NATURE, CULTURE, CLITTER

Distinguishing Between Cultural and Geomorphological Landscapes; The Case of Hilltop Tors in South-West England

◆ CHRISTOPHER TILLEY

Department of Anthropology, University College London

◆ SUE HAMILTON

Institute of Archaeology, University College London

◆ STEPHAN HARRISON

Centre for Quaternary Science, Coventry University

◆ ED ANDERSON

Flood Hazard Research Centre, Middlesex University

Abstract

This article addresses the problem of how to distinguish between natural and humanly modified features of the cultural landscape with reference to clitter (boulder and stone) masses in the south-west of England using the example of Leskernick hill, Bodmin Moor with its well-preserved Bronze Age settlement. We first set out a series of criteria for distinguishing between natural and humanly placed stones on the basis of a series of formal geomorphological criteria. We then discuss the stones from an archaeological perspective setting out a series of archaeological criteria by means of which we can recognize the presence of humanly modified stones. From this basis we discuss four examples in detail. Finally we attempt to interpret the significance of the cultural modification of stone masses, previously regarded by both archaeologists and geomorphologists as being entirely natural in origin, by challenging the very culture/nature distinction for ascribing meaning on which the previous considerations are made. Whilst acknowledging that the distinction between a stone that has been moved by human agency, and one that has not, is important for interpretation this does not make it more or less culturally significant.

Journal of Material Culture

Vol. 5(2): 197–224 [1359-1835(200007)5:2; 197–224;013121]

Key Words ◆ Bodmin Moor ◆ Bronze Age ◆ clitter ◆ landscape ◆ nature/culture

I

If God created the world, Linnaeus was able to claim that *he* ordered it. A distinction between nature and culture is one of the key building blocks of modernist epistemologies and in various ways has been central to anthropology and archaeology. In cultural ecological approaches nature is regarded as determining or shaping and constraining human action requiring an adaptive cultural response. Alternatively, in structuralist and symbolic positions nature may be regarded as a kind of void or a blank slate on which societies, more or less arbitrarily and contingently, impose meaning, order and coherence. The roots of culture may be regarded as residing in nature, or nature is referred to as a cultural construction. Both these approaches accept the nature/culture distinction. The only difference is the relative weight given to one of the terms in the binary opposition. It has, characteristically, been rather easier to make these kinds of blanket statements than to specify and justify what is actually meant by them. The central paradox is that while nature may be the product of a constructional process it is also a precondition for this process to take place at all. In a curious way it is then both present and absent in culture. In this article we address the relationship between 'nature' and 'culture' through considering the human modification of clitter (boulder and rock spreads) below hilltop tors in south-west England through reference to an ongoing research project on Leskernick hill, Bodmin Moor. We first set out a series of geomorphological criteria for distinguishing between 'natural' and humanly modified stones. We then move on to consider archaeological evidence for stone movement and/or placement. Finally we attempt to provide an interpretation of modified clitter masses leading us back to challenge the very nature/culture distinction from which we introduce our analysis. Our argument is that whilst we can acknowledge that the distinction between a stone that has been moved by human agency, and one that has not, is important for interpretation this does *not* necessarily make that stone more, or less, culturally significant. The result is a kind of paradox which can never be resolved: in research and interpretation we both require a distinction between culture and nature *and* need to abolish it!

The problem

Many archaeological investigations and reconstructions in the uplands of south-west England have concentrated on the recognition of cultural overprinting in the landscape. Implicit in these studies has been the

ability to differentiate between culturally affected landscapes and those created by geomorphological processes. However, distinguishing between these may be difficult where the landscape is a hybrid of both or where the evidence is ambivalent. For example, although standing stones are important archaeological phenomena and are easily recognized when they appear in isolation, upright stones in boulder fields may also have a geomorphological explanation. Reconciliation between these possibilities is important if the cultural impact on landscapes is to be correctly assessed and fully interpreted. While archaeologists and geomorphologists have attempted to distinguish between such features on a number of occasions, no guidelines exist to inform this debate and it is the intention of this article to set out some of the criteria by which elements of the landscape may be interpreted. By the very nature of the problem, these cannot be unequivocal.

Clitter

Clitter is a rather evocative Cornish term used to describe extensive boulder and stone spreads which lie downslope of upland tors on the granite hills of the county and the term has been applied to similar deposits in other areas of the world. It is now assumed that they were formed following the large-scale frost-shattering of the tors and the subsequent mass-wasting of the gelifracted material during extensive periglaciation. In the past, however, there has been much debate about the nature of the climatic conditions under which the tors were formed (Linton, 1955, 1964; Palmer, 1967; Palmer and Radley, 1961; Palmer and Nielsen, 1962), although the status of the clitter spreads does not appear to have been questioned. The age of the tors and clitter is problematic. Linton's (1955) two-stage hypothesis of tor formation required the initial deep weathering of granite during sub-tropical (probably Tertiary age) conditions, followed by the stripping of the weathered regolith (termed grus or growan) during periglacial phases. In this view the tors are pre-Quaternary in age, although the clitter developed during repeated cold periods during the Quaternary. The alternative hypothesis to explain tor development was championed by Palmer and co-workers and required a single cycle of periglaciation involving the extensive, large-scale frost-shattering of the tors and the removal of the blocks downslope by mass-wasting processes (mainly solifluction). In the absence of saprolite (deeply weathered in situ rock) on Leskernick hill, the one-cycle hypothesis is accepted as the most likely explanation for the development of the tors on the hill.

Apart from minor microgelivation and chemical weathering of the tors and exposed bedrock masses, it is assumed that large-scale modification of the landscape by periglacial processes ceased at the end of the

last cold period (the younger Dryas: 11,000–10,000 BP). Since then, Holocene geomorphological processes have not modified the clitter or tors to any great extent, although recent peat development and vegetation growth has obscured some areas of the clitter. The prevailing view among geologists, geomorphologists, and most archaeologists, is that the tors and clitter are the products of nature and amenable to geological description and explanation requiring no reference to culture and meaning.

Today people are fascinated with the dramatic and weirdly weathered shapes and sculpted forms of the tors endlessly reproduced in photographic images of Cornwall. They are part of the cultural construction of locality and place. Since the first human use and encounter with the granite uplands of Cornwall we can plausibly infer that the tors had enormous cultural significance as landmarks, orientation points, places invested with stories, myth and meaning (Tilley, 1995, 1996). Nobody made the tors and we can readily acknowledge that they are geological formations which have variously become invested with cultural meaning, an overlay of culture on nature. But what of clitter? Clitter does not carry the same kind of contemporary cultural baggage as the tors. A jumbled pile of stones sometimes resembling the products of a quarry rarely provides a picturesque image. Clitter, unlike tors, never features in postcards or snapshots. Where it does occur this is only by default because it gets in the way of a photograph of the tors. In the conventional wisdom all the clitter masses, like all the tors, are also a product of natural processes. Just as nobody sculpted the tors, nobody piled up and spread out these stones. While people have been interested in the tors because of their inherent aesthetic qualities and dramatic and impressive forms nobody, apart from geologists, has been interested in clitter. Archaeologists have ignored clitter because it has been universally regarded as natural rather than cultural. Clitter, in prehistory, was a useful source of building stone, and nothing more: a natural quarry. Geologists have always regarded clitter as a natural form. That clitter might be humanly transformed, and thus be invested with meaning and value, has never occurred to them previously. It is curious that geologists have described the periglacial weathering processes which form clitter but little work has been done on the cultural modification of clitter spreads.

II

Identifying cultural structures in clitter

In this section we attempt to set out a number of geological criteria for identifying the presence of cultural structures in the clitter. In the

following section we then relate these to the specific case of the clitter on Leskernick hill. From a geological point of view we need to think about how natural unmodified landscapes might appear.

Solifluction

The most common periglacial process affecting frost-susceptible sediments is solifluction. This is a mass-wasting process by which stony material is moved downslope at velocities of the order of 1–7 cm per year. Hillslopes affected by solifluction tend to be concave in form and soil depth may thicken considerably towards the base of the slope. Flow of the top metre or so of material during solifluction is initiated by the freezing of fine-grained wet soils followed by thaw-induced instability leading to mass-wasting. Freezing of the ground draws water to the freezing front allowing ice lenses to develop. This increase in ground volume results in frost heave of the ground. During thawing of the ground the excess water cannot be expelled efficiently from the soil and the consequent stresses are transferred from inter-granular contacts to porewater pressure (Ballantyne and Harris, 1994) with an associated decrease in frictional strength. This means that the water pressure increases until particles are no longer in contact with each other. The process is most effective when the soil is composed of fine sand or silt-sized particles. Finer or coarser materials inhibit the development of ice lenses during freezing and solifluction will not occur in these sediments. The implications of solifluction for the archaeological identification of cultural structures are threefold:

1. The process creates a characteristic macrofabric (spatial arrangement) to the deposit in which elongate stones are aligned with their long-axes (a-axes) in a downslope direction parallel to the direction of the flow vector. Such flows also result in clast imbrication where their long axes dip into the slope whilst maintaining their downslope a-axis macrofabric (see Benedict, 1970, 1976 and Figure 1).
2. Solifluction can only occur in frost-susceptible soils (Harris, 1981). Where the soil matrix is either too fine or too coarse for solifluction to occur, another process must be invoked to explain clast orientations and/or movement. The sandy silty nature of the soils of Leskernick hill, exposed during excavation, are highly likely to be frost-susceptible.
3. Such mass-wasting processes are very old and have not occurred to any significant extent in upland areas of south-west England since the younger Dryas. By implication, a solifluction layer will always be found below a cultural horizon.

Frost heave and clast displacement

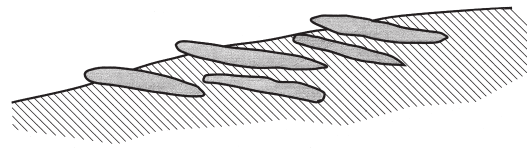


FIGURE 1 Diagram showing side-view of a stony deposit which has undergone solifluction. Note that the clasts are imbricated and dip upslope whilst their long axes are orientated in a downslope direction

In areas where large clasts are abundant (e.g. in clitter fields below tors) frost heaving, frost sorting and clast displacement may have occurred by a variety of processes. The a-axes of elongate clasts may display high dip angles (up to perhaps 80°) as a result of macrogelifraction (large-scale frost shattering) and frost heave and may thus mimic standing or placed stones of a cultural origin. However, for this to occur naturally, several conditions must be satisfied:

1. 'Standing boulders' are unlikely to form in isolation since intense cryostatic pressures are required to elevate the clast and this requires the presence of other large clasts. The depth of burial in soil determines the pressures required to elevate the clast. It follows that shallow burial requires large cryostatic pressures.
2. Although standing boulders may occur on flat and gently sloping ground, they are unlikely to survive rapid mass-movement on very steep slopes (greater than 30–40°).
3. Where they have formed in response to mass-movement pressures they will form a distinct pattern whereby groups of standing boulders will be separated by groups of boulders exhibiting low dip angles. The spatial scale implied here may be of the order of 1–10 m. This pattern is caused by the separation of extensive and compressive flow regimes on slopes and the differing response of elongate clasts to these mechanisms. Compressive flow in a viscous medium tends to occur when flow is retarded (see Hooke, 1998) and is therefore most likely to appear in the downslope edge of topographic hollows. Conversely, extension flow occurs during accelerated flow and therefore may be seen on convex hillslope segments. Such flow much have occurred within a viscous or plastic medium such as fine soil or within an ice matrix. It is not possible for clasts to move on slopes of less than about a 30° angle without such a matrix.

Perched boulders and rockfalls

In many archaeological sites boulders are found perched on top of one another or on the top of bedrock outcrops. In a geomorphological context such arrangements imply three things:

1. The perched blocks have been deposited as a result of rockfalls from bedrock masses upslope
2. They have been deposited by avalanches
3. They are in situ and the result of weathering out of corestones from a larger bedrock mass.

However, rockfalls require the presence of a steep source area for the rock debris (usually a cliff), the slope must be steep and long enough for the debris to gain sufficient kinetic energy to travel horizontally. Although determination of whether a perched block has been emplaced by rockfall is site specific, and therefore can only be achieved in the field, it is clear that perched boulders when they are found on low-angled slopes and at considerable distances from cliff faces or on hillsides with no backing cliff must be cultural relicts.

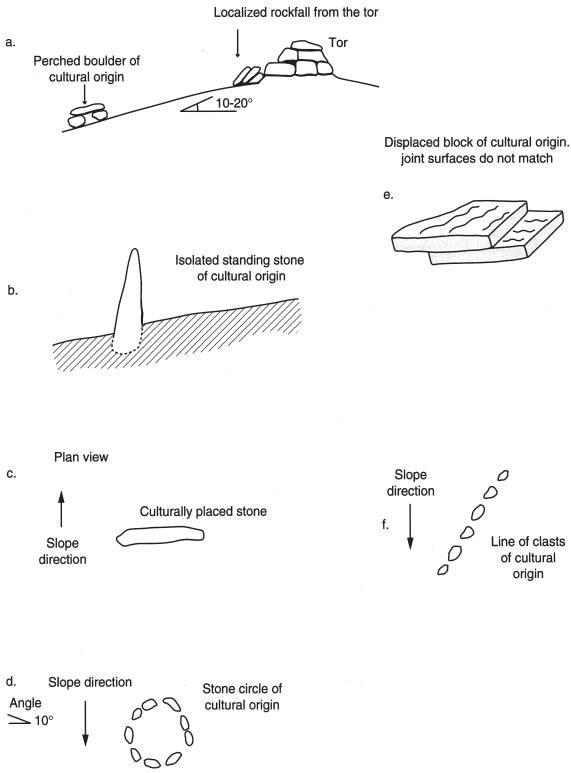
Stone circles and polygons

There are periglacial processes which may form stone circles and polygons. These include frost sorting (without the presence of permafrost) and large-scale frost wedging which implies permafrost development. The former process creates small (less than 1 m in diameter) stone circles in the uplands of Britain in the present day (e.g. Ball and Goodier, 1968, 1970; Ballantyne, 1986) while large-scale permafrost development may create large circles (perhaps up to 5 m in diameter). Hence, large, naturally formed stone circles in the landscape can only be attributed to intense ground freezing, probably during periglacial periods. These have not been found so far in the British Isles. All natural stone circles degrade to form stone stripes on ground sloping more than 5° (see Goudie and Piggott, 1981; Tufnell, 1985). The implications of this are that stone circles are likely to be cultural if (a) they are larger than 1 m or so in diameter and/or (b) they are on sloping ground. Straight lines of clasts may occur on steep ground due to frost sorting, but these lines are generally composed of small debris.

Cultural landscapes (Figure 2)

Elements of a landscape must be considered to be of cultural origin if they include:

a. Perched boulders on gently sloping ground or near hill tops
b. Isolated standing stones or standing stones whose buried portion is only a small proportion of the total length
c. Elongate clasts whose a-axes are at right angles to the dominant flow vector during mass wasting



d. Large-scale circular patterns in stone streams or stone circles on steeply sloping ground
e. Grooves on rocks found on bedrock or other rocks which are not parallel to the bedding planes or where the joint surfaces of the perched block are not aligned with joint surfaces on the resting block
f. Straight lines of large clasts, especially when these are oblique to the slope angle.

FIGURE 2 Distinguishing cultural landscapes on the basis of geomorphological criteria

III

Leskernick Hill (Figures 3 and 4)

Since 1995 we have been conducting a project centred on Leskernick hill on Bodmin Moor in Cornwall. Leskernick is a grey, stony, oval-shaped hill with remnant tors and dense clitter masses largely concentrated on the western slopes of the hill. In and amongst the stones and the clitter there is a late Neolithic/Bronze Age settlement complex consisting of 50 houses and ancillary structures situated on the western and southern slopes of the hill and separated by a corridor. The houses are associated with compounds and field boundaries straddling the lower slopes of the hill. Below the hill on a flat stone-free plateau there is a ceremonial complex consisting of two stone circles, a stone row and large cairn. Another large cairn is situated on the top of the hill, well away and out of sight of the settlement. In and among the enclosures there are numerous small cairns usually no more than 2 m in diameter. These are all obvious cultural

structures and all, apart from the large numbers of cairns that we discovered through surface survey, were previously known to exist.

Leskernick whilst completely lacking major tors and cliffs and with only small areas of exposed bedrock, is, however, an incredibly stony hill appearing in the distance as a distinctive whale-backed grey mass in the landscape of the north-west Bodmin Moor. The clitter masses on the hill take two main forms. Lower down the slopes they consist of linear streams or stripes of material varying between 10 and 20 m in width and up to 100 m or more in length separated by comparatively stone-free areas with peat and turf. Higher up the hill slopes the clitter masses are often denser and more irregular in form, a generalized spread with differential densities of stones rather than a more regular band of material. The clitter masses consist of some extremely large boulders (up to 5 m or more in length and weighing many tons) and many smaller stones with dimensions of 1 m or less. These clitter masses were plotted on the map of Leskernick (on the basis of aerial photographs) by the Royal Commission on the Historical Monuments in England (RCHME) together with the houses and walls. The differential density of the clitter was indicated by stippling and all the individual very large boulders were mapped and are readily discernible by a user of a large scale version of the map in terms of shape (see Figure 4).

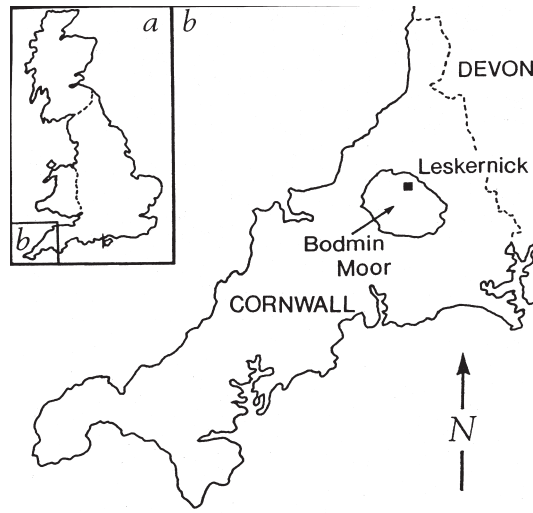


FIGURE 3 The location of Leskernick hill

In the first two years of our surface survey of the hill we ignored the clitter considering it to be entirely natural. We recorded, planned and excavated obvious cultural features: the stone row terminal, houses, walls and cairns instead. It was only in the third year of our research that we started to investigate the clitter. Virtually all the clitter masses on the hill are incorporated within the field boundaries. Having investigated the houses and walls we started surveying the clitter simply because it was *within* the fields and might contain obvious cultural features such as cairns. As a result of our previous work, we had become much more attuned to and engaged with the stones on the hill.

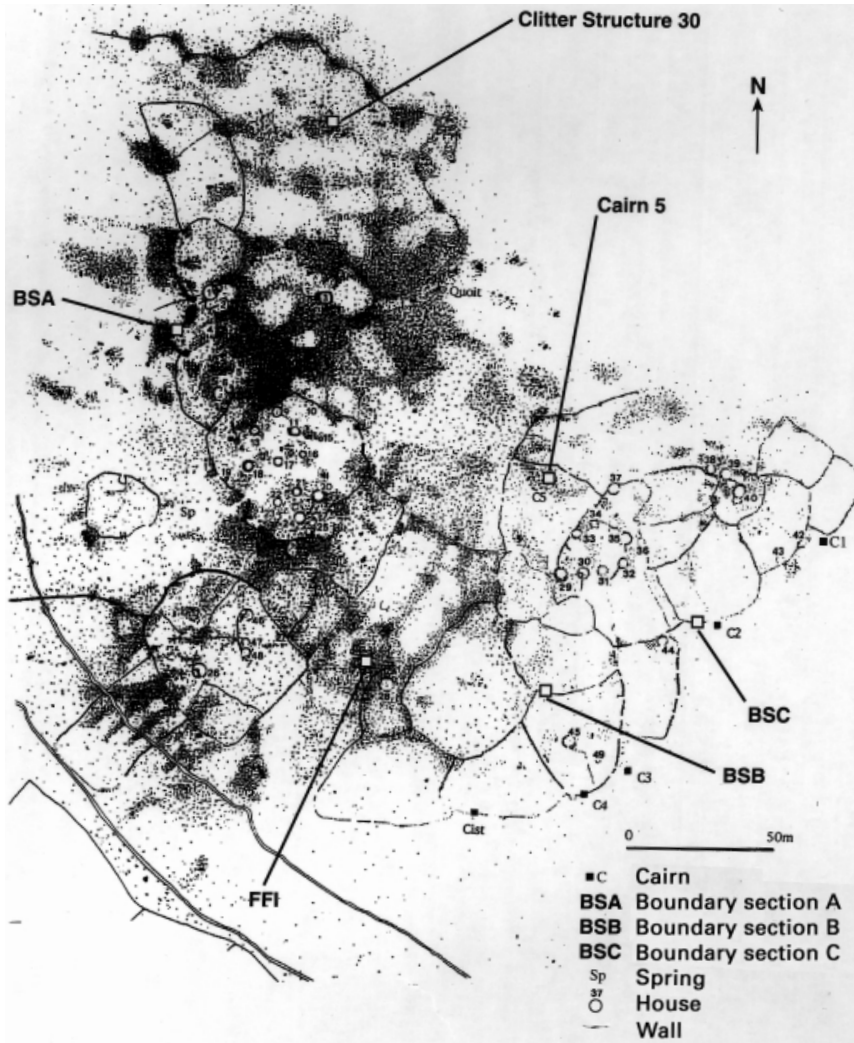


FIGURE 4 Map of Leskernick hill showing houses (numbered), excavation areas and clitter structures referred to in the text

We have noted a series of connections between the de facto cultural constructions and what we had previously regarded as 'natural' stones: large 'grounders' or earthfast stones were incorporated in the houses, the enclosure walls variously ran up to, incorporated, included or linked other large grounders and different clitter masses in a seemingly 'illogical' and 'irrational' fashion. Some large 'natural' boulders appeared to have stones placed around them. Others appeared to have

had stones removed away from them, thus in two very different ways enhancing their presence and significance in the landscape (Bender, Hamilton and Tilley, 1997). Through our survey work we became familiar and intimate with the larger and more impressive stones on the hill. We tentatively identified some as being of especial significance referring to them as 'field shrines': possible offering places and sites of minor ceremonies, part of the rituals of everyday economic and social life. While we were willing to grant such cultural significance to large and impressive stones on the hill, the clitter masses themselves were still regarded by us as natural. We spent a great deal of time searching out for the larger stones on the hill, thinking about their shapes, sizes, positions. Our problem was not whether natural stones on the hill were significant, but which ones and how we could identify them. The clitter merely got in our way as we scrabbled over it or walked around it to reach the larger stones.

It is a curious artefact of our *own* modernity that Bodmin Moor in general, and Leskernick hill in particular, appears to be more 'natural', or in some way 'closer to nature' than the chalk downlands of southern England which are an obvious palimpsest of thousands of years of human activity. In British culture chalk is to granite as the domestic is to the wild. Yet nothing could be further from the truth. The appearance of Leskernick hill today is the result of its fashioning as cultural artefact. Among the remnant tors and clitter masses there are almost 3 km of compound and enclosure walls, some still standing to a height of 1 m and consisting of double orthostat construction with a rubble core. Together with the construction of 50 houses and structures, over 100 large and small cairns, two stone circles and a stone row over 300 m long the amount of stone moved on the hill during the Bronze Age was quite enormous. And we know that these people were capable of moving not just smaller stone blocks but massive stones requiring teams of people, rollers and levers. In this sense, when we look at Leskernick hill we see nothing that might be described as 'natural' or untouched. Stones were cleared from enclosed areas and used to build the houses, walls, cairns and monuments. Stones must have been removed from the clitter masses thus transforming their character. Stones may also have been dumped in clitter masses having been cleared from elsewhere on the hill to create pathways, clearings and fields. So on purely a priori grounds we might have good reason to think that the clitter rather than being left untouched as 'natural' form is as much as the rest of the hill something that has been culturally transformed. Some areas of clitter might, of course, be more transformed than others by the simple process of removing stones for building, or depositing stones getting in the way of human activity. And perhaps some areas were just left untouched.

Culture in the clitter

As soon as we started surveying the clitter masses with as much attention to detail as we had surveyed the walls and houses we started finding structures. During the 1997 field season we identified about 40 clitter structures on the hill. By these we refer to patterned arrangements of stones within clitter stripes or masses as opposed to perched boulders virtually all of which on Leskernick hill are clearly of cultural origin according to the criteria discussed above. We used the following archaeological criteria to identify these structures:

1. Morphology: the structures we identified are generally circular or semi-circular in form. None are perfect geometric forms
2. Size: this varies between 1.5 and 20 m in diameter
3. Overall stone orientation or angle of rest: long axis is vertical or leaning
4. Shape: generally thin 'artificial' looking slabs with regular sides, often rectangular or square in form, and *always* contrasting with the other stones in the clitter
5. Spacing: some degree of regularity in spacing between the stones in the cluster but, as with the shape, this is usually approximate
6. Viewing angle: many of these structures were meant to be seen from below, looking up-slope
7. Stone size: frequently a contrast, or anomaly, is evident between these stones and the surrounding clitter.

Suddenly the clitter masses appeared to us to be no longer amorphous, essentially random masses of natural stones which had moved by themselves but appeared to be an ordered intentional product of human agency. The heaviest concentration of these clitter structures is in the corridor separating the western and southern settlement areas on the hill. The rest are in the western settlement (see Figure 4). There are none in the southern settlement. There is no clitter stream or clitter mass of significant size without such structures although they are differentially concentrated. For the most part they consist of approximately circular or semi-circular rings or arcs of stones situated within the clitter masses. All are small, usually being 5 m or less in diameter. In some cases the stones simply define a 'space' that is entirely cluttered with other stones and the stones defining this 'space', or place, are themselves surrounded by stones. There are no clearings, no openings, no paths, no stone-free areas. In other words we are identifying roughly circular or arc-like patterns of stones within an overall ground or field of stones. In about half the cases the structures encircle a central stone or boulder or radiate out from both ends of a stone or boulder curving down-slope in a semi-circular arrangement. In no cases are we

dealing with perfect geometric forms: the circles and arcs are irregular. These structures are, quite literally, hidden in the clitter and can often only be seen from within the clitter mass or standing immediately outside of it. As soon as one moves a distance of a few metres or alters the tilt of one's head, or the angle of view, these structures are instantly lost and have to be rediscovered.

Scales of engagement

Excavating on Leskernick hill involves learning to practically 'navigate' in this world of stones. Approximately 260 m^2 of the hill have currently been excavated. As archaeologists our understanding of the natural and architectural elements of Leskernick's stony landscape is articulated down to the level of the detailed description, planning, removal and interpretation of individual stones.

There are various scales of engagement. When Leskernick hill comes into view from a distance (from the south side), it immediately appears to be an extremely stony hill. On coming nearer it is possible to distinguish long stony lines, *some* of which are the wall boundaries and divisions running up and down and around the hill. Eventually, one focuses on the *possibility* of circular stone walls belonging to its numerous Bronze Age houses. These images have to be picked out of the clitter. From this outsider's point of view it is possible to formulate the gross patterns of what is humanly constructed, but it is as if one is constructing a map without having to decide, stone by stone, what to put on the map.

Once inside the settlement, the houses are of such a scale that a meaningful wall circuit can be embraced with a single eye view. By contrast, the boundary walls and clitter now begin to shift out of focus because they are on too big a scale for a sense of their directionality to remain constantly in view. Then there are the stony 'cairns', many of which are quite small and discrete, and seemingly merge into the clitter. These prompted a series of questions such as are they burial cairns, or clearance cairns, piles of 'raw material', or clitter agglomerates? The possible origins of clearings and spaces between the stones also became increasingly problematic. Particularly dramatic stones, for example, are visually emphasized by the existence of stone-free surfaces around them. But are these stone-free areas clearings or products of geomorphological processes or a combination of the two? Overall, there is a sense that the particular scale at which the eye focuses on the patterns also alters the accommodation, recognition, and questioning of the commonsense constructs of 'natural' and 'cultural'.

In excavation *each* stone 'demands' a history. We are challenged to classify, describe and make decisions at a series of macro and micro levels as to which stones are humanly placed and which are naturally

FIGURE 5 Clitter structure 30. Camera facing north west
Photo: C. Tilley

in situ. From the perspective of both the geomorphological criteria and the archaeological criteria, discussed earlier, we now consider four very different cases of the ways in which 'culture' and 'nature', humanly placed stones and stones which were not moved, become articulated in a manner which transcends this very distinction.

1: Clitter circles

Clitter structure 30 (see Figure 4) is a large roughly circular arrangement of slabs within a central de-pression in a hollow in a clitter stripe located to the west of some large and impressive grounders (earth-fast clitter blocks). It consists of at least one internal arc of stones 6.5 m in diameter north–south and 3.5 m in diameter west–east with some possible side-set slabs around the northern and eastern sides of the depression defining an area 14 m in diameter north–south and 6 m west–east. More prominent stones that were identified as forming part of the arc, or arcs, were wrapped in cling film and painted white (Figure 5). Closer examination of these wrapped stones revealed that about half of them could be accounted for in terms of solifluction processes. The rest had been moved (almost certainly from the immediate vicinity) so as to enhance a natural pattern.

2: Clitter cairns

Cairn 5, approximately 2.5 m in diameter, was built in a liminal position on the north-western edge of the southern settlement within a discrete concentration of surface clitter (Figure 4). While the RCHME describes it as a kerbed cairn (Johnson and Rose, 1994, Fig. 28), the status of it as cairn became increasingly ambiguous as excavation proceeded (Figure 6). The roughly circular piled 'cairn' stones in fact enclosed a void, subsequently naturally filled with in-washed silt (Figure 6b). The original constructed configuration would have been (i) a ring of elongated stones (Figure 6c: upper course) on top of (ii) a 'base' of smaller, squarer stones (Figure 6d:

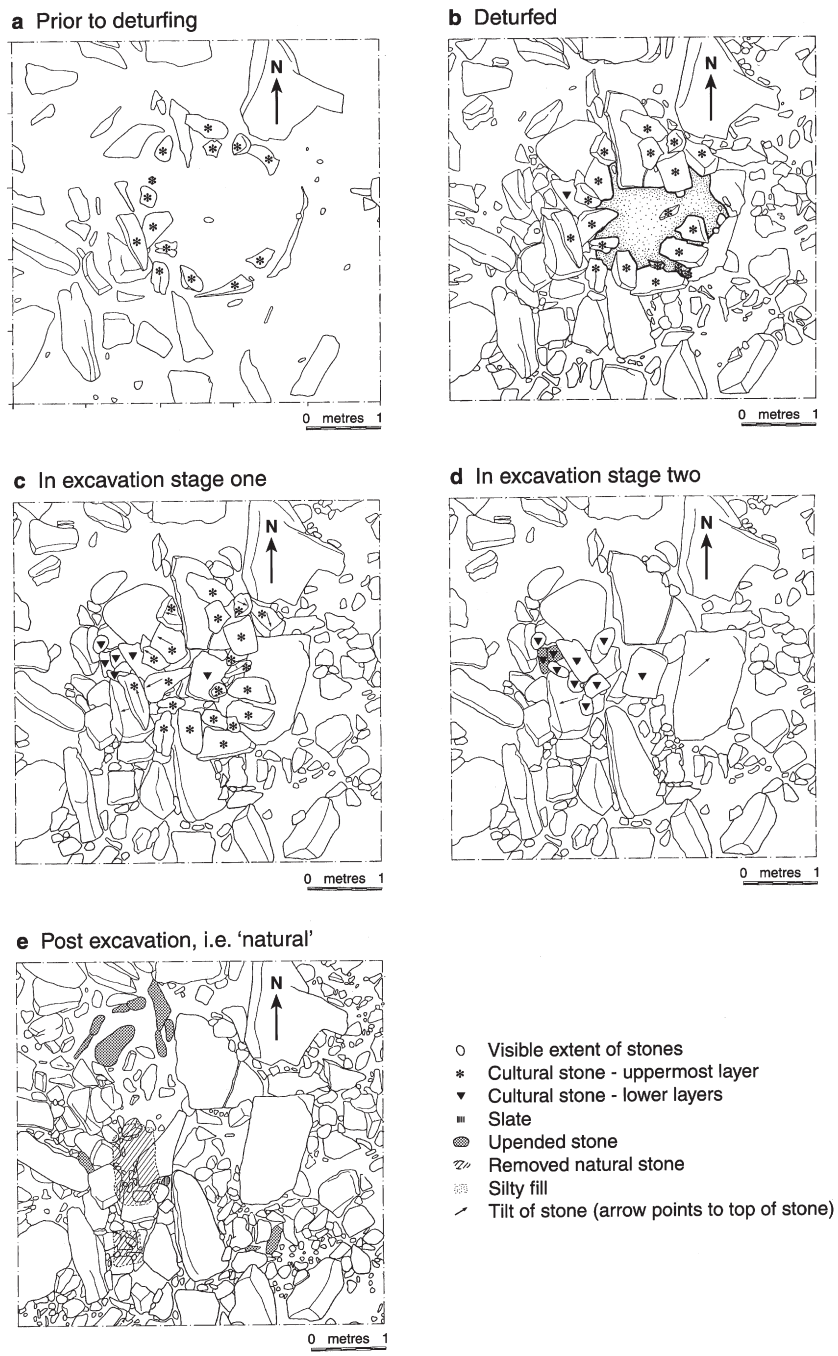


FIGURE 6 Clitter Cairn 5 (C5). 6a–6e: plans of sequential stages of excavation

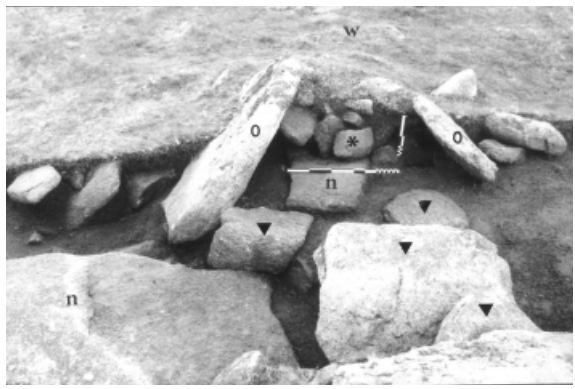


FIGURE 7 Photograph of excavated section across Boundary Section A (BSA). Camera facing north east. The scales are 50 cm and 20 cm long. n = in situ natural boulder; ▼ = stones of coursed wall; * = wall rubble; 0 = wall orthostats; w = line of wall under present-day turf
Photo: J. Stafford-Deitsch

lower course), over (iii) a natural base of elongated clitter stones 'rafted' on a natural surface on overlapping (imbricated clitter cobbles, Figure 6e). There was no central cist or other mortuary evidence. The sole small find was a flat piece of shaped slate (possibly a pot lid) from the clitter surface under the 'cairn' ring. Architecturally, the construction had actively transformed a lobed clitter flow of large boulders into a circular configuration – a vortex which with time and increasing silting and vegetation growth mutated into something that looked like, but was not, a kerbed cairn.

3: Clitter walling

From the results of surface survey it was evident that the enclosure and boundary walls of Leskernick connect together large, apparently natural, boulders and surface clitter concentrations (see Figure 4). No single wall building technique was used, but in each specific case a structural dialogue was apparent between the wall and

FIGURE 8 Photograph of excavated section across Boundary Section B (BSB). Camera facing west. The scale is 20 cm long. n = in situ natural boulder; 0 = wall orthostat; p = rubble packing of wall orthostats
Photo: J. Stafford-Deitsch

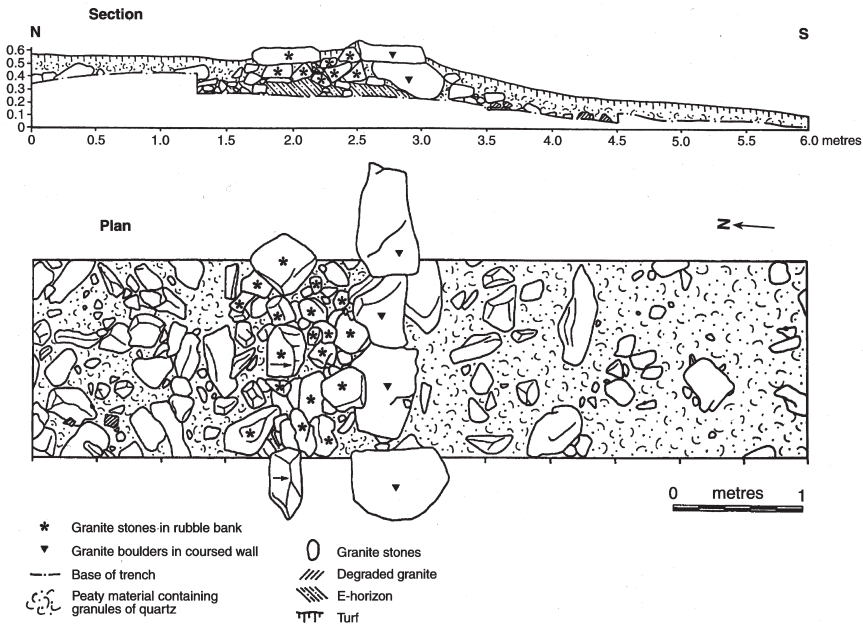


FIGURE 9 Plan and section of Boundary Section C (BSC)

the clitter. Three walls were sectioned by excavation (Figure 4). Two of these walls followed the contours at the downslope limits of surface clitter flows (Figure 4: BSB and BSC). The third wall crossed the contours of the hill (Figure 4: BSA), following a linear clitter flow. Two walls were coursed (Figure 7: BSA, Figure 9: BSC), the wall stones being in horizontal layers, using earth-fast clitter boulders as foundation stones. BSA was additionally faced with orthostats (BSB: Figure 8). The third wall was constructed of orthostats placed vertically in between the earthfast boulders (BSB: Figure 9). While this might be regarded as minimizing construction effort by maximizing the use and characteristics of stable in situ stone, in order to do this the walls persistently follow alignments that cannot be explained in terms of practical, functional or utilitarian considerations (e.g. in the vicinity of BSA, Figure 4). The wall excavations indicate that the hill was even stonier in the Bronze Age. Many of the earthfast boulders incorporated in the walls are hidden markedly below the present turfline. The excavated surfaces around the walls revealed further clitter no longer evident on the modern surface (Figure 9: plan). Thus the inhabitants of Leskernick chose to inhabit, even in their field systems, an extraordinarily dense world of stones, the major axes of which formed the *basis* of their bounded space.

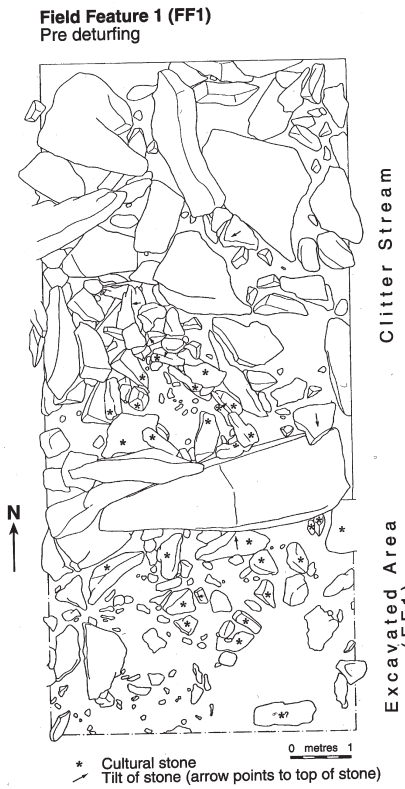


FIGURE 10 Pre-excavation plan of Field Feature 1 (FF1) (Shrine-Stone) and its upslope clitter stream

4: Clitter arenas focusing on and structurally enhancing boulder flow patterns and disruptions

The corridor area between the two Bronze Age settlements of Leskernick has a dramatic clitter stream which jaggedly dominates the surface of the hill (Figure 4). At the surface this jungle of stones is self-supporting and free of vegetation and turf development. The stones in its linear downslope flow become progressively denser and dramatically up-ended as the flow terminates against a massive lozenge-shaped boulder with a stone-free area in front of it (Figure 4: FF1; Figure 12). The geomorphological explanation of the emplacement of this great stone and the dense collection of stones immediately abutting it upslope is that it is a result of the periglacial displacement of boulders and the stresses of compaction against the more massive, less mobile boulders. Even with this knowledge the visual impact remains un-nerving. The great boulder appears to defy nature being 'fixed' half-way up a slope with a stream of massive stones bearing down on it. From down-slope it is a focal point. Its massiveness has forced the clitter flow to bifurcate either side of it creating the present day 'stone-free' turf-covered zone in front of it.

This is the only lozenge-shaped stone of any size on the hill. It also has unusual weathering lines on its downslope face. It must have had some considerable significance to the Bronze Age populations who chose to build a particularly large, isolated and impressive house, with its own enclosure, immediately to the east of it. This is the only house in the liminal space of the corridor separating the two settlement areas. It was evident from surface survey that the natural pattern of the clitter flow had been disrupted by the construction of two circular structures on either side of the stone (see Figure 10).

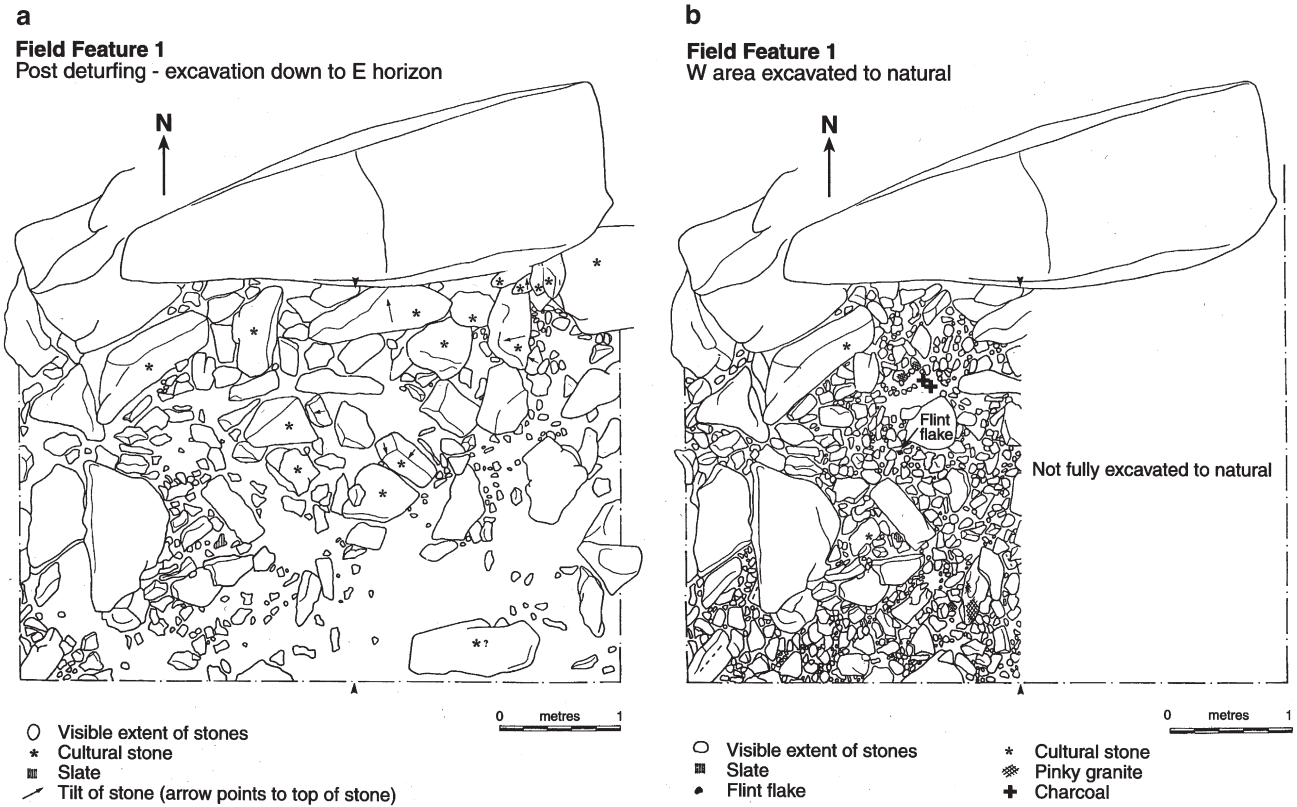


FIGURE 11 Excavated plans of Field Feature 1 (FF1). (a) The 'shrine circle' (stones with asterisks abutting the south side of a massive 'natural' lozenge-shaped boulder ('shrine stone'); (b) the western area subsequently excavated down to the natural imbricated clitter

FIGURE 12 The massive lozenge-shaped boulder ('shrine stone') with the 'shrine circle' in front of it
Photo: J. Stafford-Deitsch

The circular structure which abutted the downslope side of the stone was excavated to reveal a small ring of self-supporting placed stones subsequently filled with in-washed silt (Figure 11a). The structure was resting on a natural surface comprising small cobble-sized imbricated clitter (Figure 11b) which, downslope of the 'ring' has occasional larger boulders 'rafted' on top of it. Under the western edge of this ring structure, and partly within its interior, was a silt and charcoal filled hollow cut through the clitter. A late Neolithic/early Bronze Age flint flake and patches of pinky burnt granite occurred on the clitter surface immediately around the structure (Figure 11b). The ring structure was therefore placed on a land surface which would have provided a stone-free arena with a cobbled effect (dependent on land use) in front of a dramatic clitter backstone. This 'shrine circle', as we named it, structurally uses the large lozenge-shaped stone as a backdrop and it was almost certainly a focal point for the Bronze Age communities of Leskernick.

IV

Towards an interpretation

While it might be claimed that every stone and clitter mass on Leskernick was significant to the prehistoric inhabitants this perspective leads us nowhere archaeologically. Some stones were clearly more important than others and the interpretative problem today is deciding which ones. This is particularly difficult in the case of large unmodified and unenhanced stones not incorporated in any cultural structures. In the case of these stones our criteria for identification can only be subjective: we have a hunch or feeling that they were important because of their size, shape and location along pathways. Our perception of the stones on the hill has become wider and finer, longer, richer and fuller as we have explored the hill. It is borne out of our own practice and engagement with the stones

leading to a growing awareness of their surfaces, angles, layouts, shapes, textures and, increasingly, our own knowledges, expectations and memories of working on the hill. Our perception of a significant stone involves all these facets of our embodied phenomenological experience of them. Perhaps this contemporary experience of the stones meshes with the way the stones were experienced in the Bronze Age. We would not want to make this claim. All that our study can hope to be is one that re-works and re-presents the stones of the past in the present.

Why did people modify the clitter and construct circles within the mass of stones? Irrespective of whether any of the stones discussed in the three examples above have been placed, moved, wedged or propped up by human agency they still form a striking pattern, both recognizable to us and the Bronze Age population of the hill. The identification of circularity is perhaps not surprising given the emphasis on circular forms at Leskernick: post holes and hearths in the houses are circular, the houses are circular, they built stone circles, the cairns are circular, Leskernick hill itself appears to be circular, the hill is ringed with a circle of cairns on the top of other hills surrounding it in the landscape. The circle must have been a basic cosmological template for the ordering of the world and situating humanity within it. The prehistoric architecture and its relationship to landscape is circles within circles within circles. And these circles encompassed relationships between the living and the ancestral dead, the people on Leskernick hill and those living elsewhere on Bodmin Moor. Building circles was a representation and materialization of cosmological ideas.

These people lived in a world of stone and massively modified the stones on their hill and gave these stones meaning and significance. There is clearly a continuum of relationships between people and the stones from the most obviously artificial and cultural of forms to the 'natural': (i) there are the houses, cairns, walls and monuments. All these require the selection, movement and placement of stones for shorter or longer distances. (ii) There are the ambiguous clitter structures: architecture amidst unmodified stone clutter. These simply required selecting particular stones and then changing the angle at which stones rested on the ground rather than physically moving them from one place to another. (iii) There are powerful and significant large stones on the hill which unlike cases (i) and (ii) were neither moved or altered in terms of their angle of rest. Such stones could be (a) incorporated in houses or walls or (b) have smaller stones heaped around or moved away from them or (c) remain unincorporated in architectural structures with the immediate area surrounding them not being enhanced or modified in any way. All the stones on the hill have then differing degrees of artificiality. They are *not* more or less cultural or natural according to whether they were moved or not moved, used to build houses or walls or left

alone on the hill. It is cultural meaning and belief that gives stones social significance which is simultaneously cultural, natural and supernatural.

In the most general sense, building circles for living in and building circles in the clitter are two facets of the same process which, to borrow a term from Appadurai (1996), we refer to as the spatial production of locality. The arrangements of stones on the hill are part of a spatiotemporal technology of localization involving sentiment and feeling, local knowledge and local subjects. Building houses and building clitter structures both objectified local knowledges and formed a fundamental element in the production and reproduction of local subjects, i.e. skilled and knowledgeable agents. The material structures and spaces they created were skilled social accomplishments which acted recursively in the production and reproduction of persons in the production of meaning and value. A sense of locality was being imagined, produced and maintained through moving stones and moving past stones on the hill and through ritual acts in and around them. Through engaging with the stones people 'made' themselves, physically and emotionally creating an attachment to place. An understanding of stones was both integral to their cosmological beliefs and to an understanding of themselves.

Up to this point in the article we have been rather carefully attempting to distinguish between the 'cultural' and the 'natural'. Obviously this seems to be crucial if we want to obtain a detailed understanding of the hill but, paradoxically, it may simultaneously block or inhibit our understanding of the clitter structures that we have identified in the life-worlds of the Bronze Age peoples. When we first saw these structures we worried whether we were seeing shapes that did not exist. In many cases these clitter structures appear today as rather ambiguous forms, in some way half-way between 'nature' and 'culture'. They can only be seen on the ground. What is there, or appears to be there, is often difficult to precisely describe in words. Their presence cannot be adequately represented by a photographic image whether taken from the air or on the ground. Every photograph of the clitter tends to look the same. To an untrained eye the representation just appears to be of a cluttered mass of stones. The same is true of all conventional archaeological plans drawn from a bird's eye perspective. Because neither really differentiates one stone from another they fail to represent what is there. These structures have to be revealed through being transformed and highlighted first. The way we have attempted to show that these clitter structures are there, that they actually exist, is by covering the stones with cling film and painting them as in the first of the four examples discussed earlier (see Figure 5).

We think that these structures were very simple constructions insofar as to make them would simply require levering up some stones in a natural clitter mass to emphasize them and simultaneously to serve to differentiate them from others. It seems unlikely that these stones

were moved any distance from their original positions, say, from one part of the hill to another, or from one clitter mass to another. They were formed, then, by (i) choosing stones of suitable shapes and dimensions; (ii) altering the original angle of rest of these stones (iii) enhancing naturally occurring arc-like or circular patterns in the clitter by adding or removing a block here or there. In some cases it is the case that we are simply recognizing and granting significance to a pre-existing pattern of entirely geological origin.

We can adduce two main reasons to explain the often extreme *ambiguity* of these structures: (i) they defy a conventional distinction between nature and culture which blocks our understanding of them; (ii) the ambiguity was intended, it was part of the original cultural meaning of these places. We will discuss each of these in turn.

Nature and Culture

To regard nature as a social fantasy, a pure projection of social categories which has no influence on the manner in which those categories are formed and understood does not appear to be very helpful. However, it has been pointed out and accepted by most anthropologists and historians that ideas about what nature is supposed to be both vary between cultures and have changed historically in Western thought. The very distinction between the natural and the social world is a product of Enlightenment through which produced and required the 'Othering' of nature (Collingwood, 1945; Williams, 1976; Horigan, 1988; Latour, 1994).

Deconstructing the opposition we can note that it is just one particular *local* way of understanding the world and the place of humanity within that world. As Ellen (1996) points out food, the human body, technologies are both equally *in* nature and *in* culture rather than in one domain, and not another. Furthermore, we know that in many small-scale societies there is no linguistic term that might even be translated as 'nature' or a 'natural environment': and opposed to culture and society (Descola, 1992, 1996; Århem, 1996; Howell, 1996). Humans, and what they produce, are conceived as being part of the world, enveloped within that world rather than being in some way separated and opposed to it. Plants and animals may often be considered as persons living in societies of their own and entering into relations with humans. A continuum exists between humans, plants, animals, ancestors, spirits and substances such as rocks. All these may be endowed with consciousness and a soul. The ethnographic record thus resists the imposition of a nature/culture dualism which cannot simply be projected onto other cultures either in the past or in the present as unproblematic.

The nature/culture distinction is one of a series of classic logocentric oppositions in western thought which at the very moment of its denial

only reconstitutes itself. Ellen has recently addressed the 'problem' of nature and culture in this way: 'culture emerges from nature as the symbolic representation of the latter. As culture is a subclass of nature (the most inclusive class) nature cannot be fully specified using ordinary language, which is a kind of symbolic culture. . . If culture gives meaning to nature, then nature gives meaning to culture (humans adapt), and so on ad infinitum . . . the opposition of nature and culture is therefore a pseudo-problem arising out of reflexive symbolic constructs (ordinary language) within culture itself' (Ellen, 1996: 31). We might perhaps simply resolve the matter by regarding the distinction between nature and culture as being not amenable to a description as true or false. It is just a means of thinking about the world and understanding the lives of people which may be more or less useful in empirical research.

If we are agnostically left with an analytical position of 'no nature, no culture' then in order to understand the relationship between humans and the organic and inorganic world which exists prior to and independently of the symbolic artefact of cultural categorization we need to turn out attention to process rather than concept; the manner in which cultural salience is produced out of the world through the human practice of engagement in and understanding of that world. As Descola (1996) points out a universal feature of all conceptualizations of non-human entities by humans is that this is necessarily predicated by reference to the human domain. In Western thought this leads to a dualistic conception of the universe in which nature becomes negatively defined as that ordered segment of reality which exists independently from human action. In other cultures the model of nature, if such a concept exists, is usually sociocentric: social categories become the template for ordering the environment. The interpretation of these clitter structures perhaps requires us to abandon the opposition of nature to culture in a movement away from a binary to an analogic (or metaphoric) logic (Tilley, 1999).

Nature in culture and culture in nature

What the Bronze Age people made of their hill and how they cognized it depends on how they viewed their relationship with the stones. Their social world was coexistent with the stones which were themselves a foundation for the cosmos. The stones in a basic way grounded and anchored an experience of place. Tied into the walls and houses they added permanence as a stabilizing force. Moving the stones on the hill was part of a process of the objectification of nature through which these stones acquired cultural salience and significance. In view of the ethnographic evidence it seems reasonable to infer that the meanings of the stones were constructed by reference to the human domain. The attribution of life and a soul to inanimate objects, most commonly through

anthropomorphism, is a basic part of human conceptualizations of the world in most small-scale societies. In animic systems of thought natural beings are endowed with human qualities: boundaries between nature and culture collapse, becoming thoroughly ambiguous. The non-human world is thought of in the same manner as the human world. Continuity between culture and nature is asserted. Social categories are used to construct models of nature. We believe that the people of Leskernick hill regarded the stones as animate sentient beings, the opposite of a modernist belief system in which the stones are simply regarded as inanimate objects to be exploited at will. As animate beings the stones would be regarded as subjects rather than objects. They would possess a personality, an essence, a spiritual and moral power. The stones would almost certainly have had ancestral significance either as physical embodiments of a generalized ancestral spiritual essence or in terms of individual ancestors and events and stories connected with them. The stones contained forces exogenous to human will but forces that could nonetheless be pacified, tapped and controlled. The stones as subjects possessing internal essences would require respect and reverence. They could have a protective function guarding the population of the hill and be potential sources of evil and danger. People would be intensely aware that through moving the stones and altering their configurations to create houses, walls etc. they were doing violence to their hill, a violence necessary for life and sustenance. There were morally right and wrong ways to engage with the stones. Altering the clitter, simply modifying it, could in this light be viewed as an act of atonement. In altering the clitter people were merely *materializing its own essence*, i.e. displaying the properties, powers, potentials it contained within itself and displaying the vital energies and forces residing in the stones. People were merely revealing a cosmic patterning and order inherent within the clitter. They were then not so much making the circles as drawing them out from amongst the stones: revealing a cosmic patterning, the circle, and a transcendent order lying beneath surface appearances – a jumbled chaos of stone.

In the cosmological circle of the Bronze Age we can easily surmise a regenerative connection between life and death. Stones represented permanence. In this stone world people were born amongst the stones and, on death, returned to the stones. Ancestors were stone-faced. The stone circles below Leskernick hill were places for the ceremonies of the living, places around and through which one could move. By contrast the stone circles in the clitter could not be moved through or used by the living: they were circles for the ancestors: spirit circles. We regard it as plausible to suggest that large impressive stones on the hill possessed individual names and had a specific significance. By contrast the stones within the clitter masses had a more generalized cultural importance. Large stones might be embodiments of particular ancestors or spirits.

The mass of stones within the clitter masses could not have had individual names (there are far too many of them for that) but would connote a more generalized spiritual and ancestral power materialized through the clitter constructions.

The stones on Leskernick are differentially visible. Leskernick is entirely different when seen from a *fixed* point (e.g. a house doorway) or from a *mobile* field of vision, a path of observation, lacking fixed points. So far in our research, while we have investigated the former we have neglected the latter. And we need to experiment with moving from one place to another. Leskernick is a topologically ordered network of houses and enclosures and places each marked by physical features with paths connecting them. To perceive is to be differentially aware of the stone surfaces of the hill. An interchange between hidden and unhidden surfaces and structures is an essential part of this awareness. The fact that structures and stones come into view and out of view as one moves around the hill and are visible for long distances or hidden, like the clitter structures, except when one is very close up to them is part of their meaning and the way in which they fit into the hill. The clitter structures are, in contrast to the houses and walls, both present and absent, of this world and of another world. Compared with a house they appear like shadows or spirits: through their ambiguity they thus internally refer to the very cosmological domain that they represent.

Conclusion

When one first starts to look hard at clitter the eyes hurt, the stones begin to swirl like looking at an Escher print. A pattern is no sooner seen than it is lost, the stones appear to be an ever-changing kaleidoscope of forms. Such effects would be ideal in inducing trace-like states so important in shamanistic experiences and their capacity to mediate between this and other worlds. On Leskernick hill it therefore appears to be of great significance that the majority of the clitter structures we have identified are non-randomly concentrated in the vicinity of the large isolated houses 3 and 28 (see Figure 4) located, when compared with the others, in liminal positions amongst the densest areas of clitter on the hill. Clitter structures of the type that we have been describing are not unique to Leskernick hill. We have recently begun to identify them elsewhere on Bodmin Moor. It is possible that they may be found in granite areas throughout the south-west of England and beyond.

Acknowledgements

The excavation trench supervisors were as follows: Field Feature 1 (Shrinestone): Nick Beaudry with Fay Stevens; enclosure wall sections: Gary Robinson; Cairn 5: Helen Wickstead. The excavations were funded by the British Academy.

The archaeological field planning was done by Sharon Adrit and Justin Russell. The publication plans and sections were drawn by Jane Russell. The Leskernick project which has run since 1995 is directed by Barbara Bender, Sue Hamilton and Christopher Tilley.

References

Appadurai, A. (1996) 'The Production of Locality' in A. Appadurai *Modernity at Large*. Minneapolis: University of Minnesota Press.

Århem, K. (1996) 'The Cosmic Food Web: Human-Nature Relatedness in the Northwest Amazon', in P. Descola and G. Palsson (eds) *Nature and Society: Anthropological Perspectives*. London: Routledge.

Ball, D. and Goodier, R. (1968) 'Large Sorted Stone Stripes in the Rhinog Mountains, North Wales', *Geografisker Annaler* 50A: 54–9.

Ball, D. and Goodier, R. (1970) 'Morphology and Distribution of Features Resulting from Frost Action in Snowdonia', *Field Studies* 3: 193–217.

Ballantyne, C. (1986) 'Nonsorted Patterned Ground on Mountains in the Northern Highlands of Scotland', *Biuletyn Peryglacjalny* 30: 15–34.

Ballantyne, C. and Harris, C. (1994) *The Periglaciation of Britain*. Cambridge: Cambridge University Press.

Bender, B., Hamilton, S. and Tilley, C. (1997) 'Leskernick: Stone Worlds, Nested Landscapes, Alternative Narratives', *Proceedings of the Prehistoric Society* 63: 147–78.

Benedict, J. (1970) 'Downslope Soil Movement in a Colorado Alpine Region: Rates, Processes and Climatic Significance', *Arctic and Alpine Research* 2: 165–226.

Benedict, J. (1976) 'Frost Creep and Gelifluction Features: a Review', *Quaternary Research* 6: 55–76.

Collingwood, R. (1945) *The Idea of Nature*. Oxford: Clarendon Press.

Descola, P. (1992) 'Societies of Nature and the Nature of Society', in A. Kuper (ed.) *Conceptualising Society*. London: Routledge.

Descola, P. (1996) 'Constructing Natures: Symbolic Ecology and Social Practice', in P. Descola and G. Palsson (eds) *Nature and Society: Anthropological Perspectives*. London: Routledge.

Ellen, R. (1996) 'Introduction' in R. Ellen and K. Fukui (eds) *Redefining Nature*. Oxford: Berg.

Goudie, A. and Piggott, N. (1981) 'Quartzite Tors, Stone Stripes and Slopes at Stiperstones, Shropshire, England', *Biuletyn Peryglacjalny* 28: 47–56.

Harris, C. (1981) *Periglacial Mass Wasting: A Review of Research*. Norwich: GeoAbstracts.

Hooke, R. (1998) *Principles of Glacier Mechanics*. New Jersey: Prentice Hall.

Horigan, S. (1988) *Nature and Culture in Western Discourses*. London: Routledge.

Howell, S. (1996) 'Nature in Culture or Culture in Nature? Chewong Ideas of "Humans" and Other Species', in P. Descola and G. Palsson (eds) *Nature and Society: Anthropological Perspectives*. London: Routledge.

Johnson, N. and Rose, P. (1994) *Bodmin Moor. An Archaeological Survey. Volume 1: The Human Landscape to* c. *1800*. London: English Heritage Archaeological Report Number 24.

Latour, B. (1994) *We Have Never Been Modern*. Cambridge, MA: Harvard University Press.

Linton, D. (1955) 'The Problem of Tors', *Geographical Journal* 121: 470–87.

Linton, D. (1964) 'The Origin for the Pennine Tors: an Essay in Analysis', *Zeitschrift für Geomorphologie* 8: 5–23.

Palmer, J. (1967) 'Landforms', in M. Beresford and G. Jones (eds) *Leeds and its Region*, pp. 16–29. British Association for the Advancement of Science.
Palmer, J. and Radley, J. (1961) 'Gritstone Tors of the English Pennines', *Zeitschrift für Geomorphologie* 5: 37–52.
Palmer, J. and Neilsen, R. (1962) 'The Origin of Granite Tors on Dartmoor, Devonshire', *Proceedings of the Yorkshire Geological Society* 33: 315–39.
Tilley, C. (1995) 'Rocks as Resources: Landscapes and Power', *Cornish Archaeology* 34: 5–57.
Tilley, C. (1996) 'The Power of Rocks: Topography and Monument Construction on Bodmin Moor', *World Archaeology* 28(2): 161–76.
Tilley, C. (1999) *Metaphor and Material Culture*. Oxford: Blackwell.
Tufnell, L. (1985) 'Periglacial Landforms in the Cross Fell-Knock Area of the North Pennines', in J. Boardman (ed.) *Field Guide to the Periglacial Landforms of Northern England*. Cambridge: Quaternary Research Association.
Williams, R. (1976) *Keywords*. London: Fontana.

◆ This research is based on our joint work on the Leskernick project together with Barbara Bender.

◆ **CHRISTOPHER TILLEY** is Professor of Material Culture in the Department of Anthropology and Institute of Archaeology, University College London. Recent publications include *Metaphor and Material Culture* (Oxford: Blackwell, 1999) and *An Ethnography of the Neolithic* (Cambridge: Cambridge University Press, 1996). *Address*: Department of Anthropology, University College London, Gower Street, London WC1E 6BT, UK.

◆ **SUE HAMILTON** is Lecturer in European Prehistory at the Institute of Archaeology, University College London. She is currently directing field projects on Iron Age sites in Southern Britain and France (Burgundy) and has published extensively on later prehistoric ceramics. *Address*: Institute of Archaeology, University College London, 31–34 Gordon Square, London WC1H 0PY, UK.

◆ **STEPHAN HARRISON** lectures in geology at Coventry University. He is a cold-climate geomorphologist with research interests in arctic and alpine environments. *Address*: Centre for Quaternary Science, Coventry University, Priory Street, Coventry CV1 5FB, UK.

◆ **ED ANDERSON** has just completed a PhD on Holocene environmental change in the Macgillcuddy's Reeks, south-west Ireland. Other research interests include late-glacial landform evolution and contemporary periglacial activity. *Address*: Flood Hazard Research Centre, Middlesex University, Queensway, Enfield EN3 4SF, UK.