

Further Comment on the Islay Handaxe.

Phil Harding

I am writing with information which should clarify the unresolved issue in the article published in *Lithics* 13, 'A Lower Palaeolithic Handaxe from Scotland' (Mithen, Finlayson and Finlay 1992). This article was unable to provide a firm explanation for the presence of the object on Islay. Following a discussion with Dr S Mithen, I was asked by Dr. J Wymer to investigate the matter for the English Rivers Palaeolithic Project.

In order to try and obtain any further information as to the provenance of the object, Mrs Margot Perrons (Chairperson of the Islay Museum Trust) spoke to Mrs T. Crawford, widow of the donor. Mrs Crawford is certain that the implement does not come from Islay. The axe apparently formed part of a collection which was built up at Bowmore School on Islay by Mr Crawford in the 1960s. After Mr Crawford's death, it was donated to the Museum of Islay Life as a Mesolithic axe in September 1977. Regrettably the true provenance will probably never be known.

I am grateful to Mrs Perrons for her efforts on my behalf and hope that this helps to resolve the issue.

Reference

Mithen, S., Finlayson, B. and Finlay, N. 1994. A Lower Palaeolithic Handaxe from Scotland. *Lithics* 13 (for 1992), 1-3.

Wessex Archaeology, Portaway House, Old Sarum Park, Salisbury, Wilts.

Making the Most of a Radial Core: The Topknot Flake

Lawrence Barham

Introduction

Radial flaking is one of the oldest core reduction techniques known. Radial cores occur in Bed I at Olduvai Gorge (Leakey 1971) and become common in later industries such as the African Middle Stone Age where flake production is relatively standardised (Volman 1984). The cores with their undulating bifacial profiles are distinctive as are their flakes, marked by convergent dorsal scars. This paper proposes a third identifying attribute of radial flaking, a core rejuvenation flake distinguished by its pyramidal shape and by its method of removal.

The radial rejuvenation flake was recognised in a recently excavated Middle Stone Age (MSA) assemblage from Mumbwa Caves, central Zambia (Barham 1993). Experimental knapping of vein quartz suggested an origin for the flake and its role in the process of radial flaking. The steps involved in rejuvenating a radial core add to the complexity of this ancient technology and suggest some behavioural implications which are examined below.

The Topknot

The largely quartz MSA assemblage at Mumbwa contains numerous radial cores and flakes indicative of this particular reduction strategy. Also occurring are quadrilateral flakes whose dorsal surface is pyramidal in outline and in plan view (Fig 1). The intersection of flake scars which creates the peaked shape also frequently culminates in a topknot of hinge fractures and cortex (Fig 1a,d,f,h). The frequency of hinged peaks may in part be a reflection of the unusual flaking properties of vein quartz.

Vein quartz is brittle, often contains hidden stress fractures, and varies greatly in its homogeneity within individual veins and even in the same piece of rock (Knight 1991). These factors conspire to reduce the knapper's control over the core, particularly when hard stone hammers are used (*ibid.*, 40). Depending on the quality of the quartz, core rejuvenation may become a necessary feature of the radial reduction process.

The combination of pyramidal flakes with hinge scars in the Mumbwa sample suggested that core rejuvenation was an element of the flaking strategy and that this distinctive flake could be a clue to its frequency. To test this hypothesis, ten vein quartz cobbles were flaked radially using a quartzite hard

hammer until flakes larger than 20 mm could no longer be produced — an arbitrary cutoff. Three of the ten cores split part way through their productive life and were abandoned. Split radials occur in the archaeological assemblage and presumably reflect the inherent variability of the raw material or the use of a hard hammer. Of the remaining seven, five developed hinge scars at the apex of one radial surface and flaking was halted. The two remaining cores flaked through to the size limit.

Further reduction of the five hinged cores would only be possible by removing the scarred apex in each case. The ease with which the apex could be cleared depended on the angle formed by the intersecting flake scars. If the peak angle much exceeded ninety degrees then removal of the apex was unlikely. The flatter or more disc-shaped the core the more difficult the clearance and conversely the more conical the core the smaller the angle and the easier the removal. Three of the five experimental cores were conical with apex angles approaching ninety, the remaining cores were flatter with obtuse apices — these had to be abandoned.

To clear the apex on the three conical cores, a single blow was applied roughly a quarter of the distance between the apex and the radial edge, with the core held horizontally so the apex formed the striking platform. This simple technique worked on the most conical of the cores. The result was a truncated cone offering a clear exit for subsequent flake removals from the radial edge (Fig 2d). The two remaining cores required some modification to the apex angle. This was achieved by creating a platform by flattening a flake scar ridge near the apex. A series of short blows perpendicular to the ridge axis removed several small flakes — the technique is similar to backing a blade — or crushed the ridge sufficiently to create a platform (Fig 2b). The result is an apex with a reduced angle and ready for removal.

The by-product of the apex clearance is a flake quadrilateral in plan view and pyramidal in section. In the archaeological sample, evidence of platform preparation can be seen on topknot flakes with a damaged dorsal ridge above the point of percussion (Fig 1a,b,c,e,g,i). In theory the topknot could be retouched to make a steep scraper but in practice few pieces were modified. Only six pieces in a sample of seventy-four were worked, and these were large enough to be flaked, becoming small cores in their own right (Fig 1g).

Behavioural implications

The identification of a core rejuvenation flake specific to radial flaking not only furthers our understanding of this reduction process, but also draws attention to its behavioural dimensions. On an economic level, the topknot flake demonstrates an ability on the part of the knapper to extend the productivity of a raw material which in turn contributes to the flexibility of a

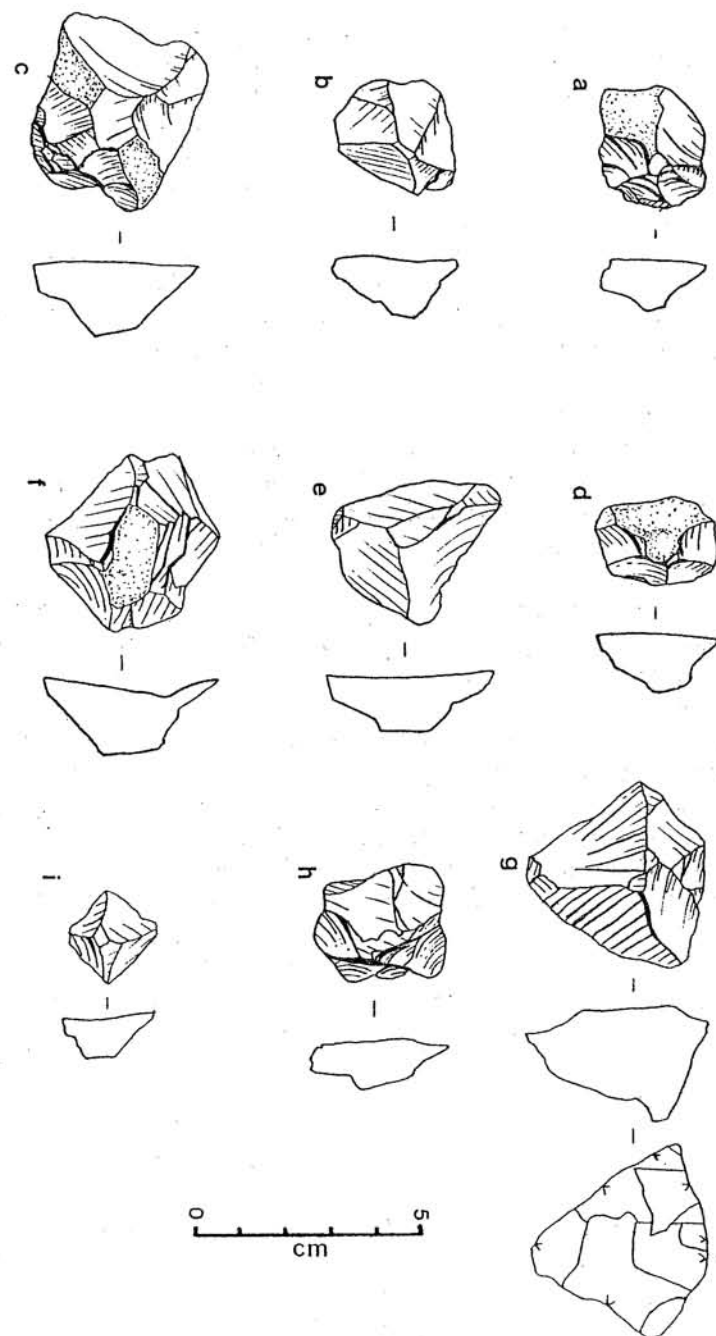


Figure 1. Topknot flakes : a, dolerite; all others quartz.

group's subsistence planning.

In the Mumbwa sample, the ratio of radial cores ($n=132$) to topknot flakes ($n=74$) approaches 2:1, suggesting that vein quartz, though available locally, was flaked intensively. Why the MSA inhabitants of Mumbwa chose to maximise a locally abundant material is a question for future research. In the interim, the use of core rejuvenation techniques carries implications for group mobility (cf Ambrose and Lorenz 1990). At Mumbwa, the topknot flake represents an enhanced facility to respond to changes in food resources by reducing group dependency on specific lithic sources. The ability to maximise vein and cobble quartz by radial flaking offered greater flexibility in choosing the location of a living site, an important consideration in a region with pronounced seasonality.

From the perspective of reconstructing site use, the spatial distribution of radial rejuvenation flakes can provide additional evidence for knapping areas when combined with refitting and other indices of primary production. The flakes themselves offer little scope for re-use and are unlikely to be intentionally removed from the site for other purposes. At Mumbwa, a dense concentration of quartz debitage including topknot flakes and split radial cores occurs towards the cave entrance, a pattern suggestive of a knapping area. The location of the odd topknot *cum* core amongst this debitage lends further support to such a functional interpretation. Refitting will be used to test this proposition.

On a cognitive level, the removal of a radial core rejuvenation flake involves an understanding of the properties of fracture and core geometry comparable to those needed to turn an edge on a biface (Bordaz 1970). Planning and forethought are also implicated in the platform preparation preceding flake removal. This degree of hierarchical thinking makes topknot flakes a potential indicator of cognitive development along lines developed by Wynn (1989, 1991). A comparison of topknot frequencies between late Acheulian and early MSA assemblages, for example, could provide a small measure of developing intellectual capabilities. In such a comparison, it would be necessary to control for variables such as raw material availability and site use.

Conclusion

Without re-examining other assemblages, it is not possible to say just when and where this technique of radial core rejuvenation was developed. Few reports illustrate radial cores in sufficient detail to detect hinge laden apices or truncated surfaces from topknot removal. In most classification schemes used in southern Africa, topknot flakes would be placed in a general category of unmodified flakes and not illustrated or distinguished from other flake debitage.

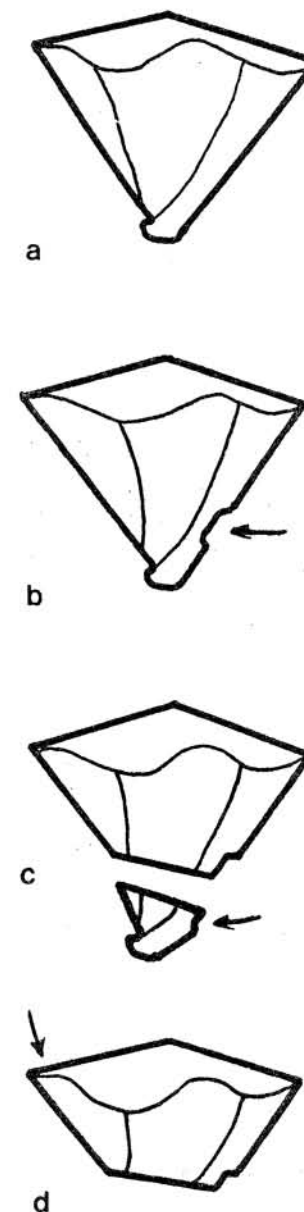


Figure 2. Radial core rejuvenation sequence.

The experimental sample used in this study to identify the method of radial core rejuvenation was small and may not be the only means possible or even representative. Experimentation might reveal a range of options for enhancing the life of a radial core of which the topknot flake is just one strategy. Whether the technique is specific to vein quartz needs examining; the type of raw material, the hammer used and the skill of knapper may all affect the frequency of hinge fractures and thus the need to rejuvenate. Further experimentation is planned to assess the role of these variables.

Regardless of its temporal and spatial distribution, the topknot flake (or whatever term you prefer) demonstrates the potential of seemingly unpromising waste material to contribute to the study of human behaviour.

Acknowledgements

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A Waisted Axe from Bashley, Hampshire

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A polished stone axe was found by George Crees between Bashley and New Milton, near Christchurch, Dorset (around SZ 424096) approximately 10 years ago. It was subsequently brought to my attention and I am grateful to George Crees for allowing me to borrow the axe for study and publication. The axe was found in a stream bed after a period of heavy rainfall. Its very fresh condition may suggest that it had originally been deposited in a pit or similar feature, the heavy rainfall exposing the artefact.

The axe (Fig 1) is made from a hard, fine-grained rock, dark green in colour; brown areas on both faces may be staining or due to weathering of the original surface of the object. The material is probably of igneous or metamorphic origin. The axe is very finely made and much care has been taken over the final shaping and polishing. It is in good condition, there is slight damage to the blade. It measures 115 mm long (maximum) by 79 mm wide at the butt tapering to 44 mm at the blade. The axe is 45 mm thick at the butt end thinning towards the cutting edge. The grooves at the butt end would have facilitated hafting. The axe has been polished all over and striations are visible in at least two directions.

The closest British parallels for this type of axe are mauls and so-called mining tools which have a wide distribution and are generally thought to be Bronze Age in date (Pickin 1989, 39). These artefacts tend to be larger and cruder than the Bashley example. However, a group of mauls from Anglesey compare well with it (Lynch 1986, fig. 19, see especially no. 4). Other seemingly well-made but smaller grooved or waisted axes have been found, for example from Limpsfield, Sussex (Malden 1926, pl. 1a; Field and Woolley 1984 91, fig. 4, no. 27), Lound Run, Suffolk (Clough and Green 1972, fig. 13), Earl Shilton, Leicestershire (Vine 1982, 313, no.152) and a wedge from Palgrave, Suffolk bears some similarity of form (Clough and Green 1972, fig. 13).

Secure archaeological contexts for such artefacts are rare, all of the cited examples being stray finds. The example from Limpsfield is almost identical to the Bashley example in size and form. An ethnographic origin has, however, since been suggested for the Limpsfield axe, although it was originally published as archaeological (Clough and Cummins 1988, 170).

Even if an ethnographic origin is accepted for the Limpsfield axe, there is ample evidence for finely made waisted axes from Britain. These artefacts would appear to be allied to mauls and mining tools in form, but what of their function? Mauls and mining tools may have had several functions as, although