ABSTRACT

This paper considers lithic raw material procurement strategies of hunter-gatherers in the Late Glacial Interstadial in Britain. It compares the Creswellian (13–12,000 radiocarbon years ago) with the Federmesser (12–11,000 radiocarbon years ago) and suggests on present evidence that the movement of prepared blades and cores by people, sometimes over long distance, was more prevalent in the earlier period. In contrast, to the Creswellian, more variable behaviour is observed in the Federmesser which might partly be a consequence of changes in the landscape, although other contributory factors are considered also.


Keywords: Creswellian, Federmesser, raw material procurement, Late Glacial, hunter-gatherers.

INTRODUCTION

Due to intensive work over the past 25 years a great deal is already known about the archaeological record of the Late Glacial in Britain. Much of this progress can be attributed to the efforts and scholarship of Roger Jacobi who died in late 2009 and to whom this paper is dedicated. In this contribution I highlight some aspects of Late Glacial material culture and technology that bring together his and related studies and include some of my own observations. In particular I shall focus on the selection and use of lithic raw materials and offer some suggestions on the question of changing human mobility patterns during this period.

Amongst lithic inventories of the Later Upper Palaeolithic (sensu Campbell 1977), at least two major technological groupings stand out as distinctive and probably temporally successive cultural facies in the Late Glacial Interstadial. For convenience they can be categorised as early Later Upper Palaeolithic (or Creswellian) and final Later Upper Palaeolithic (or Federmesser).

In her landmark survey of the Upper Palaeolithic Garrod (1926) noted many similarities between the British and the Later Magdalenian collections of Western Europe yet recognised that the indigenous lithic artefacts were distinctive enough to a warrant separate classification as Creswellian. This is the view that has generally prevailed until now (Campbell 1977; Jacobi 1991; Barton & Roberts 1996; Barton et al. 2003) even though a return to a more generic “Later Upper Palaeolithic” has recently been proposed (Jacobi & Higham 2009a) in preference to the term “Late Magdalenian” (Pettitt 2008).

EARLY LUP/CRESWELLIAN.

Leaving aside any terminological issues, the Creswellian (earliest LUP) grouping has already been comprehensively described (Barton & Roberts 1996; Barton 1999a; Jacobi 1991 & 1997; Jacobi & Roberts 1993; Barton et al. 2003). In broad terms the retouched tools in these assemblages generally consist of bitruncated trapezoidal backed blades (Cheddar points) and single truncation examples (Creswell points). Amongst other typical lithic forms are end-scrappers on long, straight-sided blades, the lateral edges often being modified by additional retouch. Also often present are piercers, burins, becs (some of them true Zinken), blades with scalar edge modification, truncated blades with heavily worn or rounded ends (lames tronquées et usées) and splintered pieces (pièces esquillées). Other features of the early LUP industry are equally distinctive. The debitage (waste) is typified by well-made blades and bladelets, detached from cores with a single preferred flaking direction. The butts on the
blades are often carefully prepared, and include a special technique that leaves a distinct faceted butt known as a *talon en éperon* (Barton 1990). Flat, diffuse bulbs on the proximal ends of blades indicate a production method using either soft stone or antler hammers. Such characteristics are typically present in more than 35 findspots in Britain including major clusters of cave sites in the Mendip Hills and in the Creswell Crags (Barton 2009).

According to revised dating evidence, the earliest dates for the LUP are recorded in south-western Britain. New ultrafiltrated AMS dates on modified bone and antler from sites like Kent’s Cavern, Gough’s Cave, Sun Hole and Aveline’s Hole reveal ages of about 12,600 14C yr BP (~14,950–14,750 cal BP) for the associated assemblages (Jacobi & Higham 2009a). Such a timing corresponds closely to the steep rise in temperatures at the onset of Greenland Interstadial 1 and may suggest that recolonisation of Britain occurred almost simultaneously with this warming. The proposed model is however challenged by evidence from beetle curves that shows that climatic amelioration had already begun by about 15,000 cal BP in western Britain (Walker *et al.* 2003). Despite these uncertainties what remains clear is that on current understanding the LUP occupation of Britain post-dates that of the Late Magdalenian in the Paris Basin and Belgian Ardennes by up to 500 calendar years (Jacobi & Higham 2009b). This chronological difference may be enough to explain the absence of small backed bladelets (*lamelles à bord abattu*) in British early LUP toolkits in favour of trapezoidal points and angle-backed blades (Jacobi & Higham 2009a). Despite an absence of a microlithic backed bladelet technology in the Upper Palaeolithic of Britain it is not inconceivable that this will eventually come to light especially in areas of the country closest to the European mainland.

Consideration of the lithic raw materials employed in early LUP industries reveals a marked preference for high quality flint and other fine-grained siliceous materials. The selection of these rocks was a necessary requirement for manufacturing long, parallel-sided blades and it is clear that the early LUP knappers went to some lengths to secure good quality material. This is especially apparent in the practice of transferring blades, sometimes over long distances, into areas where naturally occurring high-quality flint was scarce. Such behaviour is well-documented at Gough’s Cave in Somerset where translucent flint blades were probably transported from primary sources no nearer than 60 km away in the Vale of Pewsey, Wiltshire, on the northern edge of Salisbury Plain (Jacobi 2004). A similar situation may be described for early LUP sites further west in Devon. For example at Three Holes Cave in the Torbyran Valley, it has been shown that artefacts from the “lower hearth” include finished blades and tools made of flint not immediately local to the area (Barton & Roberts 1996). In this case the source of flint is still unknown but it may have been from Tertiary river gravels near Torquay from which it has been suggested that the flints at Kent’s Cavern were also quarried (Jacobi & Higham 2009b). If these gravels did provide sufficiently good flint it might explain why primary exposures such as those further east at Beer in Devon were apparently ignored. Although, this could argue in favour of material being available within a few hours’ walk (especially Kent’s Cavern), it does not invalidate the fact that the Creswellian hunter-gatherers deliberately sought out good quality raw materials which were reduced at source and carried around the landscape in the form of blades and prepared cores. Such a procurement strategy closely matches patterns documented in the continental Late Magdalenian (Arts & Deeben 1987).

**FEDERMESSE**

From around the beginning of the second half of the Interstadial (equivalent to the Allerød, 13.95–12.9 ka cal BP), a major change can be observed in the British archaeological record. In this phase, or perhaps originating slightly earlier in the climatic deterioration of Greenland Interstadial 1d (Jacobi & Higham 2009b), there is a noticeable technological shift that sees the introduction of curve-backed blades (*pointes à dos courbé*) into British lithic inventories. The appearance of such tools in the British record follows similar developments on the European mainland, especially in Germany, the Netherlands and Belgium where they are ascribed to the Federmesser tradition (Schwabedissen 1954; Taute 1968). In northern France, analogous
discoveries are referred to either as Azilian (Valentin 1995 & 2005; Bodu & Valentin 1997; Bodu 1998 & 2000) or as Federmesser (Fagnart 1997; Fagnart & Coudret 2000), although both terms are now regarded by many as broadly synonymous.

The question of whether there was continuity between the earlier LUP and the Federmesser is impossible to address at present because of the scarcity of stratified associations between these groupings. Based on parallels in northern France and the Paris Basin the oldest Federmesser is characterised by curve-backed pieces pointed at both ends (*bi-pointes à dos courbé*) succeeded by a more recent phase with single pointed forms or *mono-pointes à dos courbé* (Coudret & Fagnart 2006). It is largely on these criteria that Jacobi suggested that an early Federmesser technology was present at the Mendip sites of Sun Hole, Gough’s Cave and Aveline’s Hole (Jacobi & Higham 2009a).

While there is no reason at present to reject this model, it should be noted that in northern France lithic assemblages of the *phase ancienne* of the Federmesser are highly variable and reflect transitional characteristics with the Final Magdalenian (Fagnart & Coudret in press). Assemblages of this kind are represented in pre-Allerød deposits at the open-air sites of Hangest-sur-Somme quarry III.1 (lower layer) in the Somme Valley (Fagnart 1997), at Le Closeau (lower layer) in the Paris Basin (Bodu 1998 & 2000) and at the Grotte du Cheval at Gouy (Bordes *et al.* 1974; Valentin 1995).

Distinctive of this facies are large well-made blades with relatively straight profiles (at Hangest III.1 and Le Closeau) and with a preponderance of plain butt types, except at Hangest III.I where faceted butts account for nearly a third of measured examples. Blades with *talons en éperon* are rare or absent in all three sites. Abrasion of the platform edge seems to have been fairly variable. The bulbar surface features indicate the dominance of soft stone and antler percussion, using the tangential method (Pelegrin 2000). The blade cores are mainly of opposed platform type but with preferential use of one platform. In contrast to the debitage the retouched tools display greater variability. This is exemplified at Le Closeau and Grotte du Cheval by an exclusive presence of large symmetrical bi-pointed curve-backed blades and no backed bladelets (*lamelles à dos*). The typology of backed forms contrasts markedly with Hangest III.1 where the lower level at this site has produced a diversity of bi-points and mono-points and an abundance of backed bladelets (Fagnart and Coudret in press). In addition, the existence of shouldered and truncated points
(pointes à cran) amongst the backed tools at Hangest III.1 may be of significance as they also occur in Britain (see below). In this group of assemblages, burins on truncation tend to outnumber dihedral forms and scrapers are generally represented by shorter examples (grattoirs courts), although some are on the ends of large blades (Bodu 2000). Another feature of potential relevance for British sites is the presence of large retouched blades typified by flat scalariform retouch (retouche plate écailleuse, also known as Magdalenian...
Magdalenian retouch). Such elements are present only in the lower level at Le Closeau but are also frequently found in older Azilian contexts at sites in the south of France (Fagnart pers. comm.).

Suggestions that the early British Federmesser displays a comparable degree of variability are supported by the presence of a small but distinct group of open-air sites in south central Britain (Figure 1). These are sometimes referred to as Hengistbury-type sites (Conneller & Ellis 2007) after the large assemblage recovered at Hengistbury Head in Dorset (Barton 1992). The lithic technology at these locations shares many of the distinctive features of the French assemblages, notably in the existence of well-made blades, with straight profiles and a mixture of plain and faceted butts (but an absence of typical talons en éperon). Of key significance is in the variety of the backed tools found at these sites, which include straight-backed forms (Hengistbury, Brockhill, La Sagesse), shouldered points (Hengistbury, Brockhill), angle-backed points (Hengistbury, Brockhill) and curve-backed bi-points (Hengistbury, Nea Farm) (Figure 2). Also present amongst the retouched tools in these industries are truncations, becs, blade end-scapers, short end-scapers and burins on a truncation (Barton 2009). An added curiosity of the Nea Farm and Hengistbury assemblages, so far unreported in any other of the British or French assemblages, is the appearance of intentionally segmented blades (Barton 1992) (Figures 2 and 3).

The quality and size of lithic raw materials utilised in the Federmesser seems to have been a great deal more variable than in the earlier LUP. This may be partly due to the geographically widespread nature of the Federmesser assemblages (Barton 1999b) though it should be noted that a considerable overlap exists in the distribution of the early and later groupings. Unsurprisingly, there is a strong relationship between the occurrences of large, well-made flint blades and good sources of primary flint. This can be seen particularly in relation to findspots in eastern and southern England, stretching from Seamer Carr in Yorkshire (Conneller 2007) as far as Hengistbury Head in Dorset (Barton 1992). At Hengistbury, high-quality nodular flint was plentifully available in Cretaceous chalk deposits within 12 km of the site. Further north, but in the same river catchment, blades knapped at Nea Farm probably originated from outcrops at Fordingbridge some 5–6 km away. These two sites also provide some interesting evidence for the circulation of artefacts. At Nea Farm it is clear that mixed in with blades of local flint were tools made of a distinctive
striped flint (Barton et al. 2009) (Figure 3). It is likely these were introduced to that site as ready-made items because no cores or otherdebitage of this material were recovered in the excavations. Similar striped flint has been observed at Hengistbury and it is plausible that this comes from the same flint source. Both sites are situated in the same river catchment and are 26 km apart, so it is conceivable that material was transferred from one location to the other by the same people. This pattern is consistent with the model described for the Vale of Pickering, where there is evidence for the exploitation of local flint sources (to replenish blades and replace broken equipment) but where tools made of flint from glacial till deposits were brought in from some distance away (Conneller 2007).

In western Britain, in areas outside the main chalk flint-bearing deposits, raw material strategies were somewhat different but are also distinctive from those of the earlier LUP. For example, blades and flakes were often extracted from small gravel flint and chert. The blades tend to display wide, lipped butts and their ventral surface features are often consistent with a soft stone hammer mode of percussion. Sites where these are common include Broken Cavern and Three Holes Cave, both Devon (Barton & Roberts 1996) as well as Symonds Yat East, Gloucestershire (Barton 1996). There is no evidence at these sites for the introduction of blanks from elsewhere. Instead, at Three Holes Cave (upper hearth) and Broken Cavern, short blades of up to 5 cm were knapped from small cobbles of flint and chert that were probably imported from no more than 16 km away in the Haldon area (Collcutt 1984). The backed tools are all on short blades, reflecting the small size of the raw material. In other cases where movement of materials over greater distances may be inferred, as at Symonds Yat, it is clear that primary reduction of the small nodules appears to have taken place on site rather than at the point of procurement. It suggests that the preferred method in each of these examples was to transfer raw materials in the form of cobbles rather than as pre-prepared blanks.

**DISCUSSION: LINKING RAW MATERIALS AND MOBILITY**

From this brief overview of the Later Upper Palaeolithic one can observe a number of contrasts in raw material behaviour of the earlier LUP and the Federmesser groupings. In the earlier LUP there is convincing evidence for the long distance transfer of lithic raw materials. This was originally observed by Jacobi (1991) and subsequently developed as an idea by Rockman (2003). Although it may not always have been the case, it is clear that in the early part of the Interstadial hunter-gatherers often deliberately sought high quality lithic materials for the manufacture of long, parallel-sided blades. The blades probably had high utility value in themselves (or as end-scrapers) but also provided blanks for making tools of standardised size and form such as trapezoidal points. From this it might reasonably be surmised that the backed elements were replaceable components of hafts, perhaps similar to the example of an antler point with lithic side barbs from Pincevent in the Paris Basin (Leroi-Gourhan 1983).

Whether or not this pattern of raw material use was symptomatic of high residential mobility is hard to ascertain at present. Certainly it would be unwise simply to equate the maximum distance of raw material from its source as a sole indicator of mobility, because it does not inform how far or how frequently movements occurred or if lithics were exchanged via intermediaries. A more productive line of enquiry might be to examine the relationship of the chaîne opératoire to raw materials. As we have already noted for the earlier LUP, large lithic nodules were reduced into smaller packages (blades and cores) with the presumption that the preparatory stages took place close to the original source of raw material. Such behaviour could be interpreted as an “economising measure” designed to produce a highly portable toolkit in much the same way as hypothesised for other prehistoric hunter-gatherer societies (Kuhn 1991). It is interesting that this is a consistent feature of the early LUP and is displayed in assemblages in relatively close proximity to good quality raw material (e.g. Three Holes Cave) as well as those more distant (e.g. Gough’s Cave).

Further clues concerning mobility may come from the circulation of non-lithic materials. At Gough’s Cave, it is noteworthy that in addition to flint other objects of marine shell and antler were transferred over long distances, the latter probably originating from the North Sea coast.
of Britain (Charles 1989). Also in the same category may have been the three famous perforated antler batons (bâtons percés) that were made of reindeer, a species very rare in the fauna of south-west Britain (Currant 1986), and so were either brought in directly or exchanged with people from further east, where these animals were more common. The same may be true of incised fragments of mammoth ivory from Gough’s Cave (Charles 1989), which were doubleless “curated” personal items and part of the paraphernalia carried around by members of the group. The few other LUP records of mammoth in south-west Britain come mostly from ivory artefacts (Housley 1991; Lister 1991) and this suggests that tusks were mined from older carcasses or were collected from freshly killed animals far enough away to leave no other trace of their existence in the food debris. While the presence of these items is consistent with the long-distance transport of flint, it would be equally interesting to know the direction in which these materials travelled and how far, if at all, they mirrored the movement of lithic raw materials. One originally proposed long distance line of contact is between the Mendips and the Creswell Crag sites of the East Midlands (Jacobi 1991; Pettitt 2008). However, according to the latest age modelling estimates the sites in the Mendips may be chronologically earlier than those at Creswell (Jacobi & Higham 2009a), making this scenario less likely. Even if such trans-regional links cannot yet be demonstrated it is clear that early LUP groups were capable of hunting wild horse, animals that migrated seasonally in herds and often over significant distances (Mohr 1971). Humans may also have been assisted in hunting and other activities by domesticated dogs (Jacobi & Higham 2009a) who are known from ethnographical sources to are known from ethnographical sources to be used for tracking and hunting game as well as for carrying and hauling equipment (Kroeber 1976; Nelson 1983). Considering these elements in combination, it seems more than likely that hunter-gatherers in the early LUP were well adapted to mobile ways of life.

In contrast to the early LUP, the Federmesser seems to have been characterised by less structured approaches in the selection and use of lithic raw materials. Recognition of this can be seen in the greater heterogeneity of lithic types represented at sites but also in relation to a different strategy for transferring raw materials in the landscape (Barton 2009). For several authors these developments are best viewed in the context of palaeoenvironmental changes in the second half of the Interstadial, particularly in the expansion of birch woodland. It is argued that increased forestation would have produced changes in the nature and distribution of prey animals, and this in turn would have required modification of hunting tactics and perhaps greater use of the bow and arrow (Fagnart 1997; Barton 1999a). Innovations in hunting equipment would certainly be one of the expected consequences of changes in habitat and might explain the appearance of lighter composite projectiles made up of barbed antler points like those used to hunt and wound the Poulton-le-Fylde Elk (Jacobi et al. 2009). By the same token, novel ways of arranging projectile tips and side armatures in arrow shafts may have given rise to the appearance of slender curve backed points in the toolkits. A second major consequence of the afforestation, though less likely in my opinion, would have been a decrease in visibility (and concomitant loss of knowledge) of geological outcrops and exposures, thus forcing humans into adopting more opportunistic strategies of collecting local raw materials of mixed quality, rather than focusing on high-grade flint.

Admittedly there is a great deal of variation in the use of lithic materials across the spectrum of assemblages. However, far from being related to visibility, it may simply indicate a preference for procuring flaky material from sources that lay closest to hand. Thus in the southern and central parts of Britain where Cretaceous chalk flint was in plentiful supply it was invariably the raw material of choice. Of course it is possible that within this framework some chronologically distinctive patterns will eventually emerge. For example, a feature of Hengistbury-type assemblages (which may be early Federmesser) is blades that are typically long and well made. In the case of Hengistbury these were knapped on site from virtually whole nodules that were imported from relatively local sources. Nea Farm also displays large blades and lies very close to chalk outcrops at Fordingbridge. Although there is circumstantial evidence for the circulation of prepared blades (Barton 2009) this was not on the same scale or distance.
reported for the early LUP. Transfers of tools may also have taken place more locally. In the case of Hengistbury and Nea Farm it seems likely that contacts occurred between these sites over a distance of 26 km along the river Avon and may be linked with the seasonal shifts of hunter-gatherers between inland and coastal-estuarine environments (Barton et al. 2009). A similar set of circumstances may account for the location of the La Sagesse site near Romsey. It could imply that rivers played an increasingly important role as communication corridors in the more heavily forested environments.

Outside the main chalk flint regions, as in south-west Britain, Federmesser assemblages also reflect a reliance on local sources of raw material. Much of the lithic material occurs regionally in the form of small cobbles and this allowed nodules to be brought back to site where they were knapped and made into tools including curve-backed bladelets. I have referred to this strategy elsewhere as a type of “storage” in which blanks were kept as whole cobbles rather than transporting them as prepared blades or bladelets (Barton 1999b). It is difficult to relate this activity directly to mobility practices since the weight of the lithic material was fairly minimal. However, given the general availability of gravel flint and other siliceous materials it seems unlikely that long distance transfers of material regularly occurred in the Federmesser, at least in south-west Britain. There is also a noticeable absence at sites of other items that can be shown to have been transported over long distances. Framed in these terms, it would be logical to conclude that the mobility strategies in the Federmesser were somewhat different from the earlier LUP, but for alternative arguments on raw material sources and mobility levels in the Federmesser in Belgium see De Bie and Caspar (2000).

CONCLUSION

In summing up, raw material behaviour and core reduction methods may hold useful information for understanding human mobility patterns in the Late Glacial Interstadial. Work on the early LUP by Roger Jacobi and others has suggested that blade blanks were prepared in advance and were sometimes transferred over long distances. This implies a sophisticated degree of forward planning and flexibility in technological organisation that allowed raw materials to be transported with great economy and acted as a reserve in cases where the local material was not adequate to meet the requirements of tool making. The presence of small “curated” items and other imported objects at sites also supports the idea of a highly portable material culture as would be expected in a society adapted to frequent and perhaps long distance movement.

In the Federmesser the raw material strategy displays less uniformity and in many cases would appear to indicate greater opportunistic use of locally available sources. This does not mean that the methods of core reduction were particularly expedient or less formal, and so it would be premature to match this behaviour with a model proposed elsewhere that links reduction in mobility with a greater emphasis on expediency in the chaîne opératoire (Parry & Kelly 1987; Wallace & Shea 2006).

However, the small size of cobbles necessary for producing bladelets for a variety of curve-backed tools allowed a wider range of raw materials to be exploited but equally must have involved forward planning and a profound knowledge of the landscape. The distances involved in procuring lithic materials may suggest frequent residential moves and slightly smaller home ranges than for populations of the early LUP but this needs to be tested more rigorously by further raw material characterisation studies.

ACKNOWLEDGMENTS

I am grateful to Alison Wilkins for her help in producing Figure 1, to Hazel Martingell for the lithic illustrations in Figure 2 and to Ian Cartwright for Figure 3. I would also like to thank Alison Roberts for comments on an earlier draft of this paper and two anonymous referees for suggesting further improvements.

REFERENCES

Barton, R.N.E. 1990. The en éperon technique in the British Late Upper Palaeolithic. Lithics:


pour la Promotion de la Recherche Archéologique en Île-de-France, Nemours.


Jacobi, R.M. 1991. The Creswellian, Creswell an


Jacobi, R.M. & Roberts, A. J. 1991. Late Glacial mammals from the Late

A. Adonment and

: critères de

J. A. ns. In B. he Later Upper

2008. The British Up

Europe,


