

## **PRESENT-DAY LOWER PALAEOLITHIC LAND SURFACES IN BRITAIN: TWO EXAMPLES FROM THE UPPER THAMES**

*Terry Hardaker<sup>1</sup>*

---

### **ABSTRACT**

*Following the first report of surface Palaeolithic quartzite artefacts on the Northern Drift in the Upper Thames (Hardaker 2001), this paper describes the results of a wider search on the Northern Drift including a second clustered location on a plateau-top at Combe, Oxfordshire. The post-depositional history of the Drift is examined and evidence discussed for both surface movement and concentration of surface quartzite clasts through wind deflation. Cores dominate the artefact typology but flakes and bifaces were also found. The sites suggest a palimpsest of human occupations, widely spaced over time during cool or cold phases, concentrated at raw material source points, but with subsidiary activity elsewhere in the landscape. The study provides a rare glimpse of landscape strategies in areas away from valley floors, and arguments are advanced to suggest why river banks of major valleys may not have made ideal Palaeolithic living spaces. A model is proposed for the identification of other fossil Palaeolandscapes in Britain, and an Appendix discusses techniques for the recognition of quartzite artefacts.*

### **INTRODUCTION**

Lower Palaeolithic artefacts recovered from present-day land surfaces in Britain have not hitherto been systematically studied. Stray finds have been reported for more than a century, often solitary (Smith 1894, 1916). They have generally been considered undatable, and so of no archaeological value. Although surface finds cannot yield the range of information contained in buried sites, they do offer spatial data on a scale seldom achievable by excavation, thus contributing a useful new perspective to the current debate on landscape strategies in the Lower Palaeolithic.

Palaeolithic surface studies in several different areas in Southern Britain in the last few years have begun to fill this gap. In the Midlands, Mr. Ron Waite has collected large numbers of surface Palaeoliths since the 1970s; they are at last gaining the attention they deserve (Graf, this volume). The distribution of Waite's finds lies within the area covered by the Anglian glaciation, but not by the Devensian; if dropped in post-Anglian time they could lie on relatively undisturbed Palaeolithic land surfaces. Independently in Lincolnshire, Bee has published a number of surface bifaces that promise to add to the evidence (Bee 2001).

The plateau tops of the chalk downlands of southern Britain provide another area of interest; here it has been shown that there are many surface or near-surface sites containing Palaeolithic material in the deposits mapped as clay-with-flints (Scott-Jackson 2000).

Finally, a pattern of Palaeolithic finds is emerging from the plateaulands of the Cotswolds, which is the subject of this paper. These finds come from the Northern or Plateau Drift

---

<sup>1</sup> 79 Millwood End, Long Hanborough, Witney, Oxford OX29 8BP. Email: [terry.hardaker@oxfordcarto.com](mailto:terry.hardaker@oxfordcarto.com).

(Figure 1), a decalcified fluvial deposit that is alleged to have flowed for at least 1.3 million years, from IOS Stage 68 until OIS Stage 12 (Maddy 1997: 543; Whiteman & Rose 1992). Until it was beheaded some time before the Anglian glaciation, the river that laid the Northern Drift comprised the main Thames Valley, embracing a catchment extending into the Midlands and Wales (Bridgland 1994: 35–49; Hey 1986). It brought vast quantities of sands, clays and, most importantly for archaeology, quartzite cobbles from the Triassic Bunter beds of the Midlands, as well as other hard rocks from Wales, over the line of the Cotswold escarpment and into the present Upper Thames. The floodplain of this river was possibly up to 8km in width at times (Hey 1986: 300).

Today its course through the Cotswolds is occupied by the Evenlode Valley, a tributary of the Thames, which over the past 500,000 years has incised a slot-like “gorge” some 30m deep through the Northern Drift and into the Jurassic bedrock. Most of the Northern Drift disappeared into the Evenlode from where it has been redeposited in the later fluvial terraces of the Upper Thames, but isolated remnants of the original Drift are still preserved essentially *in situ* on flat sections of the plateau either side of the Evenlode and into the present Thames basin (Figure 1).

The detailed history of the Northern Drift as described by Hey (1986) and others is relevant to the archaeology only insofar as it shows that its age may partly predate the earliest human occupation of Britain. The Northern Drift has thus provided a continuous, if diminishing, raw material resource in the form of rounded quartzite cobbles that have lain on the surface throughout the Lower Palaeolithic period in Britain. It is noteworthy that all the artefacts so far found in association with the Northern Drift are made of quartzite, with the exception of a single possible biface of quartz.

### THE ARTEFACT SEARCH

Since the original find at the site of Freeland (Hardaker 2001), the search on Drift deposits has been widened in the Evenlode Valley area. The oldest and highest of the Drift deposits, the Watermans Lodge Formation, was visited (map reference SP 327 182). It comprises the highest ratio of quartz to quartzite clasts, all of which are generally smaller than artefact size and no artefacts were found here.

A large area of till-like material at Milton-under-Wychwood, called the Bruern Abbey deposit (SP 265 180), may represent till from the ice sheet that beheaded the Thames (Whiteman & Rose 1992; Bridgland 1994: 36). Although possibly having suffered post-depositional displacement, it may be a relic of an early Middle Pleistocene land surface. Despite a few quartzite cobbles at 150mm or more, clasts were generally below 50mm in size, and no artefacts were recovered. Various other superficial deposits of undetermined age on the plateau likewise seldom contain knappable-sized material. The small areas of Northern Drift at Ramsden Heath (SP 348 160) and Wilcote (SP 364 153) have not been accessible to date.

In 2004, however, artefacts were discovered at Combe (SP 408 165), 3km north of the original Freeland site, on the northern side of the Evenlode river (Table 3, Figure 4). They lay on the Combe Formation, which is the second youngest of the Drift suite of terraces (Table 1). In addition, more artefacts have been discovered on the Freeland Formation. These new finds are described below.

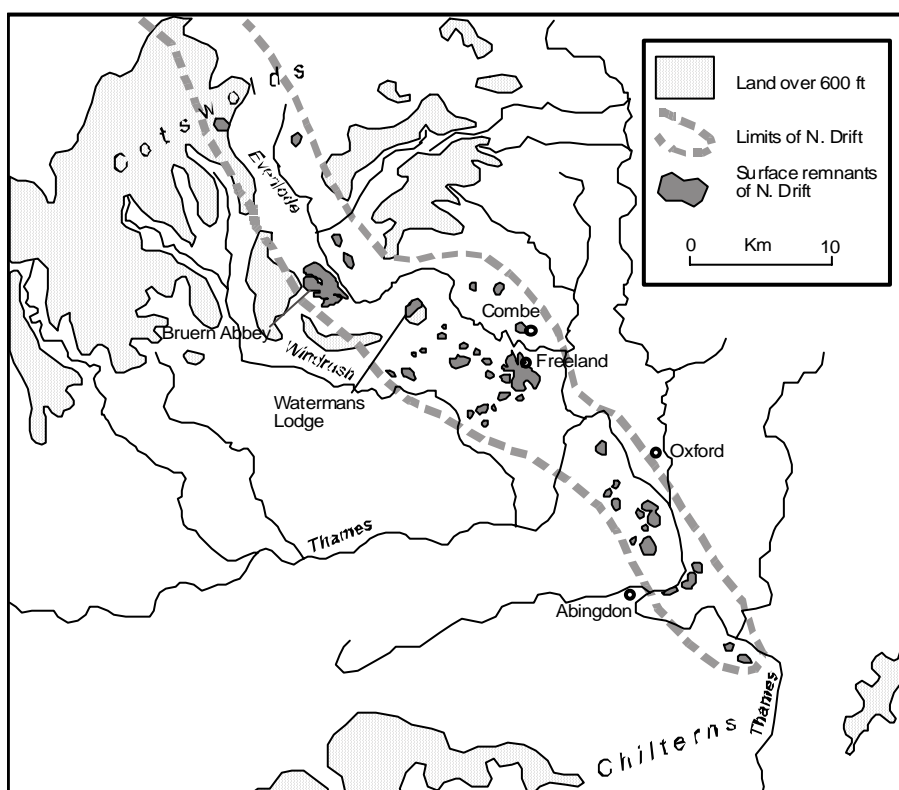


Figure 1. Map of the Northern Drift

<i>Name</i>	<i>Height OD</i>	<i>Series</i>
Watermans Lodge	190m	}
Ramsden Heath	165m	}
Wilcote	140m	}
Various superficial deposits	110–130m	} Northern Drift
Combe	120m	}
Freeland	100–110m	}
Various undifferentiated	90–100m	}
Hanborough Gravel Formation	100m	OIS 10?
Wolvercote Channel	80m	OIS 9
Summertown-Radley Formation	60–70m	OIS 7–6
Floodplain Terrace	60m	OIS 5–3

Table 1. The Northern Drift suite and later terraces of the Upper Thames (after Bridgland 1994)

Although the search for artefacts on the Northern Drift is not yet concluded, the discovery of new material affords the opportunity for a re-assessment since the first report. During fieldwalking it was noted that the B.G.S. 1:50,000 geology map, although mostly accurate, fails to plot the extent of Drift in some areas. Notably the Combe Formation is more extensive than the B.G.S. map suggests and there is a small unmapped relic of the Freeland Formation at Sturt Copse (SP 401 149) that has yielded three items.

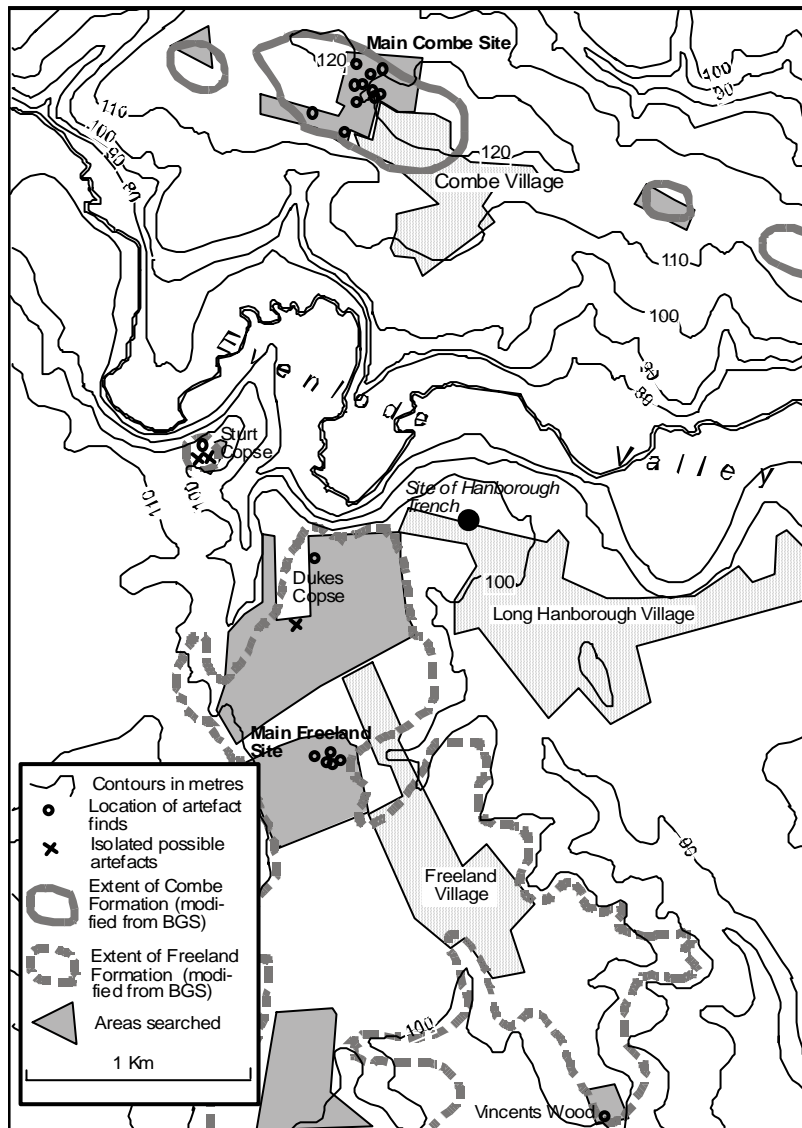


Figure 2. Map of the Combe-Freeland area showing Northern Drift, Freeland and Combe Formations and surface artefact finds

### NEW ARTEFACTS FROM THE FREELAND FORMATION (Table 2; Figure 3)

The original Freeland site was described previously (Hardaker 2001). In summary, 13 quartzite items were recorded in a small area about 150m x 150m in diameter, of which three were considered certain (a biface, a flake, and a split-cobble core). Five others were considered probably of human making and five more possible.

Since 2001, three certain and three possible/probable items have been recovered from the Freeland Formation, although none of them is from the original cluster. Most notable are the two cores and a possible quartz biface (Figures 3b & c) from Sturt Copse. These new finds show that there is a low-density scatter of artefacts away from the main concentrations.

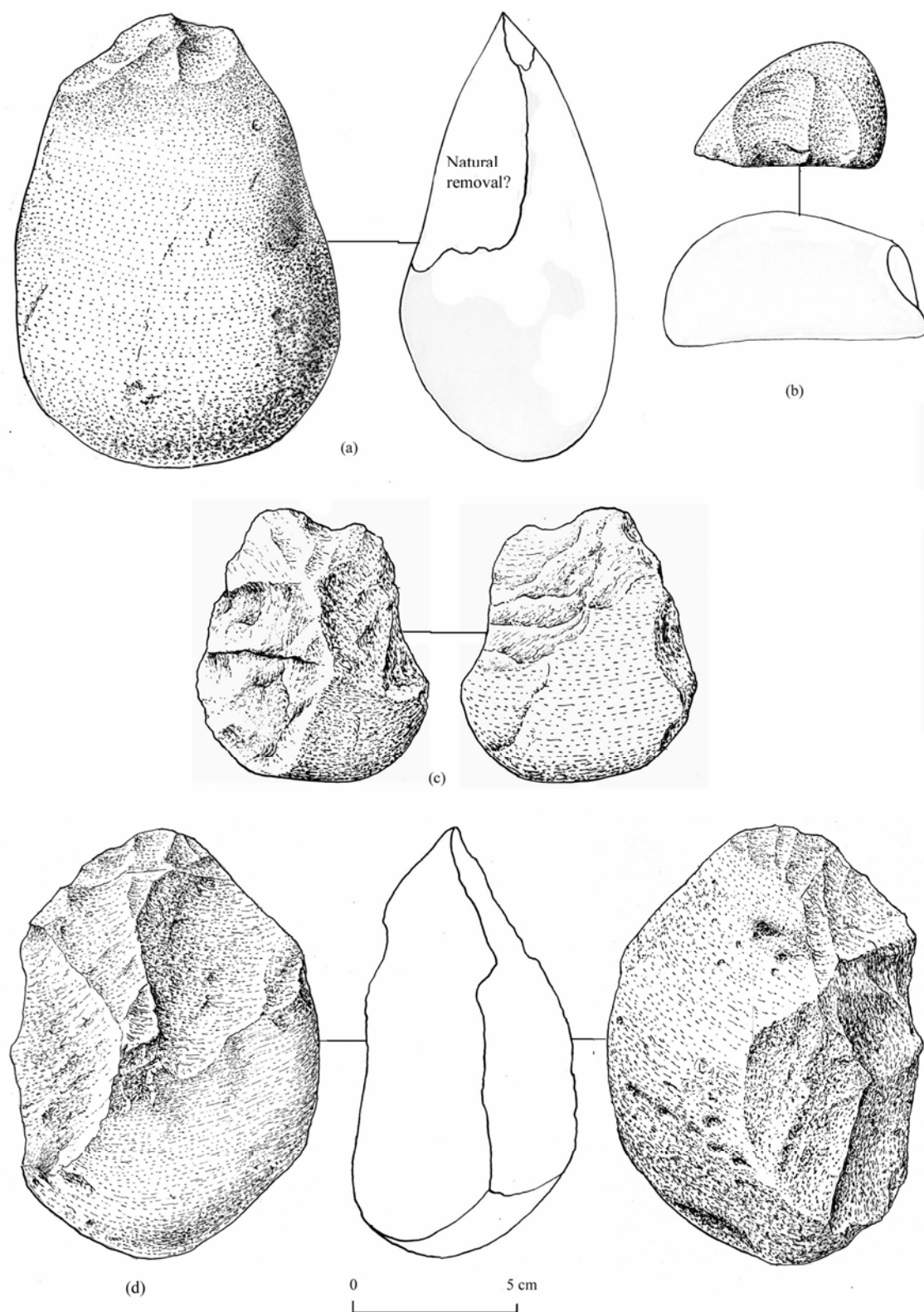


Figure 3. Artefacts from the Freeland Formation: (a) Worked point from Dukes Copse, (b) Split cobble core from Sturt Copse, (c) Quartz biface from Sturt Copse, (d) Biface from the original Freeland site. [Illustrations by the author]

<i>Description</i>	<i>Location</i>	<i>Size (mm)</i>	<i>Condition</i>	<i>D/V Scars</i>	<i>% cortex</i>	<i>Status</i>	<i>Fig.</i>
Quartz biface	Sturt Copse	87x67x40	Rolled*	>5 >3	35	Possible	3c
Split cobble core	Sturt Copse	84x62x39	Rolled	3	90	Probable	3b
Core	Sturt Copse	91x90x47	Rolled	2/3 r/t	70	Certain	-
Worked point	Dukes Copse	138x97x69	Rolled	4 0	95	Certain	3a
Chopper on split cobble	Dukes Copse	106x91x58	-	5 0	90	Possible	-
Large core	Vincent's Wood	146x126x99	V. rolled	c. 12	20	Certain	-

Table 2. New finds from the Freeland Formation. [For grading of wear see Appendix]

### THE ARTEFACTS FROM THE COMBE FORMATION (Table 3; Figure 4)

Eleven quartzite artefacts were scattered over three ploughed fields lying on a small remnant of Northern Drift on flat or almost flat ground. In addition, three possible items were recorded. This is the most intense “cluster” yet seen, and it coincides with the largest scatter of natural quartzite cobbles of artefact size so far located on the Drift. For the first time a pointed Acheulian biface (Table 3, no. 1; Figure 4a) has been found, giving credence to the previous assertion that the artefacts are of Lower Palaeolithic date. Another tool, here described as a trihedral point, could be interpreted as a handaxe (Table 3, no. 2; Figure 4b). An unusual and rather fresh item described as a unifacial tool (Table 3, no. 3; Figure 4e) comprises a naturally split stone from which small flakes have been removed almost all the way round. Its purpose is a mystery: if a scraper its edge is rather poorly finished, but if a flaking core the flakes would have been small (<30mm). Alternatively, it could be an abandoned handaxe roughout. The recovery of a flake of substantial size (Table 3, no. 9) with platform and bulb, together with evidence of previous removals, confirms that larger flakes were being produced, although they are notoriously difficult to find.

The assemblage is dominated by cores, which are described here in three categories: cores on split cobbles, chopper-cores and pure cores. Items are described as chopper-cores if the worked edges form a chisel-like feature (Table 3, no. 11; Figure 4d), although there is no clear evidence that they were intended to be used as choppers. Use-wear unfortunately cannot be invoked owing to the coarse grain of the quartzite and the weathered condition of most of the artefacts.

### CONTEXT OF THE FINDS: THE NORTHERN DRIFT

The significance of these finds will be augmented by having a fuller understanding of the deposit on which they lie. A leading question is whether the Northern Drift that remains in place is actually still lying where it was when the artefacts were dropped. In a period of 500,000 years, many forces could have caused the movement of surface material. The key factor in all of them is *slope*. Where land is flat, lateral movement of any kind is difficult because there is no gravitational agent to propel it. Movement of large clasts is particularly hard. Therefore the exact degree of slope on a site is of paramount importance. Even a slope of 0.5° can, over time, allow net movement in a consistent direction (D. Bridgland pers. comm.). The site at Combe varies between dead flat and 1° slope, except for the south field which borders on the beginning of the slope towards the Evenlode Valley, and has a slope of just over 1°. In this field two artefacts were found.

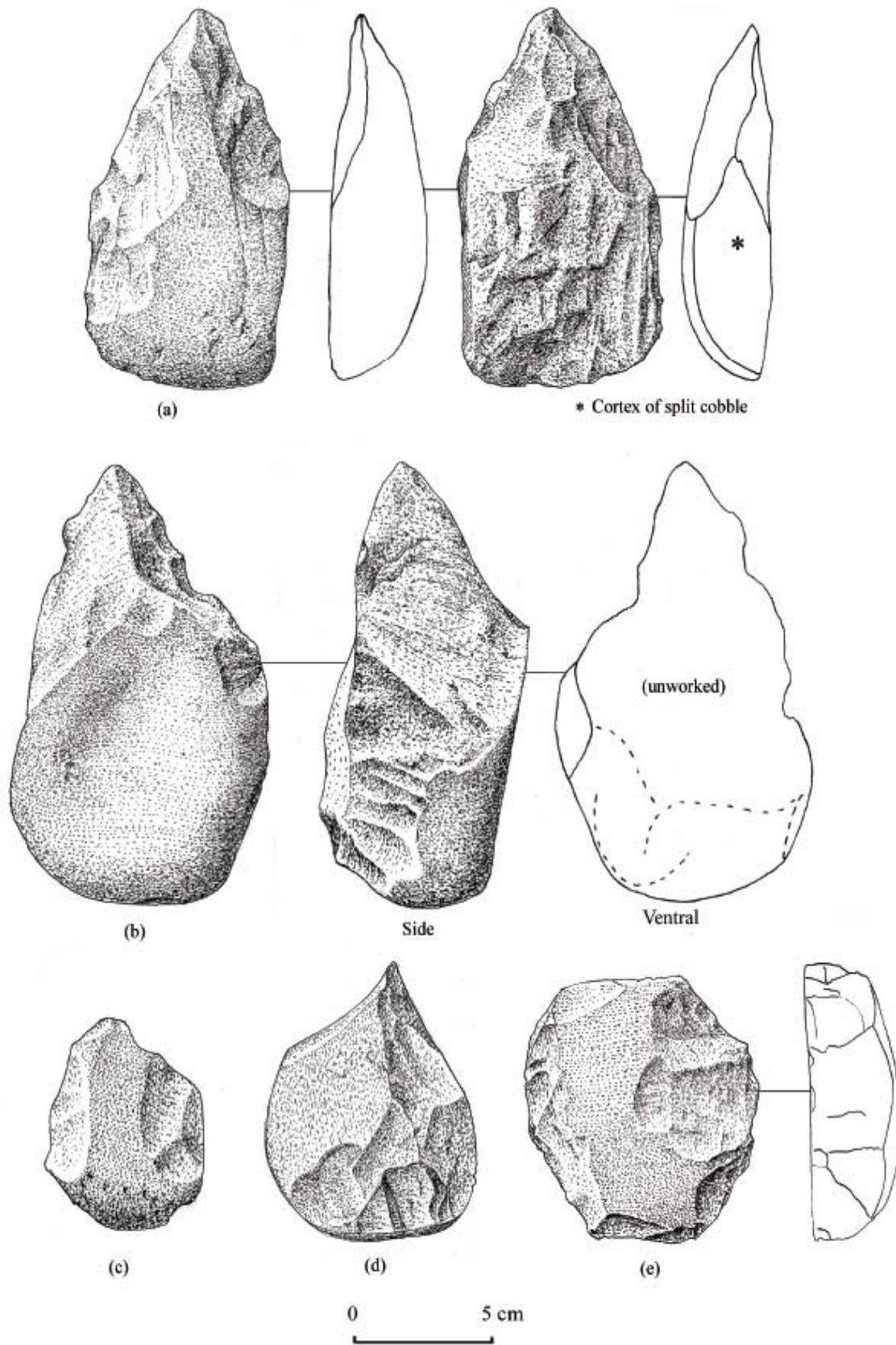


Figure 4: Artefacts from the Combe Formation: (a) Acheulian biface, (b) Trihedral point, (c) Core, (d) Chopper-core, (e) Unifacial tool. [Illustrations by the author]

No.	Description	Size (mm)	Condition	Removals		% cortex	Status	Fig.
				D	V			
1	Acheulian biface	128x68x38	Sl. rolled	>9	>8	35	Certain	4a
2	Trihedral point	151x92x66	Sl. rolled	?5	?1	40	Certain	4b
3	Unifacial tool	90x88x31	Sharp	c. 14	0	70	Certain	4e
4	Core 1 on split cobble	94x114x78	V. rolled	5		70	Certain	-
5	Core 2	117x116x90	Rolled	6		60	Certain	-
6	Core 3	70x98x60	Rolled	5		65	Certain	-
7	Core 4	72x43x58	V. rolled	8		45	Certain	4c
8	Core 5	56x70x35	Sharp	6		40	Certain	-
9	Flake	72x90x30	Rolled	-		45	Certain	-
10	Chopper-core 1	116x88x76	Rolled	3	4	70	Certain	-
11	Chopper-core 2	89x82x65	Sl. rolled	4	5	45	Certain	4d
12	Core 6	93x112x81	V. rolled	c. 10		50	Possible	-
13	Chopper-core 3	94x82x49	Rolled	5	0	90	Possible	-
14	Core 7 on split cobble	46x72x54	V. rolled	4		80	Possible	-

Table 3. Artefacts from Combe

The agencies that could have moved Drift deposits subsequent to their original emplacement can be listed as follows:

1. Rain splash. This can cause sheet-wash of small particles for example when a head of flood water creates an exit on the periphery of the flat area. It may dislodge artefact-sized clasts but is unlikely to move them far.
2. Creep or solifluction. This occurs when soil is supercharged with water and therefore becomes potentially unstable. Where it occurs at the edges of a flat area, it may create a void that draws material out of the flat area itself.
3. Rafting. This may occur in periglacial conditions when a frozen area of material is bodily transported on or within an envelope of saturated non-frozen material. It is capable of transporting large clasts.
4. Frost heave. On flat ground this will not result in any significant lateral movement, but it can act to draw larger clasts to the surface.
5. Trees and animals. They may shift stones short distances and create vertical displacement but they do not disturb the general integrity of a site.
6. More recent human agency including ploughing. It is difficult to assess the magnitude of this. Ploughing is relatively recent and can only transport stones within each field unit. The surviving artefact and quartzite cobble clusters themselves show this has not had a significant influence, otherwise they would be dispersed.
7. Deflation. Wind deflation can blow away small particles causing the progressive concentration of larger ones on the surface. This does not affect the spatial distribution of artefacts, which are too heavy to be blown.

The probability that some of the above factors have acted upon the Drift is indicated from two sections that were excavated at Long Hanborough and Combe:

1. In a section exposed at Long Hanborough (Figure 2) in the course of building construction, evidence of lateral movement was seen (Figure 5). This section lies on flat land 200m from the edge of the Evenlode Valley side slope, which itself reaches an angle of 20° in this area. The B.G.S. map shows gravel of the Hanborough Gravel Formation at this point and Northern Drift 450m to the west. The Hanborough Gravel is the earliest of the (probably) post-Anglian river terraces of the Evenlode, dating perhaps to 300–400,000 BP (Bridgland 1994: 58). Here it is seen at the base of the section overlain by a deposit of 75cm that is decalcified, containing numerous quartzite rounded pebbles and cobbles, and comprising an unstratified amalgam of sands, reddish clays, grits and small stones. Time did not permit more detailed sedimentological analysis (e.g. clast orientation), but this overlying deposit most closely matches a description of the Northern Drift. It is quite different from the conical “pipes”, described by Bridgland (1994: 55, Figure 2.9) and observed personally by the author, which penetrate the Hanborough Gravel and are filled with an iron-rich soil-like deposit with few limestone pebbles and almost no quartzites or other erratics.

The presence of an older deposit lying above the newer Hanborough Gravel requires an explanation. It is suggested that the Drift has moved (soliflucted?) over the Gravel during a cold stage at some time after the latter’s deposition. At this site there was no opportunity to search for artefacts, but in the adjacent field, none has been found, and very few large quartzite clasts are seen on the surface.

The section thus appears to preserve, in “suspended animation”, the process of the Drift eroding away into the Evenlode Valley.

2. A section was cut through the Northern Drift on the Combe site and compared with the surface layer (Figure 6). After ploughing and subsequent rainfall, the surface concentration of quartzite stones on some parts of the Freeland and Combe Formations is so intense that it appears more like a beach than a field (Figure 6a), whereas in section, below the surface layer, only one artefact-sized quartzite stone appears (Figure 6b). There are, of course, many stones in the body of the Drift, but they are far less concentrated than on the surface. Although more than one process could have caused this phenomenon, (S. Lewis *pers. comm.*) surface deflation appears to be a major contributor. During a cold or dry period when there was little or no vegetation to hold the soil in place against the force of a drying wind, the soil and small particles have blown away. The concentration of larger clasts has progressively increased to create a “surface enrichment”, which in turn has provided a rich lithic resource for Palaeolithic tool makers. The present soil development, which dates to the post-Devensian period, has no doubt diluted this enriched surface but has failed to dissipate it.

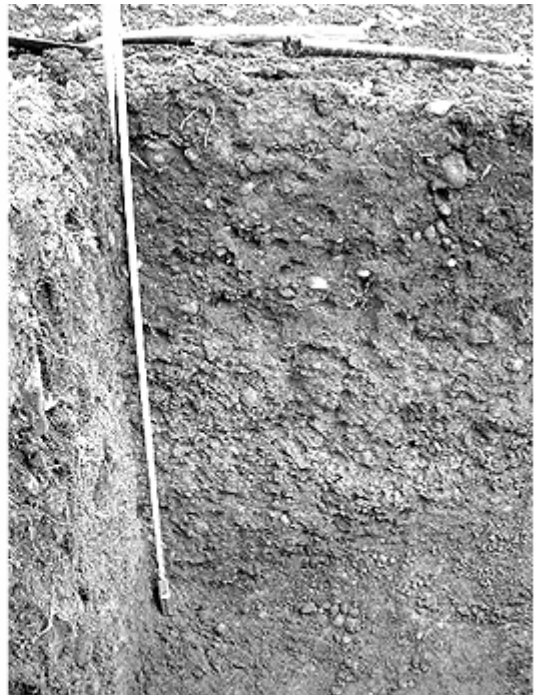
The author has seen comparable surface enrichment at other sites. At Warren Hill in Suffolk, flint clasts and lithics on the surface greatly outnumbered those dug up in the excavations carried out in 2002. Much of arid Africa contains rock plateaux with intense scatters of surface clasts including Palaeolithic material. In appropriate areas this phenomenon may be an indicator of great antiquity in a land surface, thus providing the archaeologist with a pointer for the location of Palaeolithic sites.



*Figure 5. Section at Long Hanborough showing the Northern Drift overlying the Hanborough Gravel*



[a]



[b]

*Figure 6. “Surface Enrichment” on the Northern Drift: (a) Surface concentration of large clasts, (b) Section showing few large clasts*

## INTERPRETING THE ARCHAEOLOGY

### The *in situ* question

It is evident that the archaeology must be viewed against a backdrop of dynamic surface evolution, involving lateral movement and changing surface composition, as well as the gradual uplift of the land environ coupled with the progressive downcutting of the Evenlode valley floor. It is easy to forget that the landscape will have gone through stages when its appearance was utterly different from today.

With such a plethora of change, can we really maintain that the artefact clusters are anywhere near where they were originally dropped? Once again, a key factor is *slope*. The fact that residual Drift still occupies flat surfaces away from the slopes of the present valleys implies that what is left has not moved far. The section at Hanborough provides a reminder that lateral movement has occurred in the area, and because neither of the artefact clusters in Freeland and Combe is lying *entirely* on dead-flat ground, they may not have been immune from this. But the artefacts still remain clustered together with concentrations of quartzite cobbles. They have not been totally dispersed by any movement. Lateral movement of the type suggested in the Hanborough section would tend to shift material and its clasts *en bloc* like ice in a glacier. The clusters, though altered in their detailed arrangement, would remain substantially intact.

The arguments in support of the artefact clusters at Freeland and Combe being in deposits that have maintained much of their integrity are summarised as:

1. They lie on flat or nearly flat land.
2. They lie in places where remnants of Drift also lie.
3. This Drift contains natural quartzite cobbles of artefact size that would provide concentrated lithic resources for Palaeolithic occupants.
4. They are spatially clustered with voids in between where only a few artefacts or possible artefacts have been found.
5. These voids usually contain less concentrated distributions of quartzite blanks: over a period of more than 10 years large areas of ploughed land were searched (Figure 2) where quartzite clasts were mainly below 50mm in diameter and these areas yielded no artefacts.

It is difficult to imagine any processes that could create these circumstances without human agency. However these modest assemblages hardly compare with the large numbers of artefacts recovered from favoured places in some excavated sites. This perhaps suggests we are looking only at the larger artefacts from what was once a more intense concentration, the smaller elements of which may have dispersed, by the means described above, in the course of up to half a million years. In a wider context it is worth remembering that the Upper Thames was close to — and sometimes beyond — the limits of Palaeolithic occupation in Britain. Visits may have been less frequent and in smaller numbers than in more southerly regions.

There is a further, if remote, possibility. Recent finds on the coast of East Anglia (Parfitt et al 2005) suggest a human presence in Britain from *c.* 700,000 BP, a date contemporary with the later Northern Drift, prior to the beheading of the Thames. If these early visitors dropped artefacts by this river, subsequent fluvial transport could be responsible for their present location. The very rolled state of some of the items classed as “doubtful” may thus be

explained. This does not affect the argument that the less-rolled artefacts are of later date and lie near where they were dropped.

### **Understanding Palaeolithic response to the landscape**

It seems clear that the makers of these tools had ranged over the landscape until they discovered “hotspots” of lithic raw materials that were worth exploiting. The areas of Drift may have been larger than they are today, but they were still virtual pinpoints in the wider landscape. In the Upper Thames region, the Drift was a lithic oasis in a barren zone of limestone hills and clay-filled valleys. If we assume that Lower Palaeolithic peoples were not able to function without access to lithic resources, it follows that in a barren area they would attach high priority to locating such hotspots and thus become, unwittingly, skilled geologists.

At the same time we can also observe their struggle to select the best quality quartzite from the water-worn Bunter cobbles that superficially give little indication of their suitability for artefact manufacture. We already know, from hammerstone test marks seen on cortex surfaces of quartzite cores (Hardaker & MacRae 2000: 57) that testing of raw cobbles was practised. At Combe and Freeland, good fine-grained quartzite was scarce; most of the artefacts are made on medium or poor quality material that was difficult to work. Many potentially good cobbles would have been difficult to work because their near-spherical shape prevented any initial removal.

The lack of flint artefacts from the Drift does not necessarily mean that Palaeolithic occupants here were never familiar with flint or its source areas in the Chilterns, a distance of some 38km. Other Palaeolithic finds from the floors of later terrace deposits in the Upper Thames, such as the bifaces of Chiltern-derived flint from Gravelly Guy (MacRae 1988), show that Chiltern flint was certainly collected and brought to the Upper Thames by OIS Stage 7. However, the preponderance of non-flint artefacts away from the Chilterns suggests that the daunting task of transporting heavy flint over long distances rarely provided all the stone tools that were required, and they were supplemented by local hard rock resources such as we see on the Drift.

Because so many Palaeolithic sites are located close to rivers, there is an assumption that Palaeolithic hominids clung to watercourses. Of course they had to be near water, and undoubtedly braided river channels were a useful source of lithic material for knapping, but generalisations are hard to make when the range of habitats and climates between OIS Stages 13 and 6 have been so great. The major watercourses of the Palaeolithic were not the carefully manicured rivers of today. The width of the Northern Drift floodplain shows that the Proto-Thames here was a much larger river than any in Britain today. Apart from being difficult or impossible to cross, it would be dangerous in flood, often cluttered with vegetation and faunal debris or harbouring unhealthy swamps, and in the absence of sailing craft useless as a navigational route. Rather than uniting occupants along a supposed routeway, it may well have divided peoples from bank to bank. When streams were abundant in the landscape, shortage of water was no worry for man nor beast, and this situation probably prevailed throughout much of the Palaeolithic because of Britain’s maritime location. Rivers would not always be a focal point for game in such conditions. In contrast, the distribution of knappable lithic resources was extremely uneven away from the flint-rich chalklands of the southeast. The Combe and Freeland sites show that people left no region unexplored in their quest to seek out every possible lithic resource. The thoroughness of their search is revealed by the present finds.

This intense intimacy with the landscape is all the more remarkable because such knowledge takes time to acquire, in an age where lifespans were short. The conveyance of knowledge from one person or generation to another would have been cumbersome owing to the lack of developed language skills, even though some of this “knowledge” may have derived from socially embedded rules (Pope & Roberts 2005: 89–90). By the same token, it is unlikely that Lower Palaeolithic occupants would have been able to acquire such intimate knowledge over very large tracts of land; they would naturally be most comfortable in the home-base region where they were aware of the pitfalls and able to take full advantage of the resources.

The coincidence of artefacts with unknapped lithic resources is a phenomenon also observed in commercial gravel pits. At Cassington, close to the confluence of the Evenlode with the Thames, in Devensian gravels, pit-floor quartzite artefact clusters coincide with fluvially accumulated clusters of quartzite cobbles (Hardaker 2003: 24). This has implications for the Palaeolithic routines that were adopted at these sites. On the Northern Drift, the presence of flakes, cores and bifaces at the lithic raw material site shows that knapping and discard were all performed exactly where the raw materials were being sourced. The presence of tools indicates that in all probability butchering was done on site, i.e. carcasses may have been brought to the site. At the same time a few stray finds away from the concentrations suggest that other places in the landscape were scenes of occasional activity. This is an example of the “landscape archaeology” first suggested by Isaac at Olorgesailie, who drew attention to the “spaces in between”, a phenomenon that requires the excavation of very large areas to become apparent (Isaac 1984; Bar Yosef 2001). In Palaeolithic sites where a spatial expanse can be observed, e.g. at Boxgrove (Pope & Roberts 2005), there are usually intensely used areas (“favourite places”) and other places less intensively used. The clusters at Freeland and Combe would seem to qualify as favourite-place locations, and they suggest that the predominating factor in their selection was on-site access to lithic raw materials.

### **Typology, timespan and artefact wear**

The artefacts belong only to Mode 1 (flake and core) and Mode 2 (Acheulian) typologies. The absence of Mode 3 (Levallois) material should not be taken as proof of an early date, as Levallois in quartzite in the UK has not yet been positively identified, and the Levallois in Britain does not comprise a large assemblage. The crude style of most of the artefacts places them firmly in the Lower Palaeolithic range and thus probably prior to OIS Stage 6, after which there is no firm evidence of human presence in Britain until the Neanderthal arrival about 60,000 BP (Barton 1997: 80).

The wind deflation that caused the concentration of the surface lithic material could have occurred during any cold period, possibly more than one, from OIS Stage 16. As the date of the deflation period(s) is not known, this factor cannot currently help to date the artefacts.

Apart from some “doubtful” items mentioned above, the artefacts have not, so far as we can tell, been rolled in a flowing river, therefore the wear must be primarily due to other factors. Certain artefacts may have been protected from wear e.g. by burial, but we have to accept *a priori* that, other things being equal, greater wear tends to indicate greater age. Although no data are available on the rate at which quartzite loses mass in response to surface abrasion and weathering, the wide range of wear seen on the Drift artefacts is a clear signal that not all the artefacts should be attributed to a single phase of occupation. Indeed it would be odd if this were so; in the many different Palaeolithic occupations interrupted by retreats due to harsh

conditions, people must have revisited these sites in widely separated periods of time, unaware that others had been there before. (One wonders what they made of the artefacts from previous generations that they found on the ground).

The presence of two artefacts in sharp condition at Combe (Table 3, nos. 3 & 8), and others very rolled, suggests that the latest Palaeolithic occupation of the Drift was very far removed in time from the earliest.

### **Chilly weather?**

For Palaeolithic hominids to find the raw materials to make the artefacts, the landscape is unlikely to have been densely vegetated. In the wood next to the Combe site, vegetation, soil and leaf litter conceal almost all sign of Bunter cobbles. Even where scatters are thickest on the ground, the task of digging into soil to find suitable blanks would be a highly unproductive option, when in all probability there were braided stream beds bearing cobbles at least seasonally accessible in the Thames 7km away. More likely, at the time of lithic exploitation, the vegetation would have been sparse enough to allow the raw materials to be visible, perhaps under patchy grassland or stunted trees. Although not conclusive, this is a strong hint that exploitation of the Drift occurred in the early stages of post-glacial periods or the final stages of pre-glacial ones.

## **CONCLUSIONS**

In the Lower Palaeolithic of Britain, as elsewhere, human survival strategies depended heavily on access to lithic raw materials. Exactly how important this was is illustrated in the example of the Northern Drift surface finds, where hominids discovered a tiny “oasis” of lithic resources in a vast area otherwise largely devoid of suitable materials. To find the Drift zone, from whatever direction, they must first have covered lengthy tracts of sterile terrain. Yet in their daily life they probably had a more limited range, preferring to gain an intimate knowledge of a smaller area in their short lifetimes. The Combe and Freeland sites are located on a plateau, away from the river valley, confirming that the whole landscape was traversed by Palaeolithic occupants.

The pattern of artefact scatters reveals, albeit through a rather small number of finds, a “clusters and voids” phenomenon, where hominids allowed raw material sources to dictate their choice of favoured spots for intense activity, while also remaining active in the wider landscape. Such patterns are hardly surprising as they merely confirm that human activity in the Palaeolithic, as in the rest of human history, was concentrated in certain chosen places.

The occupants of the Drift zone, who probably came and went over several separate epochs, were survivors in a harsh, cool or cold environment. Their skills included, in some cases, knowledge of the Acheulian technique, yet they usually made do with simple flake and core tools, possibly because of the difficulty of making bifaces in quartzite.

## **WIDENING THE SEARCH**

The consideration that present-day land surfaces can provide significant spatial data on Palaeolithic occupations has so far been overlooked in Britain. It must be theoretically possible to map the present land surface of Britain by age, highlighting surfaces that are of very ancient date by eliminating all those surfaces that have been subsequently disturbed.

Among the latter would be flood plains, valley sides, glaciated areas, geologically-disturbed surfaces and humanly-modified surfaces such as pipeline tracks, built up areas, excavated areas etc. The patches that do not seem to have been affected by any of these modifications should, broadly speaking, remain very much as they were in the Palaeolithic. Such a map might at the very least provide a base for the further search for Lower Palaeolithic scatters on the surface.

## **APPENDIX 1: GRADING OF QUARTZITE ARTEFACTS**

The grading of artefacts in Tables 2 and 3 refers to the amount of weathering seen on the arêtes, edges and surfaces and is measured on the following scale:

Mint: edges razor sharp, no abrasion (not seen in the present assemblage).

Sharp: edges sharp to the touch but some abrasion; surfaces still sparkly.

Slightly rolled: edges slightly rounded and not sharp to the touch; surfaces losing sparkle.

Rolled: noticeable edge rounding and some smoothing of surfaces.

Very rolled: very smooth rounding of edges and surfaces; outlines becoming blurred.

## **APPENDIX 2: THE RECOGNITION OF QUARTZITE ARTEFACTS**

Unlike flint, quartzite often behaves unpredictably when knapped, resulting in surface morphologies that may not show the characteristic signatures of human workmanship. In particular, flakes may not show platforms and bulbs so prominently as on flint, and conversely cores and bifaces may not show the familiar bulbar depression emanating from the point of percussion.

This, combined with the coarse grain of the material, can give rise to doubts about whether a piece is natural or humanly struck. When the purported artefacts are also from the surface, it is understandable that there will be a wide range of opinions on their genuineness. Below are some guidelines that the author has found useful.

There is no substitute for field experience, which enables artefacts to be judged *in context*. Context includes not only the spatial distribution of artefacts, but also their relationship to other clasts in terms of size, distribution and rock type, the contours and undulations of the terrain, proximity to rivers, and local geology.

Natural damage to Bunter quartzite cobbles may already have occurred before they left the Triassic beds, but since then their journey from the Midlands to their present destination will have provided plenty of opportunity for natural frost and percussive damage. Any assemblage of quartzite artefacts in the Drift or gravel pits will thus be accompanied by examples of naturally damaged stones. Modern plough damage is actually quite rare, owing to the toughness of the quartzite and the tendency for a plough to scrape rather than break cobbles.

Where one or more certain artefacts are located in a surface context, the possibility that others less certain may be genuine must be taken into consideration. Conversely, where no certain artefacts have occurred a greater scepticism about “possibles” has to be exercised. This principle is valid wherever artefacts tend to occur in clusters, whether in buried sites or on the surface. Context is mainly appraised in the field: a collection of stones in a museum has lost much of its context.

The second guideline is *degree of wear*. The humanly-struck cobble will have been produced within the last 700,000 years at most. That is a small amount of time in relation to the time that the quartzite material has been available for natural damage. Although rolling can proceed at very variable rates, in a large enough sample naturally-damaged stones will on average be more rolled than artefacts. Lower Palaeolithic artefacts are likely to be at least 200,000 years old and if they have remained on the surface are unlikely to retain their original condition. Any item found mint is highly suspect. However, “sharp” artefacts, in which the edges are sharp to the touch, are admissible provided that some wear can be seen. At the other end of the scale, as has been pointed out above, extreme rolling does not necessarily mean an item is not an artefact.

A third element is *pattern and purpose*. We instantly recognise the Acheulian shape, but cores may not readily conform to a template. In the recognition of cores, a key question is whether the item has any discernible purpose. Is the item of suitably hard material? Does it show the removal of multiple flakes of usable (not necessarily large) size? Does it have potential in its own right as a chopping tool? Are there recognisable platforms from which flakes have been removed? Are the edges of all the removals equally worn? Are there signs of failed attempts at removals? Are there hammerstone marks? Does it feel comfortable in the hand? In short, does it have the stamp of a human mind in its morphology?

A final guideline is *removal scars*. Humanly-percussed removals often show a tendency for a thumbnail shape in the outline they leave, especially on the cortex. Multiple thumbnails are a fairly sure indicator of human action (see for example Figure 4, d & e). The presence of step fractures is another feature seldom seen on naturally-damaged stones.

It could be argued that once genuine artefacts have been identified on a site, not much time need be wasted on doubtful ones. Even though as complete a picture as possible is a *desideratum*, it may be unavoidable to leave some items as probable, possible, or undecided.

The ambiguity about the age of quartzite artefacts from the surface is sometimes mentioned as a disincentive to their study. In theory, there is no reason why anyone at any period should not have knapped Palaeolithic-style artefacts in the field. But humans throughout history have not been very good at making perfect imitations of artefacts from a previous age: Flint Jack’s nineteenth-century handaxe imitations are easily recognisable today. It is inconceivable that the Drift artefacts are modern replicas, but it has sometimes been hinted that they may be Mesolithic or Neolithic, on the premise that large, crude tools are sometimes associated with these periods. When someone can point to a datable post-Palaeolithic non-flint assemblage of large crude cores, choppers, flakes and Acheulian bifaces, we can begin to take this seriously.

## ACKNOWLEDGEMENTS

I am grateful to Dr. David Bridgland and Dr. Simon Lewis for guidance in the discussion on the Northern Drift and to Professor Derek Roe for kindly reading the draft and offering many improvements. Thanks also to Anne Graf for her useful comments in the course of many discussions.

## BIBLIOGRAPHY

- Ashton, N.M., Lewis, S.G., Parfitt, S.A., White, M. 2006. Riparian landscapes and human habitat preferences during the Hoxnian (MIS 11) Interglacial. *JQS* 20(5) forthcoming.  
 Barton, N. 1997. *Stone Age Britain*. English Heritage.

- Bar-Yosef, O. 2001. In the quest for Palaeolithic human behaviour. In *A very Remote Period Indeed: Papers on the Palaeolithic presented to Derek Roe*: 95–104. Oxford: Oxbow Books.
- Bee, T.W. 2001. Palaeolithic Handaxes from the Lymn Valley, Lincolnshire. *Lithics* 22: 47–52.
- Bridgland, D.R. 1994. Quaternary of the Thames. London: Chapman & Hall.
- Isaac, G. 1984. The archaeology of Human Origins: studies of the Lower Pleistocene in East Africa, 1971–1981. In F. Wendorf and E. Close (eds.) *Advances in World Archaeology* Vol. 3: 1–87. New York: Academic Press.
- Hardaker, T.R. 2001. New Lower Palaeolithic finds from the Upper Thames. In S. Milliken & J. Cook (eds.) *A very Remote Period Indeed: Papers on the Palaeolithic presented to Derek Roe*: 180–198. Oxford: Oxbow Books.
- Hardaker, T.R. 2003. Some thoughts on a stray Upper Thames handaxe. *Lithics* 24: 21–31.
- Hardaker, T.R. & MacRae, R.J. 2000. A lost river and some Palaeolithic surprises: new quartzite finds from Norfolk and Oxfordshire. *Lithics* 21: 52–59.
- Hey, R.W. 1986. A re-examination of the Northern Drift of Oxfordshire. *Proceedings of the Geologists Association* 97: 291–302.
- MacRae, R.J. 1988. Belt, shoulder bag or basket: an enquiry into hand-axe transport and flint sources. *Lithics* 9: 2–7.
- Maddy, D. 1997. Rapid communication: uplift-driven valley incision and river terrace formation in southern England. *Journal of Quaternary Science* 12 (6): 539–545.
- Parfitt, S.A., Barendregt, R.W., Breda, M., Candy, I., Collins, M.J., Russell Coope, G., Durbidge, P., Field, M.H., Lee, J.R., Lister, A.M., Mutch, R., Penkman, K.E.H., Preece, R.C., Rose, J., Stringer, C.B., Symmons, R., Whittaker, J.E., Wymer, J.J., & Stuart, A.J. 2005. The earliest record of human activity in northern Europe. *Nature*: 438 (7070): 1008–1012.
- Pope, M., & Roberts, M. 2005. Observations on the relationship between Palaeolithic individuals and artefact scatters at the Middle Pleistocene site of Boxgrove, UK. In C. Gamble & M. Pore (eds.) *The Hominid Individual in Context*. London: Routledge.
- Roebroeks, W. 2005. Written in stone. *Nature* 438 (7070): 921–922.
- Scott-Jackson, J.E. 2000. *Lower and Middle Palaeolithic Artefacts from Deposits mapped as Clay-with-flints: a new synthesis with significant implications for the earliest occupation of Britain*. Oxford: Oxbow Books.
- Smith, W.G. 1894. *Man the Primeval Savage: his haunts and relics from the hill-tops of Bedfordshire to Blackwall*. London: Stanford.
- Smith, W.G. 1916. Notes on the Palaeolithic floor near Caddington. *Archaeologia* 67: 49–74.
- Whiteman, C.A., and Rose, J. 1992. Thames river sediments of the British Early and Middle Pleistocene. *Quaternary Science Reviews* 11: 363–375.