references, because of the quality of the accompanying wood-cut illustrations - for example the axe-heads from Panshanger, Herefordshire (Anon 1863) and Botesdale, Suffolk (Evans 1897, fig 53) - than from

more modern publications, which have only outline drawings of the relevant axe-heads.

The ten or so examples from Scotland were recently reviewed by Sheridan (1992, 209), when publishing the previous most recent find of an axe-head of this type, also a 'stray' find, from near Nairn. Sheridan drew attention to their generally eastern and coastal distribution, as is clear from Illus 2, which also includes the location of the Bolshan Hill axe-head. The problems and inadequacies of the definition of this group of axe-heads in Scotland were alluded to by Sheridan (1992, 210–12) and there is scope for much further study. For example, should flint axe-heads such as the narrow, 'chisel-like' example thought to be from Buchan, Aberdeenshire (Anderson 1886, 335 and fig 319) be included because they share the trait of high-gloss, even though the overall plan form is distinct?

The Bolshan Hill axe-head most closely resembles the smaller of the two axe-heads reputedly found together (perhaps with a third axe-head of 'common type') at Smerrick, Enzie, Banffshire (Anon 1882, 407–8 and fig 2; Clarke et al 1985, 253–4 and fig 5.10). They are so similar that one can suggest an identical source of raw material, and the same general cultural context must surely be reflected by the similarities of type and style.

Since they have so far only occurred as stray finds, it is impossible to say anything definitive about either the chronology of these axe-heads within the Neolithic period (to which they are presumed to belong), or about the origin of the raw material. The more distinctive marbled flint does not have any obvious British source and does not appear to have been exploited for implements other than axe-heads.

However, flint of similar appearance to examples in this group was used frequently for axe-heads in Denmark (eg Bennike and Ebbesen 1986, fig 17; MacGregor 1987, 60–61; Nielsen 1977, fig 38). Particularly close parallels for the marbled flint of the Bolshan Hill axe-head are present among those in the Hagelbjerggård hoard from Jutland (Bradley 1990, 44 and pl 7; Madsen 1993, 128; Nielsen 1977, fig 36). The overall sizes and plan forms of these thin-butted axe-heads, as in this Jutland hoard, can be nearly identical to some of the British finds.

Unfortunately, the similarities do not extend to the form of the cross-section. The British examples, although faceted at the edges, tend to have sections which are basically lenticular, with the facets appearing as truncated bevels. By contrast, the Danish thin-butted axe-heads are typically quadrifacial, with deeper, more angular, 'squared-off' side facets. Danish pointed-butted axe-heads of the early Neolithic can have lenticular cross-sections with bevelled edges, but their plan forms do not offer the close comparisons with the British axe-

heads which the thin-butted types do. For these reasons, the British axe-heads are unlikely to be straightforward imports from Denmark.

The classic quadrangular cross-sections of the Danish thin-butted axe-heads relate to the specific reduction technique used in their manufacture (Hansen and Madsen 1983; Stafford 1999). This technique can be identified from associated debitage and from the axe-head itself in unpolished or only partly polished form. But once axe-heads have reached the completely polished state, as is the case with the Bolshan Hill example, it is difficult, if not impossible, to identify which reduction technique was used.

If there is a link between the Danish and British axe-heads, the diversity in cross-sections may be explained by the modification of the axe-heads before or after export to suit British taste, or the import of Danish flint into Britain and the local manufacture of axe-heads. The former seems more likely since it would allow more convenient transport; in the latter case one might expect to have found some other locally produced implements or waste material of this distinctive flint.

Thin-butted flint axe-heads do of course have a distribution well beyond Denmark in the context of the earlier Neolithic Funnel-necked Beaker/TRB cultural horizon of northern Europe (Bakker 1979; Brandt 1967; Midgley 1992). Problems of flint sourcing mean it is rarely possible to be certain when individual axe-heads represent exports from Denmark or more local products of erratic or morainic flint (Stafford 1999, 45–6). Some authors have adopted an arbitrary criterion of length as a crude measure of how exotic they are, suggesting that axe-heads longer than 150 mm are mostly likely to be imports (Bakker 1979, 80). So, the considerable length of many of the British examples is perhaps another factor suggestive of export from Denmark.

The presence of over 100 'jadeite' axe-heads of mainland European origin from Britain and Ireland is a positive indication of distant links involving this type of implement in the Neolithic period (Jones et al 1977; Woolley et al 1977). The thirty or so 'jadeite' axe-heads from Scotland (Curtis 1997; Murray 1994; Sheridan 1992, 202–3) include a high percentage assumed to be of Piedmont, western Alpine origin (Ricq-de Bouard 1993).

Murray (1994, 99) has drawn an interesting parallel between the all-over-polished flint axe-heads and those of 'jadeite', noting that many Scottish finds of the latter material are of a thin, triangular type, not well known in the supposed parent area, and she follows Sheridan (1992, 210) in recognizing the shared attribute of high-gloss finish. She also notes that this characteristic high-gloss finish of some all-over-polished flint axe-heads in Scotland distinguishes them from Danish

examples, where this trait is lacking. This further reinforces the suggestion that some all-over polished axe-heads, at least in the case of those on distinctive marbled flint, were perhaps imported from Denmark in a finished form, originally with standard 'Danish' characteristics, being modified after arrival to suit local preference. This modification could in some cases have taken the form of further grinding to reduce thickness and allow the redesign of the edges by narrowing the facets and removing their sharp angularity.

Since some of the Scandinavian thin-butted axe-heads have cross-sections more lenticular than others (types I-III; Nielsen 1977), these could perhaps have been selected to minimise the need for additional grinding. This would be supported by the greater similarity to the British finds of the type I-III thin-butted axe-heads, which tend to have semi-circular and bevelled, rather than squared-off, butts (Nielsen 1977, 72-7; cf Midgley 1992, 263-6). On the other hand, thin-butted axe-heads of types I-III also tend to have polished edges, while the unpolished, squarer edges of other, thicker types may have more readily facilitated further thinning by flaking, prior to grinding and polishing.

A crucial and definitive modification, however, was the provision of the high-gloss finish, as in the case of the Bolshan Hill axe-head. How the high-gloss polish was created is uncertain. Harding (1987, 40) has mentioned the creation of a more glassy polish on flint axe-heads when a grinding medium is omitted in the final stages, creating much greater friction between axe-head and *polissoir*. Ethnographic observations of such techniques as polishing on silicon-rich palm leaves (Madsen 1984, 58) suggest that there could be a wide range of possible methods and that the origin of such polish may be impossible to characterize fully from the finished product alone. However achieved, the maintenance of the high polish suggests careful storage of the axe-heads, perhaps in organic wrappings, which may have enhanced the polished effect.

The way in which either the high-gloss flint axe-heads or the 'jadeite' axe-heads were actually used within Neolithic society is entirely problematic. Apart from being non-utilitarian, there is no evidence to suggest these axe-heads were ever hafted, something which would have partially obscured and perhaps damaged their surface finish.

Conclusion

Until such time as a non-invasive scientific method of determining the source raw material of flint is available, subjective comparison is the only option. On this basis it seems possible to suggest that axe-heads like that from Bolshan Hill are imports from Denmark or an adjacent area. There is a close

resemblance in the material between axe-heads of this type in both Britain and Denmark, but the raw material is found only in the latter. There are also resemblances in the general axe-head form, though the British examples are embellished by high-gloss polish and do not have the same markedly quadrangular sections. The differences in form could be explained by modification of imported items to suit local preferences for axe-head appearance. The argument is perhaps weakened by the absence of evidence for other links across the North Sea between Denmark and Scotland during the Neolithic period - with the possible exception of the 'Pitted Ware Culture' tanged flint point from Tain (Saville 1998). However, the same lack of associated evidence applies in the case of the 'jadeite' axe-heads, which must have travelled even further to reach Scotland.

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Abstract

The recent discovery near Montrose, Angus, of a polished flint axe-head of exceptional quality is described and comparisons discussed. The possibility of Neolithic importation from Denmark is considered.

Keywords: Neolithic, flint axe-head, Denmark