Raw Materials and Biface Variability in Southern Britain: a preliminary examination.

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Introduction

The seminal work of Derek Roe (1964, 1967, 1968) objectively established, using morpho-metric techniques, the presence of two major Lower Palaeolithic biface groups in Britain. These groups (pointed and ovate) were based on the relative proportions of different biface forms found at 38 sites, and were further subdivided into six smaller variants through the presence of specific types. Roe interpreted these groups as evidence for separate knapping traditions, each favouring a different style of biface morphology. This interpretation has remained largely unchallenged for 25 years.

Recent research, however, has begun to redirect the emphasis away from such interpretations, and towards more prosaic explanations invoking different approaches to raw materials and resharpening strategies (e.g. P. Jones 1979, 1980; Straus 1980; Newcomer 1984; Moloney 1988; Moloney et al. 1988; Dibble 1989; Rolland and Dibble 1990; Kuhn 1991; Stiles 1991; Dibble and Rolland 1992). One aspect of this trend is the work of Ashton and McNabb (1994) who argue that the shape of many bifaces is linked to the nature of the flint blank from which they were produced (cf. Villa 1983) and that the final shape of some bifaces is not so much chosen, as guided or 'restricted' by the raw material. In particular, for many pointed bifaces, especially those with crude butts, the knapping sequence has been directed by the reduction of long, cylindrical blanks and the need to create a usable tool, making the final form almost inevitable. Many ovates however, were found to be made on larger nodular or tabular flint on which any desired form was possible, and probably represent the attempt to create the best all-round working edge (Ashton and McNabb 1994, 187).

Drawing on this work, a simple hypothesis has been generated. It is suggested that if raw material, rather than tradition, has had the major effect on biface morphology, then tool shape should covary with flint shape, size and quality; factors ultimately referable to its source. In particular, if the ovate biface represents the effort to procure an all-round working edge, then this form should be seen wherever raw materials allow; sources most likely to sustain high proportions of ovates being fresh chalk flint and large, relatively uneroded nodules from some areas of clay-with-flint (cf. D. Jones 1980; Catt 1986). Sites at which the main lithic resources were from secondary deposits,
such as fluvial and glacial gravels, would therefore be expected to show a concomitant reduction in ovate production due to a reduction in the availability of 'choice' pieces. Pointed bifaces would be expected to be more common in such cases, often dominating the industry. The underlying notion in this is that usable-edge, and not shape is the most important factor. This paper presents the preliminary results of ongoing research into this question.

Sites Used in this Paper

Nineteen British Lower Palaeolithic Sites were considered suitable for this study. These are sites which are either in situ, or only slightly derived, the latter being in fresh condition and (unless selectively collected) associated with freshdebitage, indicating that they have not moved far from their place of origin. In this respect the bifaces used in this paper can be linked with some degree of confidence to the geological context in which they were found, and in each case form a single industry.

1. In situ Sites, either excavated or carefully collected.
   - Bowman's Lodge, Kent (Tester 1951, 1975)
   - Boxgrove, West Sussex (Smith W.G. 1894, 1916; Sampson 1978)
   - Caddington, Bedfordshire (Smith W.G. 1916, Oakley 1947)
   - Gaddesden Row, Hertfordshire (Singer et al. 1993)
   - Round Green, Bedfordshire (Smith W.G. 1894; Roe 1981)

2. Sites that may be slightly derived, but with high integrity, or in situ but collected.
   - Dovercourt, Essex (Underwood 1913, Warren 1933)
   - Elveden, Suffolk (Patterson and Fagg 1940; Wymer 1985)
   - Foxhall Road, Suffolk (Smith R.A. 1921; Boswell & Moir 1923)
   - Furze Platt, Berkshire (Lacaille 1940, 1961; Cranshaw 1983)
   - High Lodge, Suffolk (Evans 1897; Reid 1898)
   - Hitchin, Hertfordshire (Willis 1947; Roe 1981)
   - Holybourne, Hampshire (Woodcock 1981)
   - Slinson Park, West Sussex (Wymer 1964; Dines 1964)
   - Swanscombe Upper Middle Gravels, Kent (Dines 1964)
   - Swanscombe Upper Loams, Kent (Sainty 1927)
   - Witley, East Grinstead, West Sussex (Sandford 1924; Tyldesley 1986a).

The most probable source of flint at each site has been reconstructed using the immediate and regional Pleistocene geology, combined with the original workers' observations regarding flint type. One assumption has been made:

- Table 1: Probable Lithic Raw Material Sources for Selected British Sites

<table>
<thead>
<tr>
<th>SITE</th>
<th>RATIONALE AND/OR PROPOSED SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowmans's Lodge</td>
<td>Unusually small clasts and lenses distinguish this site from others in England. These clasts appear to have been taken from the surface of the chalk.</td>
</tr>
<tr>
<td>Caddington</td>
<td>Large flint nodule from chalk cliff above the 35m raised beach (Roberts 1986).</td>
</tr>
<tr>
<td>Dovercourt</td>
<td>Mostly nodules from flint nodule from chalk cliff above the 35m raised beach (Roberts 1886).</td>
</tr>
<tr>
<td>Elveden</td>
<td>Mostly nodules from Upper Middle industry in immediate area (W.G. Smith 1916).</td>
</tr>
<tr>
<td>Foxhall Road</td>
<td>Mostly nodules from Upper Middle industry in immediate area (W.G. Smith 1916).</td>
</tr>
<tr>
<td>Furze Platt</td>
<td>Mostly nodules from Upper Middle industry in immediate area (W.G. Smith 1916).</td>
</tr>
<tr>
<td>Holybourne</td>
<td>Mostly nodules from Upper Middle industry in immediate area (W.G. Smith 1916).</td>
</tr>
<tr>
<td>Round Green</td>
<td>Mostly nodules from Upper Middle industry in immediate area (W.G. Smith 1916).</td>
</tr>
<tr>
<td>Slinson Park</td>
<td>Mostly nodules from Upper Middle industry in immediate area (W.G. Smith 1916).</td>
</tr>
<tr>
<td>Swanscombe Upper Middle Gravels</td>
<td>Mostly nodules from Upper Middle industry in immediate area (W.G. Smith 1916).</td>
</tr>
<tr>
<td>Swanscombe Lower Loams</td>
<td>Mostly nodules from Upper Middle industry in immediate area (W.G. Smith 1916).</td>
</tr>
<tr>
<td>Witley</td>
<td>Mostly nodules from Upper Middle industry in immediate area (W.G. Smith 1916).</td>
</tr>
<tr>
<td>Witley Channel</td>
<td>Mostly nodules from Upper Middle industry in immediate area (W.G. Smith 1916).</td>
</tr>
</tbody>
</table>
that hominids would have utilised the closest resource available and long
distance transport of large amounts of raw material would have occurred only
if unavoidable. Therefore, the lithic resource nearest to a site is proposed as
the actual source exploited by hominids for biface manufacture. In most cases
this source is literally at the site. It is fully recognised that confounding
influences, such as frozen ground and vegetation/soil cover, may have
restricted access to many flint resources in the past, but those sites considered
here were situated in 'dynamic' environments during the occupation of the
area; either as chalk cliffs, eroding exposures at channel margins, or agrading
gravels. The validity of the proposed sources was later tested by examining
the type of cortex remaining on the artefacts. This method provides direct
evidence of the lithic resource's proximate origin through the characteristics
of its unworked surfaces. The results are discussed below.

It is not always made explicit that the biface is not the ultimate goal of
tool-use. They are functional devices made for a specific, if debatable,
subsistence-driven purpose. Here the biface is considered as part of a carcass
processing strategy, in which the rewards for manufacturing a handaxe to a
high standard was not the possession of a beautiful object, but an efficient tool
suited to its job (Jones 1981), which paid dividends for the investment placed
in it (see Torrence 1986). Tool-use is therefore open to selective pressures and
must be operationalised in ways which extract maximum benefits (Bamforth
1986; Jochim 1989). In this respect, the use of immediate, easily accessible
materials is more efficient than travelling to more distant sources, for within
expedient technologies such as the Acheulean (Binford 1979, 1987, 1989a and
b), the cost of procurement and distance travelled equate directly. The use of
local materials would also reduce the risk of loss to competitors (Torrence
1989). The questionable ability of archaic Homo to carry large amounts of
material also points to the majority of artefacts being made on materials from
the immediate area. This is not to deny that hominids transported curated
bifaces (cf. Austin 1994). What is suggested is that limited numbers could be
moved at any given time, so any bifaces imported from a different site would
not have any major effect on the predicted patterns.

So far seven of the assemblages listed in Table 1 have been fully analysed
(Hoxne Upper and Lower Industries, Swanscombe Upper Middle Gravel
[UMG] material from the Wymer excavation, Dovercourt, Elveden, Caddington and Bowman's Lodge). Examination of the remaining sites is
currently in progress.

Preliminary Results

The closest flint sources for all sites used in this study are presented in Table
1 and a summary is given in Table 2. When the patterns of raw material

<table>
<thead>
<tr>
<th>Fluvial Gravels</th>
<th>Glacio-fluvial Gravels</th>
<th>Unclear</th>
<th>Clay with flint and/or chalk</th>
<th>Chalk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furze Platt</td>
<td>Dovercourt</td>
<td>Bowman's Lodge</td>
<td>Caddington</td>
<td>Boxgrove</td>
</tr>
<tr>
<td>Hoxne U.I</td>
<td>Foxhall Rd</td>
<td>Swanscombe UL</td>
<td>Gaddesden Row</td>
<td>Elveden</td>
</tr>
<tr>
<td>Stoke Newington</td>
<td>Hitchin</td>
<td>Holybourne</td>
<td>High Lodge</td>
<td></td>
</tr>
<tr>
<td>Swanscombe UMG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wolvercote</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whittingham</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Table 2: Summary of Raw Material Source for British Palaeolithic Sites.

| Pointed | Ovate |
|---------|--|------|
| I       | II  | III  |
| Furze Platt | Dovercourt | Wolvercote |
| Stoke Newington | Foxhall Rd | Elveden |
| Whittingham | Hitchin | Holybourne |
| Swanscombe UMG | Hoxne U.I | Gaddesden Row |

Table 3: Selected British Palaeolithic sites assigned according to Roe’s (1968) traditions

source in Table 2 are compared with Derek Roe’s group designation for the
selected assemblages (Table 3), a clear division is apparent. Roe’s pointed
handaxe tradition covaries with flint from secondary sources, whilst the ovate
assemblages occur only on fresh flint resources. Of the two industries assigned
to the uncertain group in Table 2, Bowman’s Lodge is discussed in detail
below as part of the primary analysis. The Swanscombe Upper Loam material
is unfortunately not available for study at present.

The examination of residual cortex in the above assemblages yielded
complementary yet independent evidence to the geological data. The proportion of characteristic cortex types seen at the 20 selected sites did indeed reflect the different sources proposed in Table 1, indicating that the adopted methods are valid and the above patterns are real. Swanscombe and Dovercourt, the sites dominated by pointed bifaces, showed 70% and 54% derived material respectively, whereas the ovate sites all exhibit less than 17% secondary flint. Fresh flint is the most common identifiable source at ovate sites, although it is important to note that both Bowman’s Lodge and Elveden exhibit more indeterminate flint types (i.e. without cortex) than any other category. Bifaces with no cortex, however, are less common in pointed industries. This observation may support the contention that many ovate bifaces were intensively reduced from larger nodules. Moreover, this can be further supported by the fact that the three ovate industries:

1. contain an average of 54% bifaces with over 50 flake scars (compared with an average of just 15% for the pointed sites);
2. retain less cortex on individual bifaces (except at Caddington, although this was made on tabular flint and most cortex is isolated on one or both faces);
3. all show greater mean refinement (i.e. Roe’s (1964) thickness/breadth) and also more intensive thinning of the butt;
4. have no great differences to the weight ranges seen in pointed industries;
5. show a dominance of fresh flint when the evidence from cortex on flakes is considered suggesting large nodules were employed.

These properties all suggest that pointed bifaces have seen fewer alterations to the original blank than ovates due to a limited potential for thinning. Many of the indeterminate bifaces in ovate industries may have been produced from intensively reduced large, fresh material which was heavily ‘roughed-out’ before thinning began, thus removing most of the cortex. In the past this factor has been taken as a sign of inferior or chronologically earlier workmanship for pointed bifaces, rather than poorer materials as suggested here.

At Hoxne, due to the low number of provenanced bifaces, a survey of the cortex surviving on flakes was made. This showed that 67% of the Lower Industry (ovates) had been manufactured from fresh nodules, whilst 69% of the Upper Industry (points) had been made on derived flint pebbles. A summary of the percentages of identifiable flint types only (i.e. excluding the indeterminate examples) for all seven sites is given in Figure 1, whilst Figure 2 represents the revealing distribution of flint type over biface type.

That few pointed bifaces are made on fresh flint, suggests that where materials allowed, ovates were indeed created. Dovercourt, classified by Roe as belonging to the pointed tradition, has mixed glacio-fluvial raw material with 24% identifiable fresh flint, only a third of which has been used for pointed forms. Of these, 5 are made on flakes, and follow the form of the blank, and 5 are restricted by the conical nature of the nodule. Two others are typologically ovates, and qualify as pointed purely due to remnant cortex at the butt giving them an L/L1 value of < 0.350 (the index produced by dividing the length from the butt to the greatest breadth by the total length; Roe 1968, 25). Another is only 44mm long, and quite possibly a flake. Therefore, these pointed forms were evoked by the blank, whilst the remainder of the fresh materials, probably possessing more suitable dimensions, was fashioned into ovates. Likewise, at Caddington, where the bifaces were made almost entirely on flat nodules or tabular flint (Sampson 1978), the five pointed bifaces show two restricted forms and one flake, again suggesting that the pointed form was not necessarily desired. A similar pattern is evident at Elveden, whilst the Swanscombe UMG exhibits 70% derived material and 79% points.

The notion that edges are the most important aspect of a biface and that shape may only be a bi-product of edge production, is supported at the sites examined. Figure 3 shows the number of bifaces with all round cutting edges compared to those with partial edges. In ovate sites between 72-80% of bifaces exhibit circumferential cutting edges, compared to just 25% (Swanscombe) and 47% (Dovercourt) for the pointed industries. These figures correlate with the amount of work invested in, and sharpness of, the butt area. Analysis of T1 (thickness at 1/5th length from tip) over T2 (thickness at 1/3rd length from butt) indicates that ovates have a more uniform section, yet for pointed bifaces, the butt is frequently over twice the thickness of the tip. The difference in the extent of working is also reflected by the more acute edge angles seen all
Figure 3: Percentages of All-Round Cutting Edges to Partial Cutting Edges

round ovates. Pointed bifaces generally only have sharp angles near the tip, and for the area of the butt are often cortical or $>90^\circ$. All of the above features may be referable to raw material shape and quality directing the 'edge-potential', and not to unsophisticated workmanship.

These features all suggest that a greater effort was made to thin the butt of ovates, probably to attain greater utility in this area. For pointed bifaces, intensive working is usually limited to the tip, and the butt, due to the difficulties presented by the materials, is left crudely worked. In fact, the latter is largely responsible for the primary division into points and ovates. By the extensive working of just one end, lateral reduction automatically creates a narrower tip, and hence a pointed form (i.e. with the maximum breadth towards the bottom of the piece; cf. Roe 1968). In the effort to procure an all-round edge, however, both ends are worked, and the middle of the piece is often the widest. The latter pieces, then, are ovate, which can be seen as the preferred form, not for reasons of tradition but for their greater edge potential.

Restricted bifaces, as suggested by Ashton and McNabb (1994), are more common at sites dominated by pointed bifaces. When the restricted forms are divided into pointed and ovate and plotted by relative elongation against relative thickness (Figure 4), it is readily apparent that the points have been formed on long, thick, almost cylindrical blanks whereas the ovates have been produced on flatter nodules or tabular flint of varying elongation. These latter
ovates are not truly restricted, as a point could have been fashioned if desired, and often represent, like many pointed forms, knapping along the path of least resistance to attain the greatest edge. Also, the Swanscombe ovate group, of similar dimensions to the Caddington points, reflects the general thick nature of the material employed by the makers of the Swanscombe UMG industry.

In sum, the presented patterns would appear to support the contentions of Ashton and McNabb (1994), and highlight a previously unrecognised factor in biface variability in Britain - that much biface variability is determined by the size and shape of the raw material, and that this in turn is determined by the derivation of that material. This model is summarised in Figure 5, which shows the mean number of biface types for the four raw material regimes. Fluvial deposits are heavily biased towards pointed forms, chalk and clay-with-flints towards ovates. Glacial gravels, having a more varied history and including sources derived to a greater/lesser extent from wide areas (Gibbard 1986) show a more even division of biface types.

Discussion

With this framework, larger, geology-dependant regional patterns become evident. Sites found on the ancient chalk cliff-line of Sussex (Boxgrove, Slindon, Lavant) are all ovate dominated, but further inland the nature of the industries becomes more variable (Woodcock 1981), presumably as the Chalk cliffs become more distant and more secondary material is utilised. Similarly, sites on the Chalk/Clay-with-flint hills of Hertfordshire and Bedfordshire (Caddington, Round Green, Gaddesden Row, Whipsnade) are all dominated by ovates; but just 7km east at Hitchin, the geology is mainly comprised of glacial gravels and flint-poor Middle Chalk, and sites in this area are characterised by a majority of pointed forms. In East Anglia, the more integral sites on Chalk show a bias towards ovates (e.g. High Lodge, Elveden). However, sites on the 10m terrace on the right bank of the Little Ouse River (for example, the fresh bifaces from Redhill, Whitehill and Broomhill) are biased towards pointed forms and not surprisingly the over-riding regime at these locations, although imperfectly understood, was a coarse flint gravel from the river terrace (Paterson 1942).

Furthermore, a raw material based approach presents new interpretations for sites showing a variety of industrial variants which have traditionally been held to represent changing culture groups. At Hoxne, the Lower Industry was formed around a lakeside without a source of raw material. Therefore flint had to be imported, probably from the banks and terraces of the Proto-Waveney river, resulting in a mixture of flint, but a dominance of fresh material and ovates (the closest Chalk today occurs 2km to the north-west of Hoxne on both banks of the River Waveney, although Gladfeather (1993) argues that outcrops
would have been more widespread during the Hoxnian). By the time the Upper Industry was formed, the lake had been breached and a river, with a gravel bed (Bed 6; cf Singer et al. 1993), was flowing through the area. The materials used in the Upper Industry are pebbles, derived from this bed, on which small pointed bifaces were made (Wymer and Singer 1993, White 1993).

Similar circumstances seem to have occurred at Swanscombe. The pointed biface dominated Upper Middle Gravels had a perfectly adequate source of raw material direct from the river-beach formed by the underlying gravel deposits (Wymer 1964). However, the ovate industry of the Upper Loams was produced after these gravels had been concealed by a metre of sand over the entire site (Bridgland 1994; Dines 1964), thus cutting off the previous source of flint. Flint must have been procured from a separate source away from the site. A similar situation to the Hoxne Lower Industry may have prevailed, with mostly large material for ovates being introduced, possibly from the Upper Chalk a km or so south. Unfortunately, during the examination of artefacts held in the British Museum, the Upper Loam bifaces were not available, and the derivation of this flint cannot yet be resolved. Nevertheless, the sequences at these sites seem very similar to that suggested for La Cotte de St Brelade, Jersey, where rising sea levels caused differential access to raw material over time with an accompanying change in industry (Callow 1986).

The situation at Bowman’s Lodge, located on a gravel deposit, yet exhibiting an ovate industry requires explication. From the early literature, it appears that the gravel on this section of the Dartford Heath is mostly composed of small Tertiary pebbles, quite unsatisfactory for tool production (Trimmer 1853, Chandler and Leach 1912), and lithic resources must have been imported from elsewhere. Evidence from the artefacts shows a mix of fresh and derived cortex, yet only two “choppers” show the classic cortex associated with Tertiary pebbles, suggesting that this material was indeed unsuitable for implement manufacture. Further, 85% (n=5) of the identifiable fresh material has been used to make large ovates, whereas 75% (n=3) of the derived flint has been made into points. Bowman’s Lodge, then, having no local source of usable flint seems, like Hoxne Lower Industry and Swanscombe Upper Loams, to have been witness to the importation of material, much of it suitable for the production of ovates. The source of these imports remain speculative, but the presence of primary flaking in the three industries indicates that material was introduced in nodular, rather than rough-out form. Therefore, the distance was obviously not great, but clearly prohibitive when an immediate alternative existed.

So, it is suggested that hominids adapted technology to suit the raw material regime with regards to functional and technological efficiency, and that both
points and ovates are effective solutions to different lithic potential apropos edge manufacture. The presented data, in terms of intensity of reduction and nature of the edge would seem to support this assertion. The ovate was ultimately preferred as it possessed a greater amount of sharp cutting edge, potentially had a longer use-life (cf. Shott 1989) and greater reliability (cf. Bleed 1986; Oehl 1987) and would generally have been an efficient form in terms of edges, function, time and energy. Given materials which did not facilitate the manufacture of ovates, then a solution would be to produce the greatest amount of edge possible whilst avoiding miniaturisation, and minimising time and effort. Concentrated reduction of the tip end, thus attaining long edges and a pointed tip, but retaining a dull butt, would seem to fulfill these requirements. Fine pointed handaxes do not necessarily contradict this pattern, as they probably represent an opportunity to produce an all round edge, possibly following the path of least resistance, when a rounder outline with greater amounts of edge (relative to area) was not possible. However, it needs to be stated that this type is surprisingly rare (see below). Ovate industries, therefore, represent those where the materials allowed the technofunctionally preferred form to be made. In sites where importation of flint was unavoidable, it seems the added “investment” of time and energy in obtaining flint demanded that only pieces more suitable for all round edge production were procured.

Generally, ovates are rarer in industries manufactured on secondary, derived raw material, but the absolute percentages of different biface types depend on the quantity, quality, size and shape of that material, which is ultimately a function of the geological history of the deposit and the immediate area (cf. Gibbard 1986). Roe’s (1968) separation of the British Lower Palaeolithic into pointed and ovate traditions depended on the ratio of different biface shapes seen in individual sites, so the observed correlation between raw material and morphology is indeed a crucial factor. However, it is not supposed that this is a hard rule. Ovates will be found in sites with poor raw material and on poor material, just as pointed forms will be found in sites with a majority of good large nodules, due to the inconsistent nature of lithic resources. Yet in each of the above scenarios, the exceptions to the model will be proportionately less important, and will therefore not affect the overall assemblage pattern.

However, other factors, may have some role in biface morphological differences, and these will be further examined as the present research program progresses.

Summary and Conclusions

The evidence presented here suggests that variability in British Lower Palaeolithic bifac e industries, indeed the whole nature of those industries, depends to a large extent on the form, and therefore source, of the raw materials employed. A corollary of this interpretation is that the mental template involved in biface manufacture revolved around the idea of an adequate functional unit; a tool suited to do its job and little else. Preferences are suggested to have existed for a circumferential working edge, thus producing an ovate or coradate. If this was not possible, most often due to the less than ideal dimensions and shape of many derived resources, the edges were maximised by working along the path of least resistance and the butt was often neglected. This was done regardless of final shape and with minimal alteration to the blank, although in a large number of cases the resulting form was pointed. The questionable quality of some derived flint also renders it unlikely to sustain the levels of reduction intensity seen in most ovate industries without mishap. Again, a point may be the best compromise. Moreover, whilst the material seen in pointed industries could not have sustained ovates, in most ovate industries pointed forms could have been fashioned if desired. That they were not is cogent evidence in favour of the proposed model.

As a result I suggest that, whilst certainly valid, Roe’s groups do not represent separate knapping traditions, but degrees of raw material constraint. Like the French Acheulean, our “traditions” are perhaps better viewed as indicators of local Pleistocene geology than local prehistoric culture groups (cf. Villa 1983). The variation in biface morphology we see in Britain is argued, then, to have largely resulted from the desire to efficiently use different lithic potentialities, and can be described within the cognitive framework of a flexible “procedural, or technological, template” of derived gestures (Gowlett 1984). In other words, it was the ability to reproduce and adapt biface technology to myriad circumstances, and not a pre-set idea of shape that was the prime cultural signal.

The apparent proliferation of fine, refined, symmetrical sharp butt pointed handaxes in many assemblages is an artefact of biased archaeological illustration practices and/or collection. In most unbiased point assemblages these types form a small proportion (e.g. Swanscombe UMG has < 10%; the Wolvercote assemblage appears to have an equally small fraction [see Tyldesley 1986a]; whilst Stoke Newington has virtually none of these refined types), and the type of pointed artefacts indicated here proliferate. This fact should be openly acknowledged, for once rid of the preconception of what a biface should look like, a whole new world of research opens up.

Acknowledgements

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The Case of the Migrating Cleaver.

R.J. MacRae

One of the delights of trampling about in gravel pits is that the most unexpected things happen. I sallied forth in the Autumn of 1989 to a new pit at Yarnton in the Upper Thames valley hoping for evidence of Middle Palaeolithic or even Upper Palaeolithic activity, both of which are pretty scarce in the Oxford region. The Devensian gravels seemed likely to be rewarding. I came away that day with a load of reindeer antlers, a bison femur and a mammoth tooth. Not at all what I wanted, but it became the nucleus of a collection of several hundred palaeontological gems now cherished by my neighbour Dr Kate Scott. Many of them have been recovered by my colleague Terry Hardaker, also a determined flint-hunter.

A day or two later, with my lucky woolly rhino tooth in my pocket and hope springing eternal, I watched the quarrymen dump their first load of washed rejects—typical floodplain stuff; bunter pebbles, mudstone, oolitic slabs and measly bits of rotten Eocene flint. Right on top of the heap was a big chunk of yellow flint just asking to be liberated. The unexpected became the unbelievable!

It was a large Acheulian cleaver (19 cm x 12 cm x 5 cm) fashioned with a clear tranchet blow on one face and two thin invasive flakes of tranchet character on the other. A few other cleavers are known from the Upper Thames: four small ones from Berinsfield; a larger one from Dorchester-on-Thames; and quite a nice specimen from Gravelly Guy. The Yarnton cleaver is much more spectacular than these, and is the only one which in size and shape approaches those of the Middle Thames, where the type is more frequent, notably from old sites at Furze Platt, Baker’s Farm, and Lunt Rise (D.A. Roe, pers. comm.).

It has given me permission to describe it, insisting that it is not a lithic cultural resource unit, but just an aberrant handaxe. It is moderately rolled and has the same golden staining and shallow cortical hydration decay common amongst the flint handaxes from the prolific Gravelly Guy pit eight kilometres upstream, described at some length in Lithics 11. That pit was in Stanton Harcourt gravel, Summertown-Radley terrace, Stage 6, very cold but preceded by a warm stage (Stanton Harcourt Channel). Some of the evidence points to the making of the flint and quartzite handaxes early in Stage 7, but it is quite possible they are even earlier. Does the Yarnton cleaver belong to the same series, and if so what was it doing in gravels that could be 125,000 years younger?

Those of us who tend to equate lithic with the palaeolithic are apt to get drawn into speculation, which we like to think is deductive. Was the cleaver