A REFITTING BIFACE REDUCTION SCATTER FROM NEWHAVEN, EAST SUSSEX

M. Pope & A. Maxted

ABSTRACT

During the early 1970s, excavations at Newhaven, East Sussex revealed apparently in situ scatters of flint artefacts associated with fine-grained sediments preserved within a series of periglacial landforms. The original analysis of this assemblage recognised the presence of refitting artefacts directly associated with a bifacially worked core. The presence of loess within the feature fills suggested to researchers at the time a Late Devensian age, a correlation which partially resulted in the erroneous classification of the assemblage as Upper Palaeolithic. Reconsideration of the assemblage, as part of the South East Region Research Framework process, has led to the recognition of the assemblage as resulting from a soft hammer biface reduction sequence which ended in the abandonment of the unfinished biface due to flaws in the original nodule. The true age of the site remains to be determined through further study.


Keywords: Bifacial technology, loess, periglacial features, in situ scatters, Sussex

INTRODUCTION

Between 1971 and 1974 excavations were undertaken in the centre of Newhaven, East Sussex. This work represented a response to major redevelopment being undertaken in the town centre which included the construction of the town’s ring-road and associated building work. Over 34 weeks excavations carried out by Brighton and Hove Archaeology Society under the direction of Martin Bell investigated six localities (Figure 1). The results were published in 1976 as a paper in the Sussex Archaeological Collections (Bell 1976). Three of the figures accompanying this paper are taken directly from this article. The work, representing the first archaeological investigation of the town centre, determined the presence of a significant Romano-British settlement, possibly a villa, occupied in the 2nd century A.D. The site is located at TQ 446013, approximately 100m to the west of the River Ouse, between 3.5 and 5m O.D.

Underlying the footprint of the settlement, the excavations also revealed a series of thermoclastic features including ice-wedge polygons and sorted stripe features formed within the top of the soliflucted head deposits which covered the site. These were recognised during the excavations as being of Pleistocene date and were directly sampled through hand-excavation, a process which revealed an assemblage of over 150 flint artefacts. Many of these tools were in an exceptionally fresh condition and it was quickly established that it was possible to refit flakes found in close proximity. At the time of excavation the Pleistocene archaeology of Sussex had been scarcely researched on a systematic basis and it was quickly

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10 Archaeology South-East, Institute of Archaeology, University College London, 31–34 Gordon Square, London, WC1H 0PY. Contact e-mail: m.pope@ucl.ac.uk
recognised by Bell that the site represented a unique occurrence of *in situ* archaeology within the county. The excavations, it should be noted, took place both before Andrew Woodcock’s survey of Palaeolithic archaeology in the county (Woodcock 1981) and the groundbreaking excavations at Boxgrove (Roberts 1986; Roberts & Parfitt 1999). The latter body of work showed how, through the intensive study of a localised area, an understanding of the complex, multi-phase deposition of soliflucted deposits associated with the Chalk downlands could be constructed. Boxgrove also produced, in time, further examples of *in situ* Palaeolithic flint scatters associated with silt-seams within larger bodies of periglacial gravel.

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**Figure 1:** Newhaven town centre in 1971 showing A) location of the excavation areas and B) site plan. Reproduced from Bell 1976.
PREVIOUS ANALYSIS AND INTERPRETATION

During the 1970s two obvious avenues presented themselves for the interpretation of the Newhaven artefact assemblage: a study of the technological aspects of the flint flakes themselves and detailed consideration of the loess sediments in which they were preserved. Both were undertaken in an attempt to provide a basic level of understanding as to the likely age and technological affinity of the assemblage, and the processes leading to its preservation.

The study of the flint artefacts was undertaken by Dr Mark Newcomer. Newcomer, together with Bell, managed to achieve the refitting of ten flakes, all recovered from the site as a small cluster some 30cm across and associated with a single, bifacially worked core (Bell 1976). The core itself weighed 890gms and had been worked completely across both faces, leaving no cortex remaining. It was possible to refit a single flake and a further refitting group of three flakes directly to the core. It was however estimated that a total of some fifty flakes had been removed in the course of core reduction. A further core was present within the assemblage but was not directly associated with débitage and no refits were made. Of the remaining débitage, 80% could be placed into one of six discrete groupings based on both raw material and spatial proximity; fire cracked flint was also noted as present in small numbers. The assessment was not able to draw any firm conclusions as to the age or technological affinity of the assemblage given the absence of definite tool types or particular characteristics of the reduction method. The brief study concluded that the technology was geared towards the reduction of large nodules of flint through bifacial reduction, either geared towards the production of flakes or core tools.

Two types of periglacial feature were identified at the site (Figure 2), formed within the surface of the main body of clay-with-flints solifluction gravel. Six polygonal gullies varying in size between 3.5 and 6.5m in maximum width were recorded, of which two were excavated. Both produced refitting flint work preserved within the fine silty fill of the gullies, however some flakes were found at a near vertical inclination suggesting at least limited post-depositional movement of artefacts during their preservation within the polygonal structures. The structures were interpreted as resulting from ice-wedges, in which ground ice, under relatively dry periglacial conditions, led to the formation of v-shaped wedge structures forming patterned arrangements in the surface of the solifluction gravels. The second type of periglacial feature appeared to underlie the polygonal structures and to have formed during an earlier phase. These features comprised a series of stripes within the solifluction gravel, running ESE to WNW across the site and up to 1.5m in width. Unlike the polygonal gullies, these features were not generally filled with fine silt, but instead comprised differentially sorted solifluction gravel containing very stony material. However a single linear feature set within the soliflucted material and filled with fine yellow silt was seen to run parallel to the stripe structures, forming a loess-filled trough. This structure, possibly related in terms of formation to the polygonal ice-wedge features, also contained flint artefacts in mint condition.

The fine sediments filling both the trough and polygonal structures were studied by John Catt (Catt in Bell 1976). They showed that, in general, the mineral composition of the material was identical to loess sequences recorded in Kent, Wiltshire and Sussex, with light fractions being composed largely of Quartz (88%) and Alkali Feldspar (9%). Small differences in the composition of heavy fraction minerals between Newhaven and other observed loess beds in the region was explained by the local presence of material derived from the Tertiary Reading Beds (Catt in Bell 1976). The sedimentology of the Newhaven sequence was therefore interpreted as resulting from the deposition of wind-blown loess into periglacial features.
formed in the top of solifluction gravel. The gravel itself showed features resulting from both involution and direct wedging from differential expansions of ground-ice under permafrost conditions. Inspection of photographs taken during the excavations has also revealed the presence of structures resulting from differential decalcification of the solifluction gravel under solution.

![Figure 2: Detailed plan of polygon 1 on Site 6. Reproduced from Bell 1976.](image)

The presence of mint-condition artefacts, sometimes with close spatial associations, within the silt fill of the periglacial landforms led to the reasonable interpretation by the original investigation team that both flint flakes and loess were deposited at the same time. As loess deposition in south-east England was generally thought at the time to date to a single period between 26,000 and 13,000 BP (Catt 1974), the inescapable conclusion was reached that the flint artefact assemblage also dated to this period and consequently classified as Upper Palaeolithic. Since the publication of the original paper the Newhaven site has been referred to as Upper Palaeolithic and is indeed recorded as such on the county HER and in accounts of the county’s Upper Palaeolithic record (Woodcock 1978; Holgate 2002). Yet even cursory examination of the published artefact drawings and associated technological descriptions demonstrates the complete incompatibility of the flint technology with known variation within the British Early Upper Palaeolithic. While this discrepancy has previously provoked comment and speculation as to the correct designation (Holgate 2002), the South East Region Research Framework (SERF) process provided an opportunity to critically re-examine the lithic assemblage.

TECHNOLOGICAL ASSESSMENT OF THE REFITTING DÉBITAGE

The lithic material from the Newhaven site is currently stored in the basement of the Royal Pavilion, Brighton by the Brighton and Hove Museum Service. The material was readily accessible as part of the Newhaven site archive and a brief study of the material was undertaken in the autumn of 2007. While more detailed study of the entire assemblage is currently underway, examination of the refitted material alone was sufficient to make a number of key observations on the technological character of the material and to bring into
question its assignation as both Upper Palaeolithic in nature and Late Devensian in age.

Central to any discussion of the Newhaven stone tool assemblage is the large, bifacially worked ‘core’ element presented in the original paper (Figures 3 & 4). The piece measures 147mm (maximum length) by 136mm (maximum width) in plan and has a maximum thickness of 77mm. In general the cortex, where present, shows only a minimal amount of fluvial abrading and appears to be in a relatively fresh condition. Localised areas of bruising do exist on associated refitting débitage, particularly on the dorsal face of flake 9. These might have occurred as a result of short-lived exposures to fluvial processes.

The flint immediately below the cortical layer is dark and translucent. However the bulk of the piece is of a more opaque mottled grey colour with a reasonable number of cherty inclusions. At least two removals have detached from the rough-out as angular blocks, presumably following internal flaws in the material. The quality of flint does however seem to be generally good, and it is possible that the progress of the knapping was hampered more by lack of skill than by inherent flaws in the flint.

Knapping appears to have progressed in a centripetal manner across one entire face of the piece with the removal of at least 14 probable soft-hammer flakes (Figure 4). The piece was then turned to bring the other face into play and centripetal flaking proceeded, including the refitted pieces described below. As flaws emerged in the ‘tip’ of the piece, attempts to thin the piece met with failure and numerous resulting flake removals terminating in step fractures are
evident. At some point a single removal is made from the ‘butt’ of the piece, which manages to travel 110mm across the face of the core, perhaps in an attempt to thin the flawed area from a different direction. At this stage in the reduction process a single removal is made from the other face (the only documented switch between faces subsequent to the initial shaping of the first face). The piece is, at this point, abandoned. The following flake elements refit to the biface:

**Flake 2:** Refits directly to the biface and preserves a striking platform with a pronounced lip. It was possibly aimed at removing the developing intractable step with a lateral blow but terminates in a step fracture itself.

**Flakes 3 & 4:** Refit directly to the biface. Two bold soft hammer removals with lips exhibited alongside well developed bulbs of percussion from the early stages of preparing the butt of the biface. Both pieces exhibit previous removals but also preserve cortex of a weathered nature.

The following refits are also recorded from the assemblage:

**Flakes 9, 10 & 11:** Three hard hammer flakes. The first removal is 85mm long with at least two previous removals indicated on the dorsal surface by flake scars, although some remnant cortex suggests previous reduction was still early in the reduction sequence.

Two refits, numbers obscured: The first removal is a thick flake of indeterminate hammer technique with a bruised platform resulting from preparation. The dorsal surface exhibits both weathered unrolled cortex and an area more locally abraded through contact with other lithic material, possibly in a fluvial context.

**Flakes 13, 14, 15 & 16:** Four flakes, three of which are missing their proximal ends, all exhibiting soft hammer characteristics, and all knapped from the same platform as part of a thinning episode. The last removal preserves some cortex on its lateral edge. This is of a weathered and smooth nature consistent with the natural exposure of a nodule surface. The flints are fresh and unpatinated. The raw material appears to relate to a separate block entirely and offers the possibility of other reduction sequences being present within the assemblage.

**Flakes 17 & 18:** Two laminar soft hammer thinning flakes. The first platform is marginal but appears to be abraded prior to removal.

**Flakes 19 & 20:** Two soft hammer thinning flakes. The first removal is missing its striking platform but retains some relatively smooth fresh cortex on its dorsal end. The second flake is complete, and appears to be soft hammer in origin with a small lip in the striking platform.

**Flakes 6, 7 & 8:** Three squat soft hammer thinning flakes. The first two removals are marginal whilst the third shows more invasive knapping and preserves a platform with four previous step fractures. This may imply a removal was undertaken to correct a problematic flaking angle during the thinning of a biface.

Three technological features, the rigid working of one face before switching to the other, the plano-convex shape of the piece, and the final bold removal of a single flake across one face of the piece might suggest a knapping process informed by Levallois technique. However, the
concern with thinning and the use of marginal, soft hammer technique has led us to the conclusion that the technology was directly aimed at biface production. Our conclusions are that the core represents a discarded attempt at manufacturing a broadly ovate handaxe, that the reduction sequence was aimed directly at the manufacture of a biface, and that this process failed due to a mixture of raw material flaws and a level of knapping ability unable to overcome these problems.

**IMPLICATIONS**

The determined technological affinity of a relatively small assemblage should never be grounds on which to determine the age of a potential Pleistocene site. However, in the case of the Newhaven material, the character of the refitting, *in situ* scatter is firmly at odds with the previously claimed Upper Palaeolithic classification of the flint assemblage. This being said, the bifacial nature of the technology is, in itself, a poor guide to age with similar technological practises being present in Britain from at least 500,000 BP and continuing, albeit intermittently, until the start of the Mid-Devensian and the appearance of Late Neanderthal MTA bifacial technology (White & Jacobi 2001).

No further attempt can be made at this stage to determine the real age of the material but potential avenues for further research can be suggested. Broadly speaking two possibilities exist to explain the site: firstly, that the material was discarded at an earlier stage in the Pleistocene and only became worked into periglacial features during the Late Devensian; or secondly that the loess deposits at Newhaven date to an earlier glacial cycle. Given the
exceptional degree of preservation of the flint artefacts and their close spatial association, the latter hypothesis seems more credible. *In situ* scatters of Palaeolithic débitage are exceedingly rare in the British Palaeolithic record and it is impossible to envisage the maintenance of close spatial relationships between the artefacts without fairly rapid, low-energy processes of burial.

Compared to the continent, the preserved extent of loess sequences is limited in Britain (Antoine 2003; Bell & Brown in prep.). However, some significant artefactual assemblages are associated with loess deposits in Britain and occur from a wide range of dates showing clearly the potential of the sedimentary context for preserving Palaeolithic archaeology. Examples include biface reduction sequences from seams containing loess material within the solifluction gravels capping the Boxgrove sequence (Roberts & Parfitt 1999) and from the fine-grained fill of doline structures at Caddington in the Chilterns (Smith 1894), and Levallois material from Crayford (Wymer 1968), Creffield Road, Acton, (Wymer 1968), Ebbsfleet, Kent (Wymer 1968, 1999; Bridgland 1994; Wenban-Smith 1995) and Bapchild, Kent (Wymer 1999). These sites cover a broad time period and while Boxgrove currently provides the oldest association between loess sediments and artefacts, the possibility of older occurrences is not out of the question. At least three distinct phases of loess deposition in the British Pleistocene record have currently been identified (Parks & Rendall 1992), but it is possible that each glacial cycle includes periods of loess deposition to some degree. In Sussex the association of Brickearths containing loess material with both the Goodwood–Slindon and Brighton–Norton raised beaches shows the potential for multiple periods of loess deposition within the county (Bates et al. 1997).

It is likely that the Newhaven material could relate to a pre-Devensian phase of loess deposition, but determining its exact age will require further fieldwork as opportunities arise. The high likelihood that river terrace sequences directly correlatable with the Sussex raised beaches survive within the Sussex river valleys offers a useful framework through which we can begin to understand the development of Pleistocene sedimentation within the south east region (Bates 2001).

Further opportunities for this kind of research will undoubtedly emerge through future redevelopment in Newhaven and will allow for a more detailed, targeted and modern investigation of the wide-spread Pleistocene deposits now known to survive under the town. The importance of the site is two-fold: Firstly, it provides a new, previously unrecognised, example of an *in situ* biface knapping scatter. More detailed study of this refitting sequence alongside the wider assemblage can hopefully contribute to our understanding of bifacial technology. The site also shows the potential for periglacial landforms, sometimes quite limited in extent, to preserve *in situ* Pleistocene archaeology. Archaeological investigation, both in developer-funded and pure research contexts, should be sensitive to the possibility that small localised deposits of fine-grained material have the potential to deliver us an equally fine-grained record of human behaviour during remote periods.

**BIBLIOGRAPHY**


