

by Frances Healy

John Schofield's paper demonstrates admirably that the size and character of surface collections varies from one ecological zone to the next. It would be difficult to disagree with his general conclusion that much of this variation is due to differential raw material availability in, and differential long-term use of, distinct areas of the landscape. The specific mechanisms which he proposes, and the arguments adduced in support of them, may, however, be questioned.

Regional Analysis

In the first section of the paper, the decision to regard as flint sources only the chalk and the clay-with-flints prompts misgivings. Fig. 1 shows that river gravels are present, often abundantly, in all zones of the Middle Avon valley survey area except for the chalk itself. They also have a limited distribution in the East Hampshire Survey area (Shennan 1985, fig. 1.2). Since the products of Neolithic and Bronze Age knappers rarely betray the fastidiousness as to raw materials of their modern counterparts, these gravels are likely to have been used for rather more than the occasional 'instant tool'. A high proportion of 'honey-coloured' flint in Neolithic levels at Downton (Higgs 1959, 216), just to the north of the Middle Avon valley survey area, suggests a derived, rather than a chalk, source. Decreasing flake size from north to south, away from the chalk, in the same area might thus reflect the initially small size of pebbles of gravel flint, as much as increasingly economical husbanding of chalk flint. This uncertainty will doubtless be resolved in the forthcoming publication of the Avon Valley Survey.

Site Analysis

The preliminary conclusions presented in this section, in support of those reached in the regional analysis, are based on a sample of eleven disparate published assemblages (table 4), drawn from the far larger total available in the literature. The acknowledged problems of author variability are augmented by those of site variability. The assemblages selected are from contexts so diverse that function is at least as likely as resource stress to account for distinctions between them. The enclosures of Windmill Hill, Offham, and Bury Hill arguably filled special roles (Drewett, 1977, 222-226; Bedwin 1981, 75-76).

Chronology is abbreviated. In table 4, sites 2 to 8 are all classed simply as Neolithic, despite widely varying dates and cultural affinities. This compression results in the description of the industries from the primary levels of Windmill Hill and from the West Kennet Avenue occupation site as 'two broadly contemporary assemblages'. Was the Battle of Bosworth broadly contemporary with the Battle of Britain?

The correlations obtained between distance from source and percentages of true blades and of broad flakes in assemblages (Fig. 3) may be a product of the small number of industries examined in the study. All three sites listed in table 4 as

lying over 2km from their flint sources happen to be Mesolithic (Oakhanger) or Earlier Neolithic (Windmill Hill, Carn Brea). In other words, they all lie on the early side of the traditional divide between Mesolithic and Earlier Neolithic industries, characterised by blade production, and Later Neolithic and subsequent industries, characterised by the production of broad flakes. Later industries, from the West Kennet Avenue occupation site, Durrington Walls, and three Wiltshire barrows, figure among those on or close to their flint sources. This does not discredit the traditional model, which would be better tested by reducing the number of variables involved to a manageable one. If flake shape could be shown to vary with distance from source among industries from sites of similar nature, date and cultural affinities the argument would more persuasive.

The resource stress model does not fit all published assemblages, which tend to conform to the traditional cultural/chronological pattern, although at the same time reflecting variations in the nature or proximity of raw material. Examples excluded from the study include Broome Heath, Ditchingham, Norfolk, where the Earlier Neolithic occupants worked the gravels of the site, into which they dug numerous pits which, whatever their other functions, would have provided an abundance of relatively fresh flint. According to the resource-stress model, the response to this effectively unlimited on-site raw material supply should have been careless knapping with little preparatory input, resulting in the production of broad, irregular flakes with frequent hinge fractures. Yet the proportions of the flakes from the pits are distinctly blade-like, differing little from those of the flakes from the primary levels at Windmill Hill, located 2-3 km from a flint source (Wainwright 1972, figs. 36-37). Frequency of blade-like proportions in the Earlier Neolithic and their progressive scarcity in subsequent periods often seem to bear little relation to raw material type or availability. A striking example is afforded by Earlier Neolithic, Later Neolithic and Bronze Age industries from Fengate, Cambridgeshire, which show a chronological progression from more to less blade-like forms and a marked deterioration in knapping technique (Pryor 1980, 123-124, figs. 73-74), although all three sites lay in immediate proximity to each other with access to the same river gravels. There is a similar chronological progression in the proportions of flakes from Earlier and Later Neolithic contexts at Briar Hill, Northampton, although the raw material used throughout remained constant. (Bamford 1985, 60, figs. 35-36).

Comparable flake shape preferences were exercised on the small and intractable gravels of the Midlands, on the larger, sounder gravels of East Anglia and on the chalk flint of southern England. The influence of raw material is most clearly seen in variations in overall size, rather than shape, and perhaps in knapping techniques adopted to achieve a common product. A consistent pattern of chronological variation in flake proportions still seems to obtain. It may be attributable to common function and/or cultural preference. Both would accord with the general uniformity of material culture over much of Britain in the third and second millennia BC. Neither proceeds from description to explanation.

To sum up, I agree with John Schofield in many respects:

1. The macrocharacteristics of surface collections and stratified assemblages are profitably studied and understood in a landscape context, including their relationship to raw material sources.
2. Such studies would be greatly enhanced by detailed investigation and mapping of raw material sources.
3. The proximity and nature of raw material sources indeed affects assemblage character. Many of the common features of non-contemporary industries based on on-site supplies of chalk flint, such as nos. 3 - 5 and 8 - 11 in table 4, are most readily understood in this light.
4. Abundance of freely-available raw material often seems reflected in relatively low percentages of retouched pieces, scant core-preparation and uneconomically-flaked cores. Resource stress may be reflected in higher percentages of retouched pieces, regular core preparation, systematically and extensively flaked cores, and the reworking of discarded artefacts.
5. Simple linear relationships should indeed not be viewed in isolation, and it is rightly acknowledged that resource stress is only one of many factors, among them the effects of specialised blank production, governing the nature of an assemblage.

Disagreement starts here, with a difference of emphasis. I see resource stress as one of a large number of factors affecting assemblage character. Others among them would be not only the nature of end product(s), but site function, cultural preference, even style. Resource stress should indeed be detectable by the criteria listed in John Schofield's introduction, and summarised in point 4 above. Mean flake size, much used in the paper, is, by itself, an uncertain guide to level of resource stress, since small size may reflect the initial limitations of abundant raw material, not to mention the size-range of desired blanks (e.g. for microlith manufacture), as much as a need to get as much mileage as possible out of a scarce commodity.

Flake shape may be even less of a reflection of resource stress, since variations between assemblages still seem to conform to a broad chronological pattern, which cuts across raw material type and availability. The established cultural/chronological model has a lot of life left in it, but calls for a lot of explanation.

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