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FIELDWORK AT GREAT LANGDALE, CUMBRIA, 1985 - INTERIM REPORT

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Introduction

Considerable attention has been paid to the petrology and distribution of Neolithic axes, but less interest has been shown in the details of their production. Specialists have been unable to decide between three radically different hypotheses, each with its own implications for the character of contemporary society:

- a) Did axe production take place under monopoly control, so that access to the raw materials might be a source of power?
- b) Was there a class of specialist axe makers or 'axe traders'?
- c) Or did people enjoy free access to sources of raw material, in which case the 'value' of the finished product might depend on its rarity in other parts of the country? (cf. Bradley 1984, 48-57).

These questions apply to all the major sources in Neolithic Britain, but it is easiest to investigate these questions in Cumbria, the area of origin of Group VI axes (Bunch and Fell 1949; Houlder 1979). Not only was this one of the largest producers: despite recent tourist erosion, the sources of this material still survive relatively intact. More important, the production sites themselves have been surveyed to a high standard by a team drawn from the National Trust and the Cumbria and Lancashire Archaeological Unit, whose objective was to document the archaeological sites with a view to their preservation and management (Claris 1985). Our own work in August and September 1985 was intended to complement the results of this survey. Its main aim was to find ways of analysing the nature of lithic production on the largest group of sites, those at Great Langdale. The project was essentially exploratory and was intended to devise a satisfactory methodology for future research in this area.

Our research design divided into five components:

1. An investigation of the technology employed on the stone working sites themselves. This was designed to assess the efficiency and standardisation of production at Great Langdale.
2. Experimental stone working intended to assess the factors influencing the siting of the Neolithic quarries: how efficiently had these locations been selected?
3. Sampling of the hammerstones introduced to the quarry sites.
4. Field survey of areas of Group VI rock not examined in detail before.
5. Field survey of areas around those tarns and coombes with pollen evidence of nearby clearance (cf. Pennington 1975); also survey of the blanket peat on the plateau behind the main working sites.

Despite appalling weather, all these objectives were met, although work on the tarns was curtailed.

Results

Our provisional results can be considered under the same headings:

1. Lithic technology. The survey carried out by the National Trust and the Cumbria and Lancashire Archaeological Unit showed convincing evidence that some of the Group VI rock was quarried - work had not been confined to loose boulders or to material in natural scree. In 1985 research was concentrated at the quarries themselves, where material still retained some integrity and where occasional pieces could even be refitted. A series of these locations was examined and standard samples of the lithic debitage were recorded in detail. This preliminary work resulted in five main observations:

a) The rock was worked fairly summarily, with a high proportion of hinge fractures, suggesting that the producers were under little pressure to use their time or their raw material efficiently. This was not so true of the secondary working floors located away from the Group VI outcrop. In addition, there were variations in the efficiency with which the stone was worked at different points along the rock face.

b) Blades were made as well as axes, and sometimes their production was the result of careful core preparation. In other cases crested blades were struck from discarded roughouts. The proportion of blades varied between different parts of the Great Langdale complex, but overall they were found at a restricted number of locations.

c) There were also a number of crude cores unsuitable for axe production, some of which resemble the forms taken by cores made of flint. Some of these used raw material from the lower part of the Group VI outcrop. This is particularly hard, and experiment has shown that it takes longer to make polished axes from this material. The stone industry also included scrapers. Thus axe production was not the only function of these sites.

d) The roughouts suggest that axes were made to different sizes in different quarries and that separate types occur in varying proportions around the Great Langdale complex. It is clear, however, that the surface evidence is a palimpsest, resulting from numerous episodes of production, and such variations will need to be studied in detail if the chronology of these sites is to be unravelled.

e) Fieldwork also revealed possible grindstones at the quarries. This may mean that some Langdale products were finished at the source of the raw material, although other explanations are possible.

It is intended to extend these approaches to more of the quarry sites and also to the roughout axes in the scree. At present the wide range of spatial variation does not suggest the activity of specialists.

2. Experimental stoneworking. Experimental knapping was carried out at seventy-two locations on and close to the Group VI outcrop. These locations were chosen because they were accessible, if only with difficulty; they were not a random sample. In each case the rock was tested for its flaking quality,

the extent of the exposure and its accessibility. Using that information we could model the most efficient production strategy at Great Langdale and compare this with the actual amount of archaeological material at the same locations. The results of this exercise demonstrated that the best quality rock was nearly always used, but those working the stone showed little concern with the other factors, apart from a tendency to favour the larger, more obvious exposures of Group VI rock. Some of the most suitable areas were hardly used, if they were used at all, and quite often less satisfactory outcrops were preferred. This does not suggest the efficiency (or the knowledge of the sources) to be expected of specialists, or even of people using the sites for any length of time (cf. Bradley and Ford in press).

3. Hammerstones. The hammerstones proved to have a restricted distribution and were found mainly where there was clear field evidence of quarrying. It was already known that they fell into distinct size classes, and the large fragments collected in 1985 were most probably used to detach pieces of rock from the outcrop. Smaller stone or possibly antler hammers would have been needed for making tools, and presumably these were carefully curated.

A series of hammerstones were collected close to the quarry faces and will be compared macroscopically and microscopically with superficially similar cobbles sampled from local stream beds and from glacial deposits in the Great Langdale Valley. It has been suggested that hammerstones were being imported into this part of Cumbria (e.g. Bunch and Fell 1949, 9), and it will be important to find out whether or not the samples from the quarries could have been of local origin.

In view of the restricted distribution of hammerstones, we decided to investigate the methods of stone extraction in more detail. For example, might the more complex techniques have developed as the scale of axe-production increased during the Late Neolithic period? It is clear that some stratified deposits must remain intact. For example, flake scars occur only 50 cm above the present ground level, suggesting a considerable build-up of material beneath the surface. Work undertaken by Chris Gaffney shows that the depth and even the character of such stratigraphy can be measured by geophysical methods. At the same time, it is possible that large-scale quarrying was aided by fire-setting, a common practice in the ethnographic record. This is particularly important since firing of the rock face might allow thermoluminescence dating of the sites. Measurements of magnetic susceptibility were uninformative but a series of soil samples have been taken for magnesium analysis which may also reveal evidence of burning. In addition, samples have been taken from the rock face itself, since evidence for burning may be revealed in thin section.

4. Survey of the Group VI rock outcrop. At the request of the National Trust/Cumbria and Lancashire Archaeological Unit team, 3.6 km of the Group VI outcrop were investigated by field survey. This linked the two areas investigated in their work and extended from the known site at Troughton Beck as far as Bowfell. No new sites were found, but one previously published site was located and proved to be of natural origin. Several others examined during preliminary reconnaissance during 1984 had also proved to be spurious. The effect of such work is to emphasise

the concentration of quarries and/or flaking sites around the Langdale Pikes, Scafell Pike and Glaramara. Their location is also being studied by Helen Jeffrey in relation to lowland agricultural resources, using a modified form of Site Catchment Analysis. The results of this work should have a bearing on the role of these sites in the wider pattern of settlement.

5. Fieldwork around Blea Tarn. Otherwise survey was restricted by the appalling weather and the high water table. Work in the blanket bog behind Langdale Pikes was impossible. The same applied to survey around most of the upland tarns.

The lowest-lying, Blea Tarn, was the only one to be investigated. As with the other upland tarns, pollen analysis combined with radiocarbon dating had shown evidence of Neolithic clearance in the vicinity, accompanied by increased soil erosion. We wished to investigate two questions:

- a) Could corresponding archaeological material be discovered by field survey?
- b) Could we trace any links between the activity revealed by the pollen record and the use of the Group VI sources?

Work took place in two stages: extensive survey of all exposures in streams, land drains, etc., and examination of the stone used in local walls; and the excavation of a series of seventeen soil pits. These pits were located either in the better-drained parts of the survey area or close to possible indications of prehistoric activity. Results were generally discouraging, but on the north side of the tarn two blocks of Group VI rock were recognised in a collapsed wall. Both had clearly been flaked, and lacked the rounding and abrasion characteristic of glacially transported material. A Group VI flake was found beneath a layer of peat in a nearby soil pit, suggesting that the wall had been built from immediately available material. An axe roughout is already recorded from Blea Tarn, but this evidence, however limited, suggests that blocks of Group VI rock were also being transported. It helps to strengthen the links between the pollen record and the evidence from the quarries themselves.

After one season's fieldwork we are still some way from answering the questions with which we began. There is evidence of considerable variation within the Great Langdale complex, but we should not expect this to be related directly to the organisation of production - more detailed analysis is needed. Even so, our results do not support the idea that lithic production was a specialist activity. More important, our experiments during 1985 have established a methodology with which to investigate these problems in greater depth. In future years our major aims will be:

1. To extend the technological analysis of the debitage to cover a wider range of quarries and other flaking sites, as well as the contents of the major screes. We also wish to take a similar approach to the Scafell and Glaramara complexes.
2. To examine the methods of stone extraction in more depth, and in particular to use geophysical analysis to assess the character of any intact stratigraphy against the quarry faces. We also need to investigate the presence or absence of fire setting

on these sites.

3. To investigate the extent and character of the ancillary working sites on the plateau behind Langdale Pikes. This is best achieved through a series of 1m square test pits cut through the blanket peat.
4. To obtain samples for absolute dating through small scale excavation against the Neolithic quarry faces, using the results of thin sectioning, geophysical and geochemical analyses to define the most suitable locations for this work.
5. To build on the rather tentative results of our fieldwork at Blea Tarn by examining the watersheds of upland tarns with similar environmental evidence. We also wish to take this approach to at least one tarn on the Cumbrian Plain, in order to provide a comparative sample from a lowland area.
6. To examine the existing finds from Group VI sources in public and private collections, and re-analyse artefacts made of this rock in selected regions elsewhere in the country.

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