



Lithic Studies Society

RESEARCH FRAMEWORKS FOR HOLOCENE LITHICS IN BRITAIN

The resource

The durability, quantity, and near-ubiquity of knapped flint and stone give them an unique value as the most widely surviving evidence of prehistoric human activity. Pleistocene lithics tend to survive *in situ* only in locations protected from large-scale scouring and erosion of land surfaces, and are generally reworked into secondary deposits like gravels. Holocene lithics stand out by the evenness of their preservation across the landscape. Decay, drainage and cultivation have eliminated or severely damaged buildings, organic artefacts, earthworks, and ceramics to varying extents, according to landuse history and local conditions. But the lithics are still there, although sometimes masked or displaced. This makes lithics one of the most reliable indicators of human use of the landscape through at least the first 9000 years of the Holocene. In areas of sustained arable cultivation and/or a low original incidence of monuments, like parts of East Anglia, they are the principal indicator. The contexts in which they survive may also reveal the taphonomic processes which have led to the erosion of other materials by human and natural agencies, as in the case of colluvium or relict soil horizons.

Background and achievement

While Mesolithic societies and their industries have remained the focus of academic research throughout this century, interest in later lithics has fluctuated. Ground-breaking work was carried out in the 1950s and 1960s, notably by Clark and Higgs on the Hurst Fen industry (1960) and by Isobel Smith on that from Windmill Hill (1965). A spell of stagnation gave way in the late 1970s and the 1980s to revived interest in both stratified assemblages and the vast resource of surface material. Surface collections, so far the subject of more collection than analysis, now provided the basis on which both changing settlement patterns and zonation of activity across the landscape could be posited, often through variants of *chaîne opératoire* analysis. This surge of activity shared in and gained from a growing concern with prehistoric societies. These developments are

well-represented in two volumes of papers (Bradley and Gardiner 1984; Brown and Edmonds 1987). At the same time, a growing knapping-based understanding of flint and stone technology increasingly informed analysis. The Stonehenge Environs Project explicitly developed a technology-based scheme of analysis and applied it to both fieldwalked and excavated assemblages (Richards 1990). In the 1990s, the extent and interpretive potential of surface material have been recognised by the establishment of English Heritage's *Lithic Scatters Project* (English Heritage 2000), and approaches to analysis have broadened and diversified, drawing increasingly on archaeological theory and information technology (Schofield 1995).

The characterization of industries of the full Bronze Age (Saville 1981; Ford *et al* 1984), and perhaps of the Iron Age (Young and Humphrey 1999) has gone hand-in-hand with the recognition that lithics of the second, or even the first, millennium BC carpet the landscape, often masking those of earlier periods. This has been emphasized by the results of the Stonehenge Environs Project and others with a high fieldwalking component. Fieldwalking projects have also shown how consistent are the distinctive ploughsoil signatures of extensive third and second millennium scatters, discrete, often elusive clusters of the fourth and fifth millennia, and the more visible concentrations of earlier times. The behavioural and taphonomic causes of these distinctions are receiving increasingly mature consideration (eg Pollard 1998; Edmonds *et al* 1999), which in turn informs the interpretation of surface and ploughzone material.

Intensification of fieldwork in previously under-researched areas, including Scotland, Wales and the Midlands and the North-East of England, has brought out regional distinctions, especially those reflected in the quality and quantity of available raw material.

This document

The priorities outlined below are inter-related and overlapping, both with each other and with those of prehistoric research in general, including

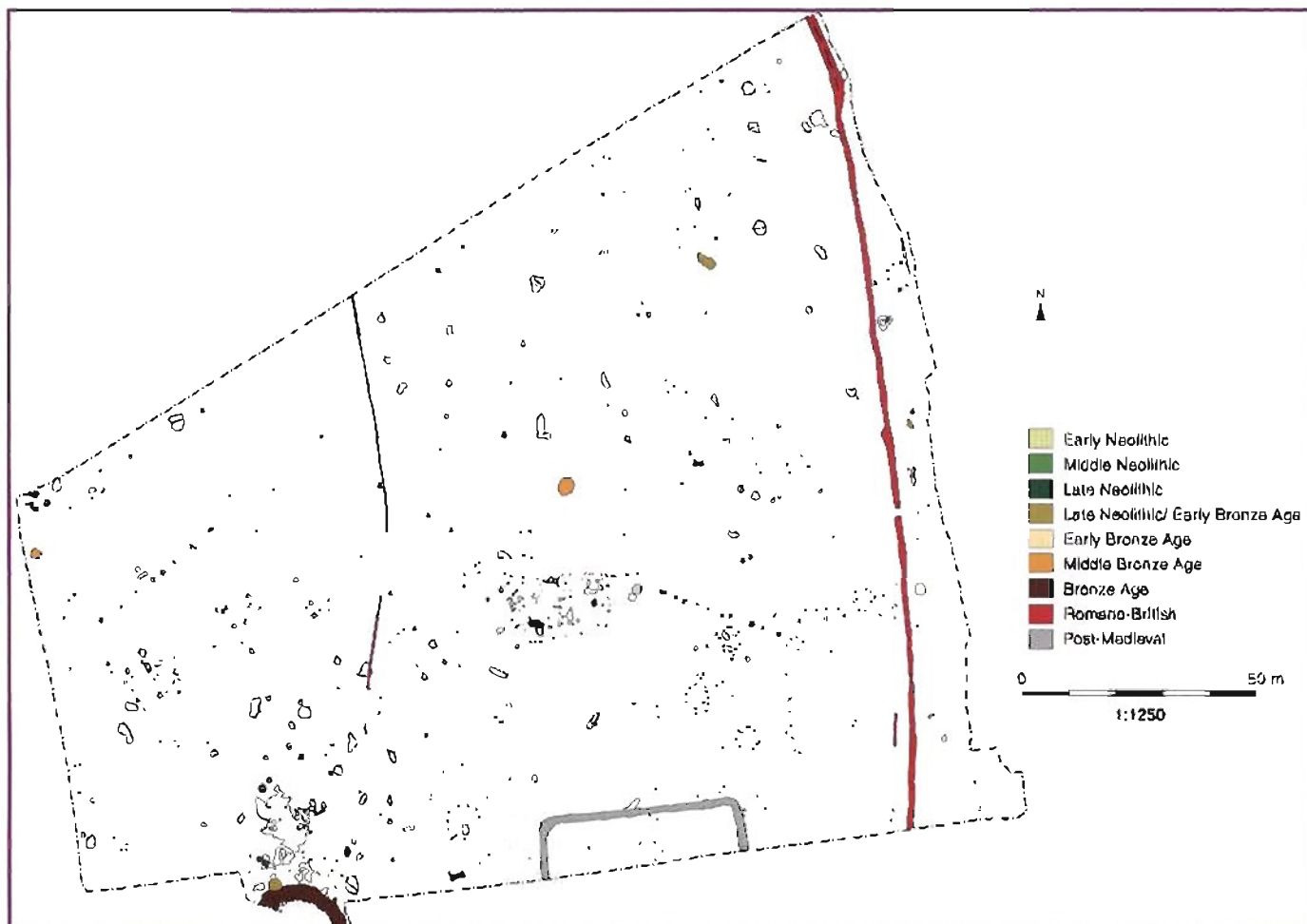


Fig. 1 Part of an excavated area of many hectares on what is now the Thames floodplain at Yarnton, Oxfordshire, showing structures and features of various dates and the less intensively used areas between them. Excavation on this scale makes it possible to assess the varying lithic signatures of different kinds of activity and of different periods.
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research into earlier periods (eg Gamble *et al* 1999). They constitute substantial contributions to the aims set out in English Heritage's 1999 Research Agenda.

Questions

What was the significance of cultural material and its deployment?

The cultural practice of deposition and past conceptualization of artefact lives are fruitful avenues of exploration.

Symbolic attitudes to refuse and cultural material in general make for a less than straightforward link between the ways in which lithics were used and the ways in which they were deposited. The character of these practices and the manner in which they changed over time (for example what and how much was put into pits/incorporated into middens/abandoned where it was used/cleared to the side of a living site) need further exploration. So does the extreme end of the spectrum of significance-laden disposal represented by what appear to be 'structured' deposits – the deliberate articulation and manipulation of symbolic meanings through deposition. Lithics play an important part in such

practices (Brown 1991), although often under-considered. Extensive investigation of areas of good preservation like Barleycroft Farm, Cambridgeshire, Yarnton Floodplain, Oxfordshire (Fig. 1), or the Eton Rowing Lake, Berkshire, have made it possible to compare the contents of pits and monument ditches with those of natural hollows, treethrow holes, and old land surfaces, with their potential for encapsulating distinct patterns of behaviour.

How? On what scale? and For how long? as well as Where?

More thought needs to be given to how lithic studies can contribute to understanding occupation practices. In addition to questions of settlement pattern, lithics should be able to inform us about issues such as the scale and duration of an occupation event, residential composition, and the 'biography' of landscapes and places.

Experiment and replication have made it possible to identify discrete events, whether butchering a deer or finishing an axehead. They can be less directly applied to the accumulated, displaced, time-averaged, assemblages recovered from most flint scatters and pit sites. The *chaîne opératoire* and related approaches go some way

to defining general signatures which have helped to indicate possible balances of activities. Further sound criteria for characterizing such material should be developed. Carefully designed and recorded experiment and replication, combined with usewear studies and the ethnographic record, could better define the kinds and intensity of activity which a given assemblage may represent. The duration of individual episodes of activity at a single site is likely to be best indicated by the integration of absolute dating and the palaeoenvironmental record, as in the Vale of Pickering (Mellars and Dark 1998, 221–5).

How dense and intense overall?

We still have little idea how thickly or thinly the countless thousands of lithic artefacts which crowd museum and unit stores were spread in time and space. An increasingly well-defined radiocarbon chronology for the technological and typological trends exhibited in lithic assemblages raises the possibility of trying to assess density of population and intensity of presence over time, and of testing whether lithics are an equal indicator of human presence across geographic boundaries.

In well-fieldwalked and test-pitted areas it should be possible to calculate the likely overall frequency of lithic assemblages of a given period and their likely total content, and estimate how much material might have been knapped and deposited in that period, whether five flakes a year or fifty major industries a year.

Does it mean the same thing everywhere?

It should be possible to quantify the extent to which the imbalance of lithic between flint-rich and flint-poor regions reflects lower use of the material rather than lower populations. In systematically collected areas like the flint-poor North-West Wellands and the flint-rich East Anglian Fens, it might be possible to find a technique for relating the density of lithics in any broad period to independent evidence for intensity of human presence, such as contemporary anthropogenic changes in vegetation and sedimentation. Once there is a good indication of which parts of areas of low lithic density were well-used, resource-rich zones and which were less intensively-used peripheral areas, like some uplands, it should be possible to distinguish corresponding patterns in the composition and occurrence of the lithics, regardless of density and to apply those patterns to the analysis of assemblages from areas where comparable environmental evidence is not available.

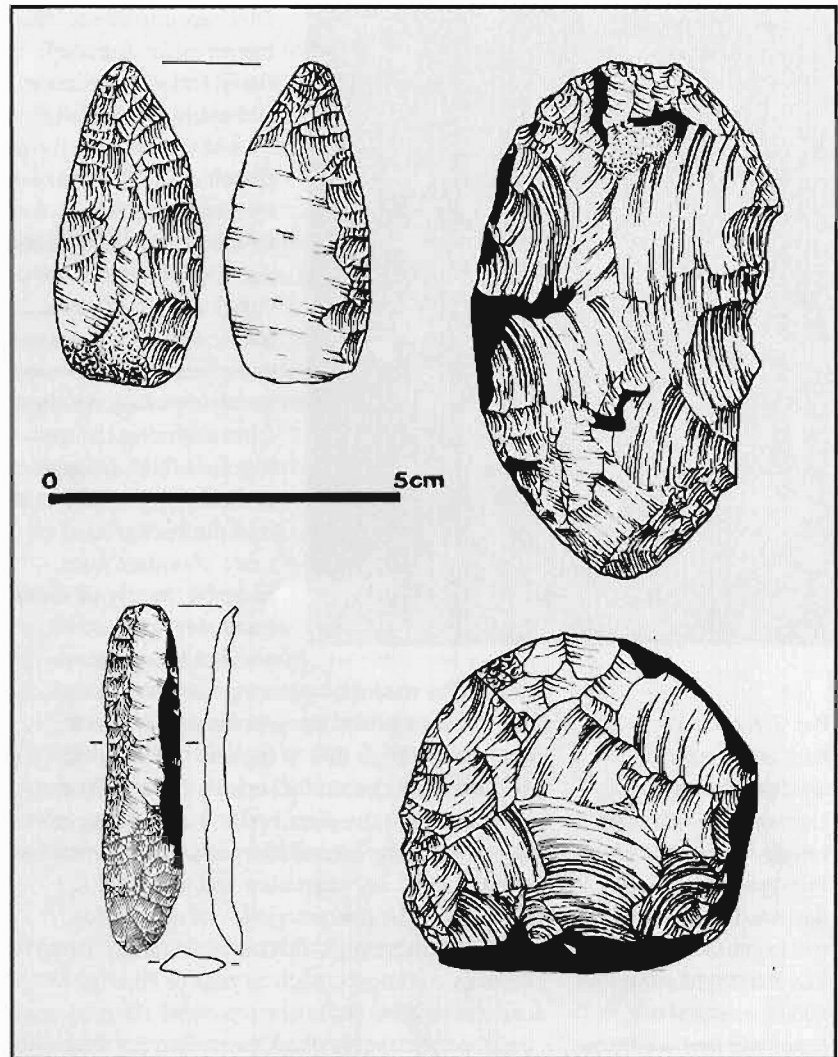


Fig. 2 Elaborate late Neolithic artefacts
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Is material of all periods being recovered evenly?

The small size of many earlier Neolithic scatters and some Mesolithic ones makes them inherently less conspicuous and makes them particularly less likely to be identified in extensive fieldwalking survey, where walked rows spaced at intervals of the order of 20 m or 25 m could pass either side of a small, early scatter, while serving to identify a large later Neolithic or Bronze Age one. There is a case for determining the scale of local sites of all periods, from the results of excavation and intensive survey, and gearing the methods to that scale.

Do we know what all Mesolithic industries looked like?

The presence of postholes and a pit of Boreal age near Stonehenge, without artefacts and in an area with only a minimum of recognizably Mesolithic lithics (Cleal *et al* 1995, 41–62), is only the best-known instance of apparently Mesolithic features without associated or nearby Mesolithic lithics.



Fig. 3 A nodule from the ditch of the outer Stepleton outwork on Hambledon Hill, Dorset, refitted by Alan Saville from flakes and a core deposited there in the mid fourth millennium cal BC, showing how the nodule was originally flaked and how few flakes were removed to other locations. Maximum dimension 134 mm. Reproduced from Saville (forthcoming). © Trustees of the National Museums of Scotland.

Other examples include Runnymede, Surrey; Perry Oaks, Middlesex; and Hambledon Hill, Dorset (Allen and Gardiner 2002). It is impossible to tell whether these represent activity which did not entail the use of stone tools, whether artefacts were removed after use, or whether they resulted from activities the tool-kits for which were so undistinctive as to blend into the background of more abundant later material. In any of these cases, any current artefact-based assess-

ment of the extent of contemporary settlement may be a misguided under-estimate. A check could be made on this in regions with a good environmental record by seeking (1) any discrepancies between the presence and abundance of Mesolithic material and independent evidence for human impact on vegetation and soils and (2) establishing the characteristics of any lithics, however nondescript, from independently dated Mesolithic contexts, such as peat or riverine deposits.

Who did what and why?

While it is inherently plausible that flint-knapping was universally practiced at a utilitarian level, we know little about the nature of craft specialization, of how skills were transmitted, or of the significance of particular contexts and artefacts.

Understanding of these questions could be enhanced by systematic examination of elaborate, finely-made Neolithic implements such as the various polished knife forms (Fig. 2), 'fancy' arrowheads, and the Levallois technology that went with them, the distribution of all of which is very uneven. Individual and regional tricks of working, such as might have been passed from one knapper to another, could be illuminating. A better-defined chronology for particularly distinctive forms could clarify the case for person-centered or longer-lived traditions. Condition could point to artefact history; usewear analysis could, for example, demonstrate likely function or lack of use, or indicate hafting, or polish from a leather or wooden container. The immediate topography of finds of this kind (in wet places? On possible routeways?) would repay investigation, as well as the general areas where they are concentrated.

Clusters of fresh knapping debris on the floors of newly-dug monument ditches, sometimes refitting with few or no flakes removed (Fig. 3), are likely to have been imbued with extra-functional significance, like other more obviously non-utilitarian deposits in the same contexts. In what circumstances were these generated?

Some finished implement types, such as stone and flint axeheads, and some groupings of implement types and technological traits, such as the 'heavy' component of southern English Neolithic industries (Fig. 4), are rare in secure prehistoric contexts although widespread in the total record. This must reflect the manner of their use and discard.

Technological change can be a proxy for social change. The timing, character and incidence of changes in lithic technology, along with other forms of material culture, might illumine and be illuminated by changing lifeways.

High quality information

While the potential of existing collections is vast, there is still a need for the complete recovery of well-preserved artefact and ecofact assemblages from securely stratified and dated contexts, whether (ideally) in stratigraphic sequence or (at least) capable of precise absolute dating. It is here that techniques such as residue analysis and usewear, applied across the gamut of material types, can elucidate whole patterns of activity. The potential of direct dating of lithics and other materials, by thermoluminescence, radiocarbon dating or other means remains to be fully explored.

Mobility, in what directions? Over what distances?

Specific lithic raw materials and artefacts, together with lithic inclusions in pottery, are among the most frequent indicators of extra-local contact in Neolithic and Bronze Age assemblages, whether in the form of bulk materials from nearby sources, like flints, cherts, and quern or rubber materials, or of rare finished implements from remote sources, like axeheads. The bulk materials, and the ways in which they were worked, used, and discarded, may help to define the territories in which particular groups lived and moved, and their contacts with other groups.

Longer distance bulk transport

The scale of flint transport away from the southern chalk is larger than that of any other visible object of contemporary exchange. It was often transported in the form of cortex-covered nodules, even as far as Cornwall or Wales,

perhaps raising the question of the significance of animal and/or water transport. The definition and quantification of this traffic would help elucidate the wider patterns of movement and contact of which it must have formed a part.

Specific sources

A reliable means of characterizing *in situ* flint sources, based on the chalk zones in which they occur, would be vastly illuminating. Attempts to achieve this by physical, chemical and palynological means have met with some success but many problems. The potential must be there. Implement (especially axehead) petrology has been characterized by an imbalance between extensive sectioning of stone artefacts and limited investigation of the petrology of most of the sources from which they may have come. Some work on outcrops was done in the late 1980s in the Midlands (Bradley 1989) and Mik Markham's investigation of Cornish dolerite outcrops has gone a long way to clarify the likely and unlikely sources of Group I (Markham 2000). Such projects should be extended and supported.

Extraction sites

Complementary to source characterization is an understanding of the gamut of extraction sites, from rare, clustered and exceptionally deep flint mines to the grubbing-out of material at natural exposures. The ongoing publication of the British Museum's 1970s excavation at Grime's Graves (Fig. 5) is welcomed and appreciated. The results achieved at Great Langdale (Bradley and Edmonds 1993) provide a model of what can be learnt of organization and working practices on an extraction site with good sub-surface

preservation.

Recent surveys by the former Royal Commission on the Historical Monuments of England have highlighted the significance of the Sussex flint mines and enclosures, both largely investigated in the first half of the twentieth century (Barber *et al.* 1999; Oswald *et al.* 2001). The potential of the existing archives had been demonstrated in many pieces of individual research (eg Gardiner 1990; Russell 2001). This provides an exceptional opportunity to examine enclosures and nearby mines. Systematic (re)analysis and publication of both the mine and enclosure material would be of value for the understanding of the region and of the British Neolithic as a whole.

Implement petrology

The future preservation and accessibility of thin sections of stone implements, accumulated over the decades, should be ensured by their being brought together at a single location (or at least as few locations as possible) within the public domain. This will ensure their availability for reassessment and reinterpretation in the light of developing ideas and techniques.

Where did second-hand materials come from?

Many (most?) lithic raw materials used in prehistory were obtained from secondary sources, whether gravels, tills or bench deposits. The problems of sourcing here are considerable. At a practical level, the understanding of assemblages within a region could be greatly enhanced by systematically exploring and collecting from flint, chert and stone sources, secondary as well as in

Fig 4 Heavy-duty tools from surface scatters on the Clay-with-Flints in Cranborne Chase, Dorset. Such implements occur regular on Neolithic 'industrial' sites, whether actual mines and quarries or surface scatters at flint sources, but are rarely excavated from other contexts.

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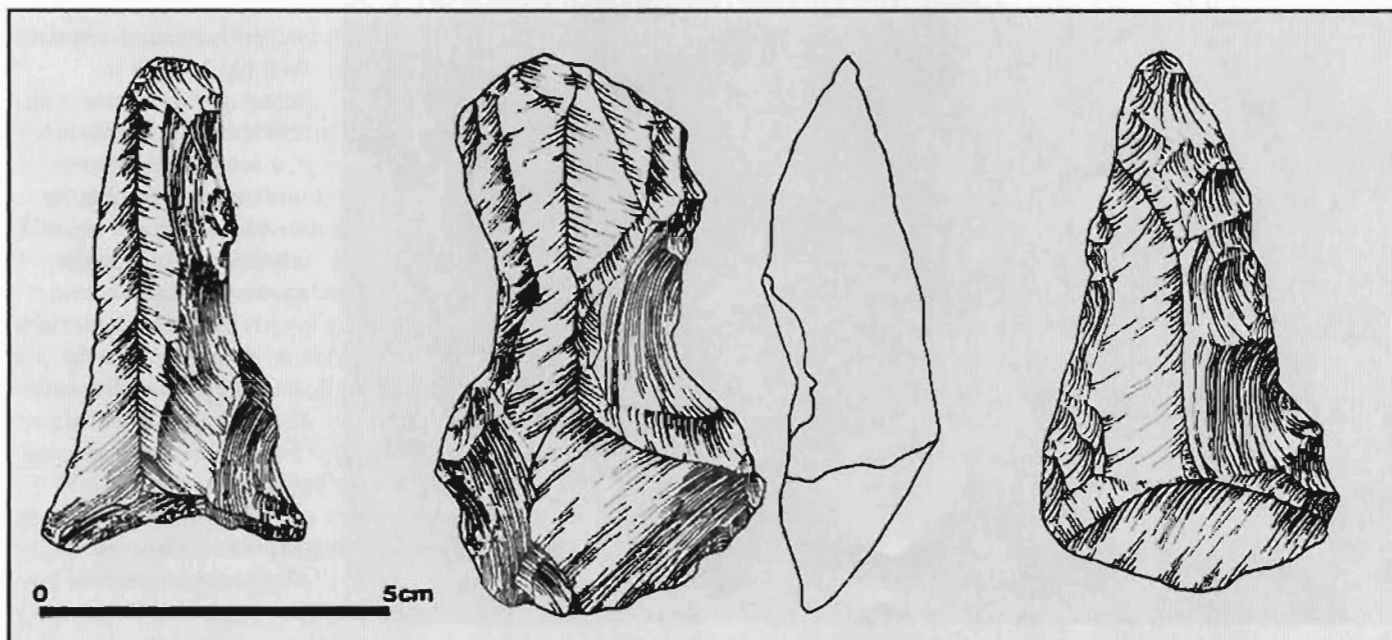


Fig 5 The entrance to a gallery at the base of Canon Greenwell's pit at Grime's Graves, Norfolk, showing the partly quarried seam of semi-tabular floorstone and the antler picks used to extract it.
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sim, as an integral part of excavations and surveys. The worth of such an approach is seen in the demonstration that the 'Portland' chert which figures in the industries of the Dorchester area was collected from local soils formed on a particular till rather than brought from the coast (Woodward and Bellamy 1991).



Are raw materials other than flint under-recognized?

Materials such as quartz, chert and rhyolite were used in much of north and west Britain. The extent to which they were used may, however, be underestimated. Their fracture properties are such that they are relatively difficult to recognize as artefacts, especially by an eye attuned to flint (Figs 7 and 8). They are often under- or uncollected in excavation and survey, especially if flint is also present. Further experimental knapping of these materials can clarify their characteristics. Awareness of local raw materials and properties is essential for those participating in fieldwork and analysis. Without it, there will be a perpetuation of false blanks and lows.

Continuity vs innovation

There has been little comparative work between British and Continental assemblages of the fourth and later millennia, although this has been a

common, and rewarding, practice for earlier periods (eg Jacobi 1976). Two of the major points of social transformation in the Holocene were the Mesolithic-Neolithic transition and the appearance of Beakers and related practices and artefacts. Both involved the adoption of sets of practices from antecedent continental groups, although the generic rather than specific relation of British assemblages to their continental equivalents would rule out substantial demic diffusion as a mechanism. We need fully to explore how far early Neolithic and Beaker assemblages mark the importation of new technologies or the reworking of existing ones. Comparison with coeval and earlier assemblages, especially from comparable geologies, in north-west Europe would help define the extent of common cultural ground between the two sides of the channel at these times.

Fig 6 Grave goods of the late third/early second millennium cal BC, including artefacts of non-local flint brought from the Chalk, from the primary burial in Barrow 1 at Raunds, Northamptonshire. Reproduced from Healy and Harding (forthcoming).
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Nomenclature and analysis

Lithic analysis has become increasingly assemblage- rather than object-oriented, as it has become increasingly concerned with technology, function, and the dynamics of stone-working and use. Yet these developments co-exist with a typological vocabulary based on the taxonomic needs of artefact collectors and developed on a far smaller geographical base than the areas of Britain from which lithics are now studied.

Traditional terminology has been winnowed by time and will continue to have considerable value.

There is, however, a case for reviewing categories and assumptions in the light of presently available information and for recommending methods for the processing, recording, and analysis of lithics.

Curation and Record

Baseline standards are needed for the curation of lithics and their recording in, for example, SMRs and museum accession registers. The uneven quality and reliability of lithic records in both can be misleading to curators (in both the museological and planning authority sense) and researchers alike.

Where possible these should be improved by re-examination and recording of the actual material, including private collections — the record of which is often sketchy to non-existent — as well as those in the public domain. This would bring the nature and potential of the material to the attention of those likely to realize it. The Upper Palaeolithic and Mesolithic Database for England (PaMele), currently under construction, is an important and welcome development, since it will document Upper Palaeolithic and Mesolithic material to a high and uniform standard, contributing much worthwhile information and dispelling countless misconceptions.

A national inventory of post-Mesolithic material would be a far larger and more challenging undertaking but, if accomplished, would be an invaluable tool for research and planning control, if it could be achieved to a consistent and adequate standard. It would complement and enhance the results of English Heritage's Lithic Scatters Project. Practicalities and pitfalls might best be explored by undertaking pilot inventories in selected regions, an important aim of which would be to assess the level(s) to which it is useful and feasible to record. Consistency would call for a small, experienced and co-ordinated team.

Education and dissemination

Lithics should be more fully integrated into the promotion of public awareness of prehistory. Their near-ubiquity makes them singularly suited for this. Any one can find them, and many frequently do. Emphasis on the information value of the material, and on the importance of accurate recording of find and their location, whether through the pilot portable antiquities scheme or longer-established channels, such as the Scottish Treasure Trove system.

With an ever-growing majority of the population leading an urban and electronic existence, exposure to knapping and related skills provides an insight into the lives lived by the overwhelming majority of our ancestors.



Fig 7 Mudstone and chalcedony artefacts from An Corran, Skye.
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Fig 8 Quartz artefacts from Shieldaig, Wester Ross.
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