Putting Rock Art to Use

A Model of Early Neolithic Transhumance in North Northumberland

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Abstract

The intentions of this paper are to: 1) demonstrate how rock art can be usefully studied and incorporated into the wider arena of archaeological studies and interpretations, and 2) provide an original and explicit interpretation of early Neolithic activity in the Milfield Basin, north Northumberland based on a re-evaluation of the available evidence, and describe ways in which the conclusions can be tested. The 'inscribed grazing area' is the name given to discrete areas of upland which contain distinct clusterings of cup and ring marked outcrop rocks. These areas of fell are defined almost continuously around their sides by water channels, which form both a physical and symbolic delineation of these parts of the landscape. These 'fluvially defined' areas are thought to function as a naturally occurring stock grazing area where the herds of a local community could graze and forage until they were driven down on to the adjacent plain for such times as calving, consumption and over-wintering, possibly on a similar basis as the medieval commons. Calibrated radiocarbon dates are given as years BC/BP and uncalibrated radiocarbon dates as years bc/bp. As a frame of reference; the early Neolithic in this area is considered as the period approximating to 4000 to 2500BC, the late Neolithic as the period 2500 to 2000BC and the early Bronze Age as the period 2000 to 1400BC.

Introduction

In the beginning there was rock art (the cup and ring tradition in this case), a phenomenon which has captivated and teased many an observer. As this study gathered pace it was realized that if rock art studies were to advance, and therefore be taken more seriously by prehistorians, a detailed case study of an area rich in rock carvings would have to be made in relation to; 1) a known environmental context, 2) the detailed archaeological context of that area and, 3) any available external information such as ethnographic data. With these objectives in mind a case study area was selected that would allow for such a study to be undertaken. The local area that lent itself most aptly to these research ambitions was the Milfield Basin in north Northumberland (fig.1). The Milfield satisfied the research criteria on the grounds that; 1) it contained a wealth of known Neolithic archaeology (relative to other areas of north-east England), 2) a significant amount of archaeological survey and excavation had already been conducted there which has provided a series of C14 dates (eg. Harding 1981; Burgess 1984; Miket 1987), as well as there being plenty of opportunity for further work, and 3) environmental work has been carried out there providing a detailed record of soil types (Payton 1980, 1988, 1992), valley sediments and pollen cores (Tipping 1992 and this volume; Clapperton, Durno and Squires 1971; Borek 1975). This approach to cup and ring studies should be considered as a 'depth' approach, in the sense that the cup and ring tradition in a particular area has been investigated in detail and in relation to the specific archaeological and environmental context of that area. This is in contrast to the more general but potentially complimentary 'breadth' approach which views the rock art tradition from a more macro perspective across time and space, and is aimed at identifying broad patterns within the rock art traditions themselves and between rock art and other broad contexts such as landscape setting, pottery decoration etc.

The model presented is not intended particularly as an explanatory account but more as a descriptive model at this stage. The aim of this model is to describe the pattern of Neolithic land-use in a transitional upland-lowland zone of northern England.

Background to the Milfield Basin

The Milfield Basin comprises three main elements; a low lying central plain, a sandstone escarpment which skirts around the plain from north-east to south-east, and the Cheviot Hills which dominate the southern and western periphery of the plain (fig. 1). The main river channel which runs through the plain from the south-east to north-west is the river Till which joins the Tweed 3.5 miles north-west of Etal gorge, the point where it leaves the plain. The Till meanders extensively and is prone to

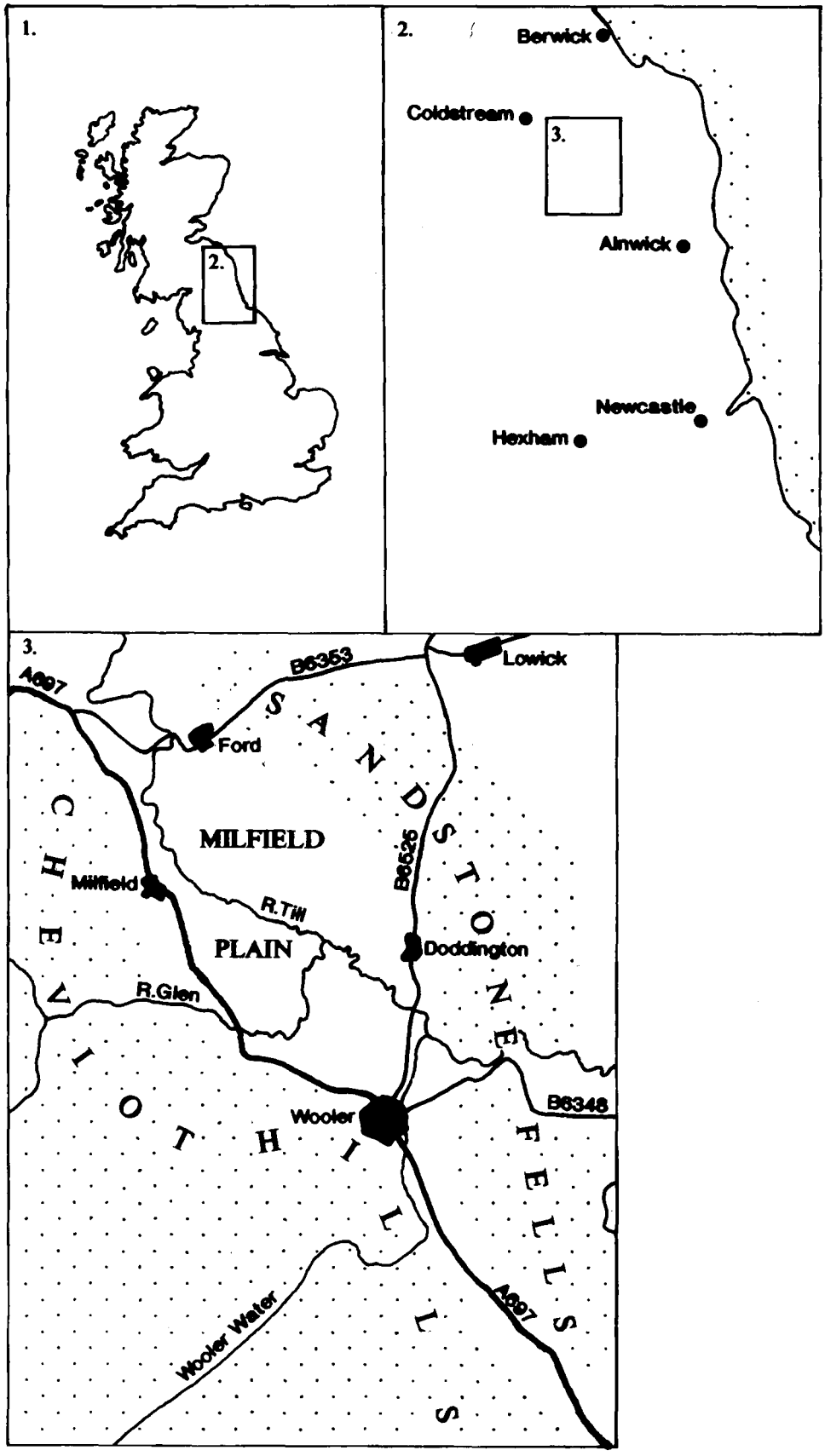


Fig. 1. Location map of the Milfield Basin study area.

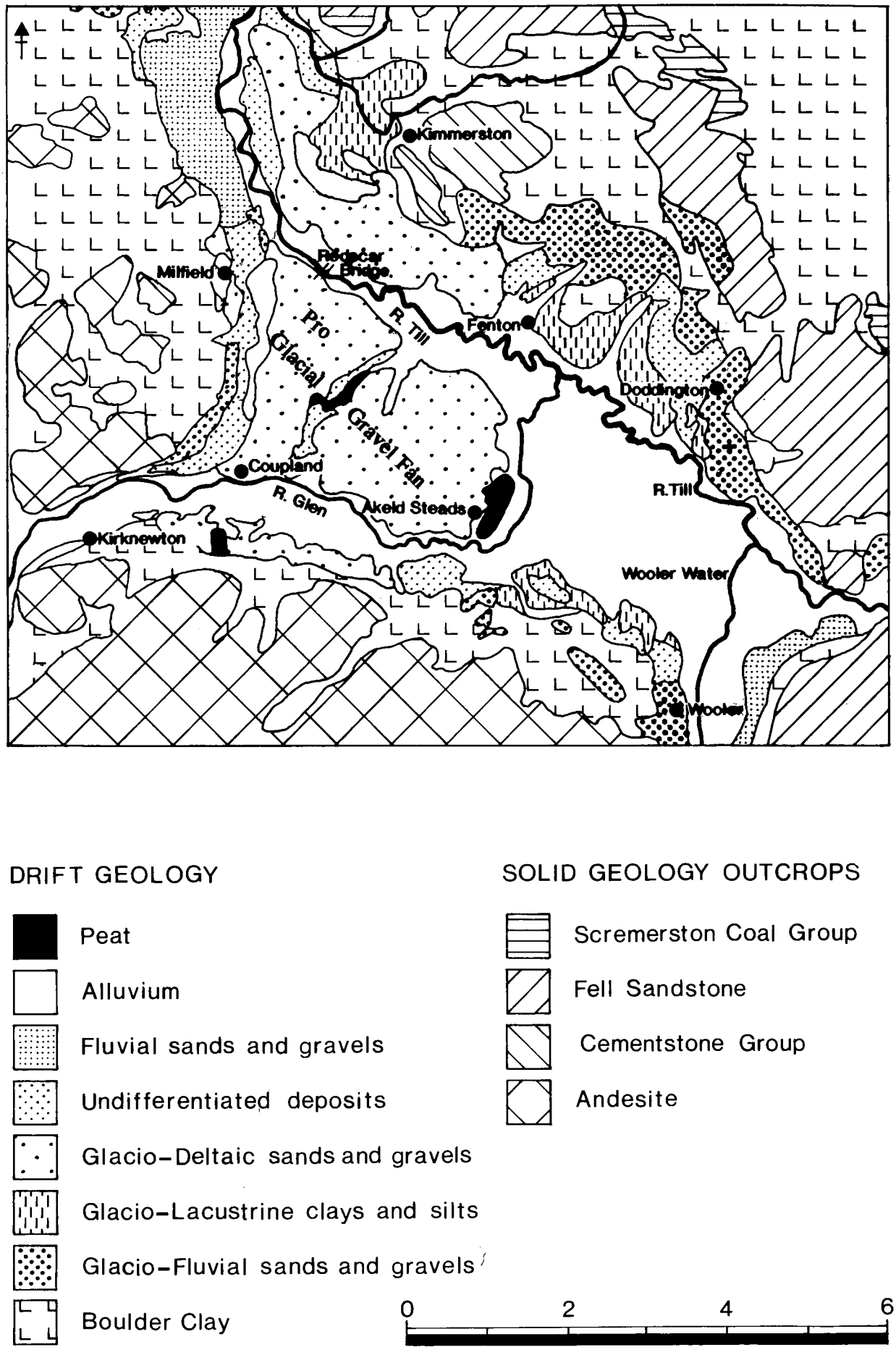


Fig. 2. Geological sketch map of the Milfield Basin.

severe winter and spring flooding (Gibson 1986, 93). The river Glen, which occupies a glacial valley, drains the north slopes of the Cheviots before it flows into the Milfield plain and joins the Till from the west. The Wooler Water, also occupying a glaciated valley, drains the north-eastern slopes of the Cheviot massif and enters the Milfield plain through the narrow gap at Wooler. The sandstone fells to the east are drained by a series of water courses smaller than their Cheviot counterparts due to less rainfall at the lower altitude and a less dense surface drainage pattern. Broomridgedean Burn drains the north-east slopes surrounding the Milfield plain, and Doddington Dean the south-east slopes.

The Milfield Plain. The low lying fertile plain is for the most part below 50m O.D. containing large tracts of level land. Breaks in elevation on this level land are apparent due to the occurrence of late-glacial and Holocene terraces which surround the flood plain giving it a stepped profile. These terraces are attractive for settlement as can be demonstrated by the distribution of the present pattern of settlements with Milfield, Coupland, Wooler, Doddington and Fenton all located on them (fig. 2). Most of the soils on the terraces are affected by a fluctuating water level, and this may have affected the appeal of the soils to early Neolithic communities. A key geomorphological feature of the Milfield plain is the glacial outwash fan, or delta, which spreads out from the mouth of the Glen valley as a raised terrace, deposited when the last ice sheet retreated c.10,000BP (fig.2). The plain is approximately triangular in shape and extends over an area of about 50 square km. The solid geology of the plain is cementstone which has been covered since the retreat of the last ice sheets by deposits which include glacial till, and glacio-fluvial outwash sands and gravels which form the terraces above the valley floor proper. This aggraded valley floor has been incised by the rivers Till and Glen throughout the Holocene, which in turn have deposited a significant thickness of alluvium over the flood plain, measuring at least 4.0m deep to the east of Redscar Bridge [1]. There is a wide variety of soil types over the plain mirroring the complex drift deposit parent materials, which in turn give rise to wide variation in agricultural capability (fig. 3). The dominant soils of the gravel terraces are varieties of brown earths and brown sands, some with fragipans (very compact layers, though uncemented in contrast to iron pans) and argillic horizons (Payton 1980, 20-21). The dominant soils on the clay-silt valley floor are pelo-stagnogley soils which suffer from compaction, structural deterioration and poor drainage, being used mostly for grassland today (Payton 1980, 24). The soils that have developed on the post-glacial medium textured alluvial deposits of the valley floor account for approximately half the soils of the Milfield plain. There is a marked contrast in the agricultural potential of these soils with the brown alluvial soils being traditionally used for grass, though more recently, through large scale drainage and application of fertiliser, they have been used successfully for cereal cultivation (Payton 1980). Organic-rich fine sediments (probably a buried soil or old channel fill sediment) were located below the alluvial soils to the east of Redscar Bridge by coring as part of a geoarchaeological field exercise by the Department of Geography, University of Newcastle Upon Tyne, in collaboration with the authors Milfield reasearch. This probable palaeosol measured 0.75m in depth and was located 4.0m below the present ground surface (Passmore D, pers comm.), which appears to have been relatively stable since the medieval period as clear traces of broad ridge and furrow, 9.5m wide, cover the surface. The presence of this possible buried soil has important implications for the presevation of buried archaeological surfaces in these flood plain deposits (see also Tipping this volume). This part of the immediate flood plain is now used for sheep pasture.

The Cheviot Hills. The Cheviot hills rise very sharply from the Milfield plain on the south and west sides. These distinctive round or flat topped hills extend over 250 square miles. The valleys are generally deep and steep sided with broad areas of plateau between. This igneous massif is composed of andesite surrounding a central granitic core which forms the highest point, The Cheviot, at 815m OD. Outcropping bedrock is rare, occurring only occasionally as crags on the valley sides. Thin skeletal and acidic soils with limited agricultural potential are found on the steep slopes, whereas on the gentle slopes and areas of low plateau, deeper free draining typical brown earths overlying andesitic drift occur, which are favourable for agriculture including cereal cultivation (fig.4). Tracts of high quality brown earths on the low plateau and gentle slopes such as at Whitton Hill, Flodden, Pace Hill and Marden, are soils well suited to early agriculture. Podzols occur at higher altitudes where conditions are cooler and wetter and the leaching is more advanced producing poor nutrient deficient soils (Payton 1980, 31).

The Sandstone Escarpment. The Fell Sandstone uplands form a sweeping, almost continuous, escarpment to the north and east of the Milfield plain (fig.2). The scarp slopes face west onto the plain with the dip slopes tailing out to the east. The escarpment averages a height of 150m OD, with the highest point at 200m on Dod Law. Glacial scouring has left the scarp slopes more pronounced and outcropping bedrock horizontal with the ground surface is common on higher parts of the dip slope. It is on these areas, and these areas alone, that cup abd ring marks on outcrop rock occur in the Milfield Basin. The Fell Sandstones produce acid soils which are generally poor in terms of their agricultural potential (fig.3). Where the sandstone lies at a shallow depth, particularly on the upper slopes and hilltop locations, highly acidic podzolic rankers occur (Payton 1980, 32). This land is currently left as open moorland with its vegetation cover dominated by heather and bracken. Where glacial till overlies large areas of the dip slope the relatively poor stagnogley soils are used for grazing. Thick sandy colluvial deposits, probably of post Neolithic formation [2], occur at the base of the scarp slope in a narrow band adjacent to the Milfield plain, which give rise to brown sand soils, well suited to permanent pasture (*ibid*). During the Neolithic, the soils

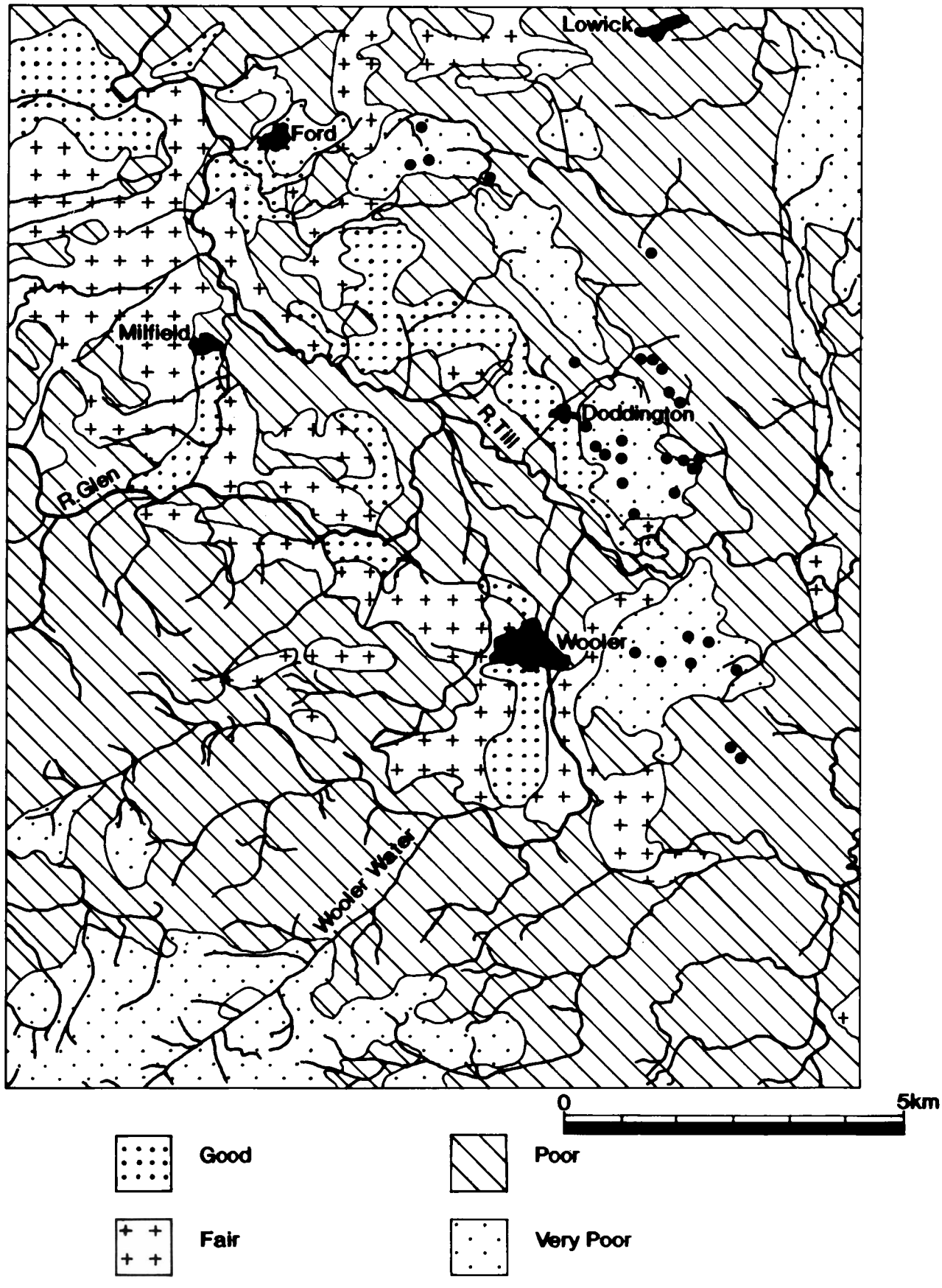


Fig. 3. Map showing the agricultural potential of land in the Milfield Basin and the location of cup and ring marks on outcrop rock (the land classification is derived from the soil survey by Payton, 1981 and 1987).

of the sandstones would have offered little if any scope for agricultural exploitation, with animal browsing among the forested slopes the most probable subsistence application.

Throughout the Holocene the rivers Till and Glen have incised the pro-glacial sediments on the plain and medium textured alluvium has been deposited on the valley floor during flood episodes (Payton 1988). The cause of these aggradation events is a key question that has been addressed by Tipping (1992; also this volume) for a number of the Cheviot valleys. The link between phases of clearance and flooding, as evidenced in the valley sediments (cf.Tipping 1992), has important implications for the dating and intensity of prehistoric clearance in the uplands.

Vegetational History. The vegetational history of the Milfield Basin may at first appear well documented. However, there has been a bias for work to be concentrated in the Cheviot hills rather than elsewhere in the catchment. There is a pressing need for a sequence of datable pollen cores from the Milfield valley floor as well as from the sandstone escarpments which have received even less attention.

The presence of early Neolithic activity in the Milfield Basin is attested in most of the dated pollen diagrams now available for this area (Tipping 1992; also this volume). The evidence for the Cheviot area of the Milfield Basin consists of diagrams from Sourhope, Swindon Hill and Yetholm loch in the Bowmont Valley and one from the Wooler Water. The Sourhope diagram contains evidence of early Neolithic pastoral activity together with a single possible cereal grain dated to 3325BC (Tipping this volume). The diagram from the Wooler Water also contains evidence for woodland clearance taking place in the fourth millenium BC (*ibid*). At Din Moss, a pollen site a few kilometres north of the Cheviots, cereal type pollen grains are recorded around the period 3900BC (*ibid*). Evidence for woodland disturbance and cereal cultivation, which included barley and probably wheat, in the period from 2800BC onwards has come from the Swindon Hill diagram (*ibid*). The only dated pollen evidence available for the Milfield plain consists of the core from Akeld Steads. Here there is evidence for clearance for crops between 4000 and 3000BC (*ibid*). The nearest pollen core to the Milfield Basin from the Fellsandstones, Camp Hill Moss, shows that this site was surrounded by woodland between the elm decline and c.1800BC (Tipping 1992, 118).

In summary, the pollen evidence for the early Neolithic testifies to occupation of the plain and Cheviot slopes, with small scale agriculture and clearance taking place in these areas. The Fellsandstones remain largely wooded as do the parts of the Cheviots not opened up for small scale cultivation or settlement. In contrast the late Neolithic witnesses a significant departure in terms of the scale of human intervention/exploitation of the landscape. The first major human impact on the Cheviot uplands in terms of mass clearance took place in the late Neolithic (Tipping 1992, 119; Tipping 1994, 80) c.2500-2000BC, and is recognised at the C14 dated pollen sites at Powburn, Halter Burn, Wooler Water, Swindon Hill and Sourhope (Tipping 1992, 119).

Archaeological Data. This intensification of land-use in the late Neolithic is also supported by archaeological evidence in the form of extensive pit alignments, recognised from aerial photographs, which occur in the Milfield plain (fig.5). Separate excavations by Miket and Harding (Miket 1981 and Harding 1981) established these features as late Neolithic on the basis of diagnostic late Neolithic pottery in the case of the former and C14 dates of 1790 +/- 50bc, 1820 +/- 50bc and 1655 +/- 80bc in the case of the latter. The Ewart 1 pit alignment, excavated by Miket, was thought to have held deeply set posts with diameters of 0.65m possibly with some form of infill in the 2.4m between each post (Miket 1981, 143-5). Although these boundaries across the plain may have had a symbolic or ritual function, their regularity and grid-like pattern as seen at the Ewart, Milfield Palace and Redscar Wood complexes (Miket 1987; fig.5) are more suggestive of substantial land divisions for farming purposes such as for segregating off areas of hey meadow for example. Whether the boundaries took the form of fences or hedges, the important point is that if these boundaries are accepted as being 'field' boundaries then they represent an intensification of production over the valley floor in the late Neolithic period, indicating a shift towards large-scale intensive land exploitation in the plain. During excavations at Thirlings, a settlement site in the centre of the plain, a quernstone, grains of 6-row barley, oats and small vetches associated with arable land were recovered from the late Neolithic contexts (Miket 1987) further demonstrating the presence of an agricultural input into the local economy during this period. In essence, what is evident is an intensification and expansion of arable and pastoral farming during the late Neolithic. These changes in the scale of the food production system occur in conjunction with a new system of land division, as evidenced by the pit alignments, and an abundance of new ritual monuments including henges, standing stones and stone circles. As can be seen from the discussion above, the evidence for this switch in the pattern of land-use in the late Neolithic is particularly strong as both the environmental and archaeological evidence support this view independently of each other. As the time-scale for the clearance events registered in the environmental record are so close in C14 terms (*cf.* Tipping 1992), and the same is true for the cluster of C14 dates from the dated late neolithic features in the Milfield Plain (*cf.* Harding 1981), this expansion and intensification of farming activity, both in terms of arable and pastoral production, should be considered as a relatively sudden and radical event in historical terms. This has implications for the timing and scale of the shift to fully sedentary farming communities and the re-organisation of the landscape and human relationships with it.

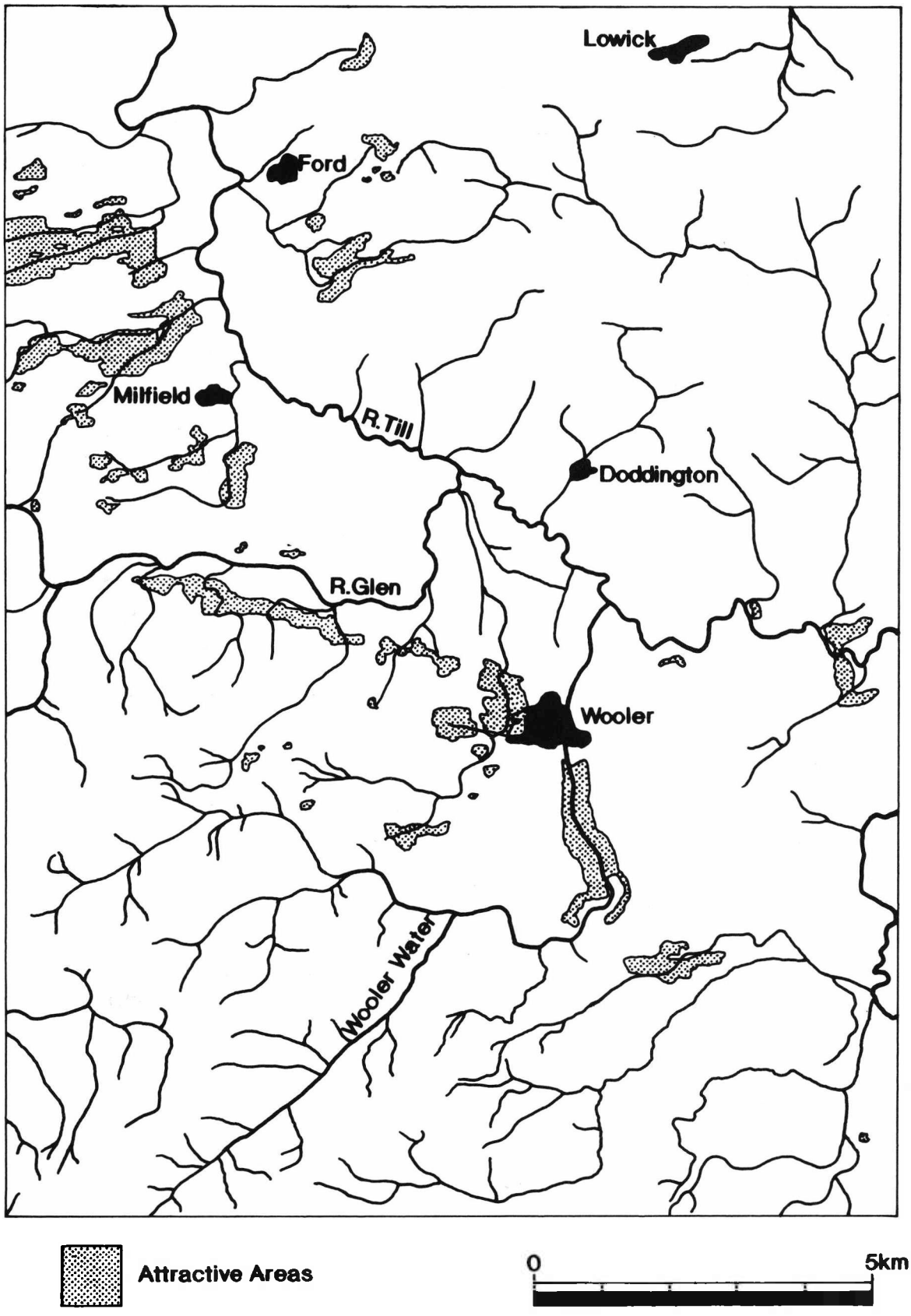
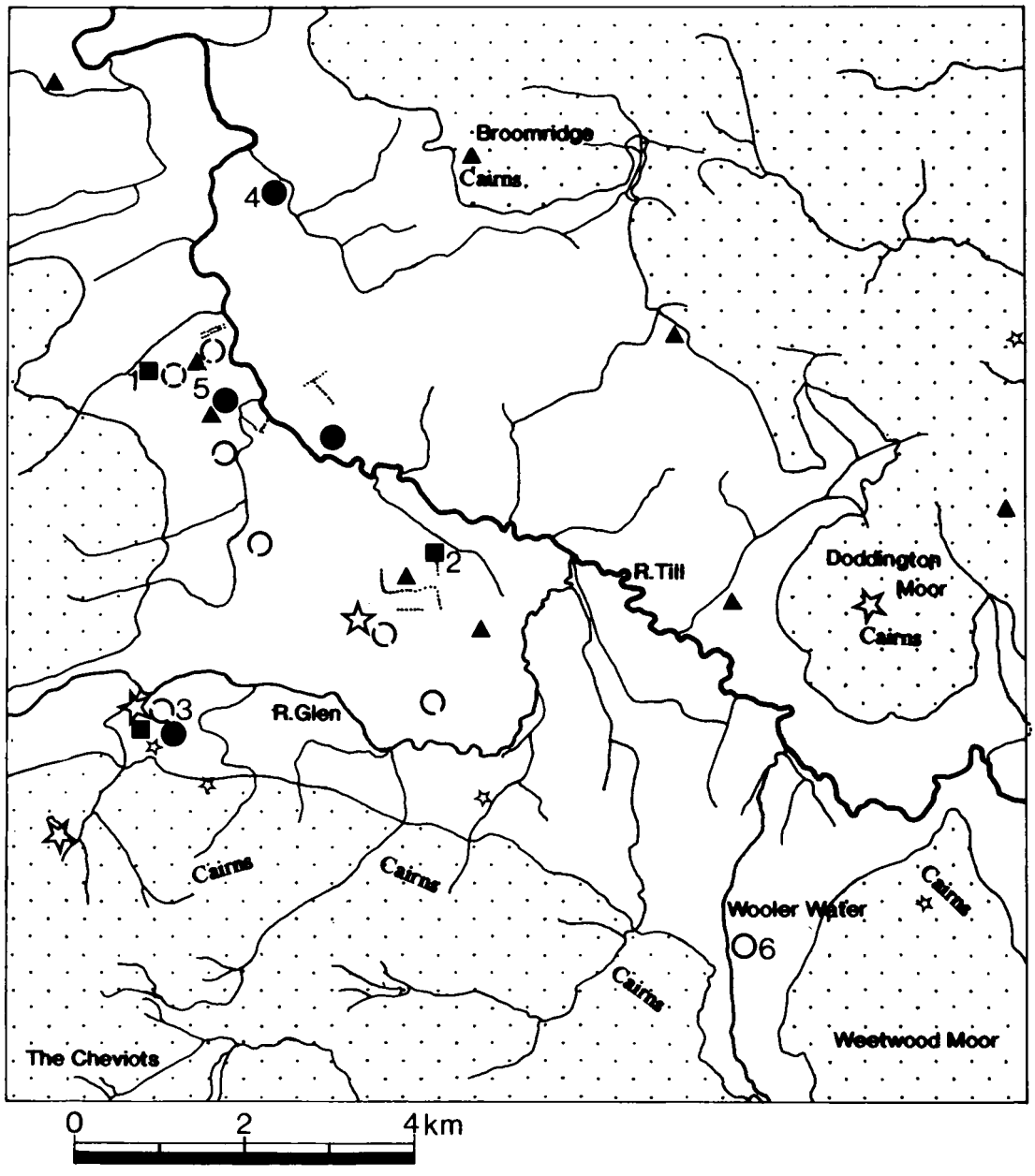


Fig. 4. The most attractive areas for agriculture in the Milfield Basin (based on: soil potential, degree of slope, aspect, proximity to water and level of flood risk).



■ Settlement Site

● Burial

▲ Stone Axe Find

○ Hengiform

Pit Alignments

☆ Stone Circle

⭑ Standing Stone

Land Over 100m

1 Whitton Hill
(recognised from a lithic scatter)

2 Thirlings

3 Yeavering

4 Ford Area

5 Whitton Hill

6 Wooler Area

Fig.5. Map showing the Late Neolithic/Early Bronze Age archaeology of the Milfield Basin.

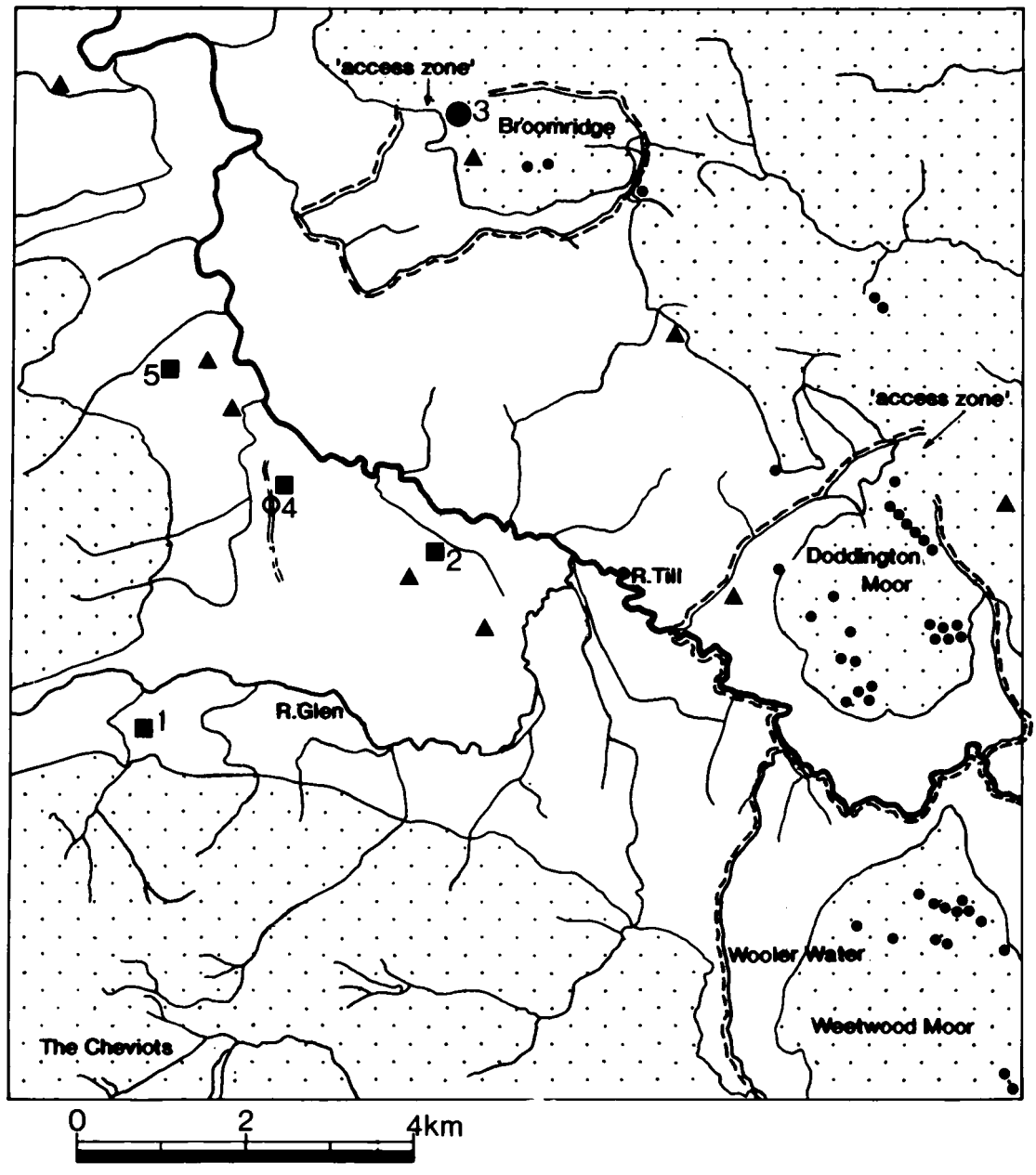


Fig. 6. Map showing the early Neolithic archaeology of the Milfield Basin.

The 'Inscribed Grazing Areas'

A concise definition will be followed by a few qualifiers and an explicit account of how these entities were initially recognised and how potential ones are substantiated. An Inscribed Grazing Area (IGA) is an area of land which is contained for most of its perimeter by fluvial channels, and which contains a concentration or concentrations of cup and ring marked outcrop rocks within the enclosed area (fig.6).

These inscribed grazing areas are viewed as a kind of naturally occurring compound, or defined space, which was utilised as an area for stock grazing, and being demarcated in both a physical and a symbolic sense. These grazing areas are considered to have an active currency extending from the early Neolithic through until the beginning of the late Neolithic. Only cup and ring carvings in outcrop contexts are considered in this model. This means distortions of the spatial and temporal patterns caused by carved rocks in secondary contexts (and thus of unknown date or provenance) are filtered out. Cup, and cup and ring marked rocks in burial contexts are considered to be a degenerate later use of the cup and ring tradition which takes place in association with the land re-organisation in the late Neolithic/early Bronze Age referred to above (see also Waddington 1995). Consequently, it is carvings in primary contexts (ie. on outcropping bedrock) that are central to this study.

It is considered here that cup marks certainly, and probably the other elements of this tradition, originate in the early Neolithic [3] (see Burgess 1990a and Waddington 1995 for full discussion). This is not to say that their currency extends through this period only, but rather that the tradition has a long chronology ranging through from its inception in the early Neolithic through into the earliest stages of the early Bronze Age. The main assumption on which this model rests is that cup and ring marks occurring on outcrop rocks are the original context for these carvings and that they are considered to have been employed during the early Neolithic (and possibly later periods as well). During the late Neolithic, cup and ring marks occur on standing stones, in cairn material, on cairn kerbs, on the inside of cist slabs and on capstones overlying cremations. This marked association with funerary contexts in the late Neolithic is in contrast to their occurrence in open air on 'living' rock in outcrop contexts. As many of these cup and ring carvings in late Neolithic contexts are heavily weathered, even though they have been recovered from contexts not exposed to weathering, it means that they have been removed from a primary context where they have been exposed to the long term process of weathering, and thus must have come from open air places exposed to the elements. The logical conclusion therefore, is that these re-used carvings were originally made on carved outcropping bedrock where they experienced nature's erosional processes. This is an entirely different cultural and experiential context than the direct association of re-used carvings with funerary structures, and as such this suggests that there is a significant difference between the embedded meaning of cup and ring marks in these two types of contexts. As cup and ring marks on outcrop rock are evidently in their primary context whereas many of the the cup and ring marked slabs in late Neolithic funerary contexts are re-used in secondary contexts (see below for examples), then surely it must be the case that cup and ring marks on outcrop rock are the earliest manifestation of this carving tradition. There are many examples of weathered carvings in secondary contexts including the decorated slab in cist 1 at Balbirnie, the cist cover on Nether Largie North cairn and the cist cover from Stamfordham, among many others (fig.7). Previous writers have repeatedly brought attention to the fact that cup, and cup and ring marked stones in these late Neolithic and early Bronze Age contexts are often re-used and taken from an earlier context, where they had been exposed to weathering, for example Simpson and Thawley (1972, 86), Hadingham (1974, 63-4), Morris (1981, 3), and Burgess (1990, 22). A similar argument can be made for the carvings on standing stones having been on the rock in some instances before the stone was erected. This assertion has been based on the observation that in some cases the designs are partly or entirely hidden by the packing material around the base of the stone, such as the half hidden spiral at the base of a stone at the Temple Wood stone circle, Argyll (Hadingham 1974). Frodsham (this volume) makes a case for Long Meg having come from an outcrop location where it may have been originally adorned with carvings. It is assumed, therefore, that outcrop rocks were the original contexts for the cup and ring rock art tradition, and that it is only in later periods that these carvings become widely used in a range of other contexts. There is not space in this paper to discuss this change in use (and meaning) over time, though it has been preliminarily discussed elsewhere (*cf.* Waddington 1995).

The initial observation which prompted the search for a patterning in the landscape was the occurrence of a distinct spatial zoning of cup and ring marked outcrop rocks in Northumberland. The rock carvings all occur on the sandstone escarpments; there being only two possible examples being known from the Cheviot hills further west (M. Maddison, pers. comm.). In the Milfield Basin there are three marked clusters of cup and ring marked rocks; these being located on Weetwood Moor, Doddington Moor and around Broomridge (fig.6; fig.8; fig.9).

The Evidence

1. Environmental considerations

Firstly, an assessment of the environmental backdrop provides a largely culturally independent set of parameters within which Neolithic peoples would have made decisions. The carved outcrop rocks are all found on sandstone moorland which are dominated by thin soils of poor quality (fig.3). In simplified form, these consist of podzols on the steep scarp slopes and stagnogleys on the dip slope where glacial till overlies the sandstone bedrock (Payton 1980, 32). These unproductive soils would have produced little opportunity for early subsistance

exploitation, except as an area for rough grazing or for hunting wild beasts. On the present evidence these areas were wooded until the first significant clearance episodes at the onset of the Bronze Age (see above, Camp Hill Moss pollen diagram). However, the pollen sequence for these sandstone hills has not yet been established in detail though it is work that is in hand (Stevenson A. pers. comm.). It is worth noting that the place name of 'Weetwood Moor' meaning wet-wood (Beckensall 1991, 37), signifies the previously wooded character of these sandstone escarpments which are now predominantly open moorland, with heather and bracken the dominant vegetation. When these areas were wooded, clearings in the canopy due to the occurrence of glacially scoured outcropping rock over the higher parts of the slopes, would have provided attractive aggregation locales for wild animals such as roe deer, pig and cattle, as well as their later domesticated cousins (*cf.* Simmons and Tooley 1981). Clearings would, therefore, have been important parts of these transitional upland-lowland landscapes for both Mesolithic and early Neolithic communities, being the predictable larder over very long periods for local groups, whether mobile, semi-mobile or sedentary. In an attempt to understand what attracted animals to these spaces, early communities may have attributed the obvious feature of these spaces, that is exposed bedrock, particular qualities, possibly conceptualising them as living entities. This may have been formalized by applying carvings to this 'living rock', a phrase still used today (Beckensall 1983), thus transforming these areas of the landscape into symbolically defined 'places'.

In short, the environmental makeup of the inscribed grazing areas is such that early Neolithic *agricultural* exploitation of these areas would not have been viable. So, what would the essentially wooded environments of the IGAs offer? These IGAs, which contain tracts of valley floor, slopes, semi-upland and hilltop, cover a range of environmental zones, which taken as a whole would offer an all year round self-contained grazing regime. Grazing would be expected on the upper slopes during the summer months and on the more sheltered valley floor in the winter months, with the possibility of grass production for winter feed being gathered from the narrow band of better quality soils on the valley floor in late summer. The environmental constraints imposed by the IGA soil makeup renders these sandstone areas, where the cup and ring marks are exclusively carved, suitable for little else except pastoral and woodland exploitation.

2. Landscape Location

As mentioned above, cup and ring marked outcrop rocks occur in concentrations on sandstone uplands with poor soils, and are defined on nearly all sides by river channels. This is a recurrent pattern which can be observed throughout Northumberland (see figs. 8, 9). The correlation between these specific landscape niches and carved outcrops is striking, implying that cup and ring marked outcrops had specific and particular significance for these parts of the landscape. The water channels effectively create a naturally contained area within which these carving clusters, situated on discrete upland units, are located. This also means that the availability of fresh water from any point within the IGA is never far away.

Cup and ring marked outcrop rocks must have been created and used by the local communities resident in the surrounding area. This is apparent because:

1) Cup and ring marked outcrop rocks are not upstanding monuments and in virtually all cases the carvings are not visible until a viewer is stood almost directly over them, indeed they are not conspicuous in the landscape, or on present evidence, made apparent in any way to attract attention or advertise their existence, and therefore it is highly unlikely that visitors to the area would know of their precise location.

2) The carving of outcrop rocks commenced in a period when the sandstone fells were largely wooded and this would have hindered visibility of and from them. Consequently, anyone entering the landscape would not know of their existence and would probably only find them by chance. Hence these marked surfaces must have been produced by, and functioned in the regime of, the immediate local community who were aware of their precise location.

3) There is little evidence to demonstrate that these carved outcrop rocks were on paths across the landscape *per se* as has been suggested (Beckensall 1992; Bradley 1993), and thus observable by passing mobile groups or travellers. They do not have a linear or progressive distribution as would be expected if this were the case. It would require special pleading to envisage people zig zagging their way across the wooded moors, as carved outcrops occur more as a mosaic of separately carved panels within large naturally discrete areas (ie. the IGAs), rather than as a linear alignment crossing the landscape. They sometimes occur on exposed ridges which are 'dead ends' (ie. the ridge is discontinuous) such as Broomridge for example, but most importantly they occur in marked clusters over a restricted area (see above) creating self-defining 'places', which are termed here IGAs. As such they provide focal areas, or 'places', in their own right, possibly for the destination of a localised transhumance cycle given that the area is suited to little else but pastoral exploitation. The notion that a 'place' can exist without a site, and that it can participate in a system of land-use, is vital to the understanding of the distribution of cup and ring marks in concentrations and the IGAs in which they are integral components. In this case a 'place' is formalized not by a specific individual site, but rather as an area defined by a relatively discrete spread of cup and ring symbols, all of which are surrounded for the most part by a continuous water body. Their siting as a focal area, or 'place', for the destination of a localised transhumance cycle within the polygon is therefore considered more likely than their being sited on routeways across the landscape used by passing travellers.

4) Beckensall (1992, 21) has noted that the different carving groups display subtle stylistic variations, such as the elaborate carvings characteristic of the designs around the Milfield Basin, and the deep cups and long

ducts of the Lordenshaws group. These localised characteristics could be interpreted as indicating distinct kinship/social groupings, while at the same time maintaining a wider affinity between groups as expressed by their common use of the same broad cup and ring tradition. If each community had rights over a particular grazing area (IGA) it would not be surprising if they developed their own recognisable style to help legitimate their claim. If earlier Mesolithic communities had ranged over a given area, whether on a seasonal, annual or less episodic basis, such an area may have become more formally claimed as the need for claiming rights to grazing areas for the domesticated herds arose. Invocation of the longevity of a community's ancestral use of an area to sanction their claims to it is relevant, especially given the location of early Neolithic tombs around the 'access zone' to IGAs (see below; fig.9) and the location of cup and ring marks on rock outcrops previously used in the Mesolithic as rock shelter sites and with possible Mesolithic zoomorphic carvings on its vertical face as at Goatscrag on Broomridge for example (cf. Burgess 1972; Van Hoek and Smith 1988). These tombs and the fluvial defined IGAs could therefore be viewed as a continuation of the use of possible earlier 'territories', though in a more formalized way. Pollen evidence suggests continuity in the style of woodland disturbance, and therefore land-use, between the late Mesolithic and the early Neolithic in the Cheviot Hills surrounding the Milfield Basin (Tipping this volume). An important implication of this would be that such continuity of, 1) landscape perception (though inscribed in a different way), and 2) its partition between peoples, could be taken to suggest that the Neolithic population were the descendents of the earlier Mesolithic population and not settlers or invaders from the continent, bringing the trappings of civilisation to wildwood Britain. Spikens (1996) has recently suggested the existence of Mesolithic 'territories' defined by water courses and watersheds in the Pennine massif and adjacent areas, these being the same natural features as suggested here for defining these early Neolithic IGAs. Could the IGAs record the imprint of an earlier Mesolithic cognition of landscape configuration?

3. The Archaeological Context

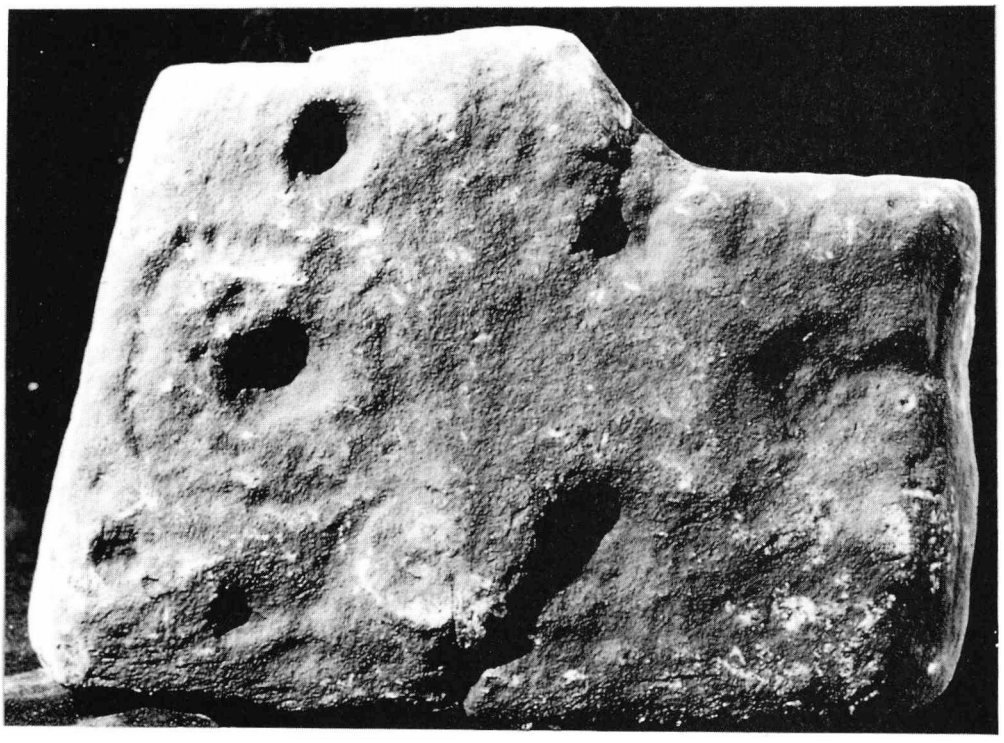
In the Milfield basin, all the cup and ring marked rocks on outcrop rock are located on the sandstone uplands (or IGAs) around Broomridge, Doddington Moor and Weetwood Moor (fig.6). These carved outcrops are not associated with contemporary settlements or domestic activities, industrial activity, field systems or areas of cultivation, and neither are they directly associated with contemporary (*ie.* early Neolithic) funerary activity. However, by carving on outcropping bedrock the decoration is being physically applied to a naturally occurring landscape feature that is visibly a part of the earth. Their role would therefore seem to lie in a different sphere. One clue to the central theme of this symbolism is their location in the landscape. The only subsistence use to which the areas occupied by cup and ring marks in outcrop contexts can be put is grazing (see above). This implies that the carvings on outcrop rock were connected in some way with pastoral farming. Bradley also suggests an association between cup and ring marks in outcrop contexts with a pastoral regime and/or hunting, and with summer grazing on the fells (Bradley 1991, 82). All the known early Neolithic settlement sites in the Milfield Basin [4] are located on the west side of the river Till (fig.6) on the gravel terraces and low slopes of the Cheviots, all of which are outside any polygon areas. All evidence for Neolithic (early to late inclusive) cultivation, both environmental and archaeological, confirms agricultural activity having taken place on the valley floors and on the favourable parts of the Cheviot Hills. There is no evidence of any early Neolithic agriculture having taken place within the areas of the IGAs. The only Neolithic activity which is evidenced near the polygons, barring cup and ring marks, are early Neolithic burial mounds. All the known early Neolithic burial mounds in Northumberland, with the exception of the Dod Hill long cairn, occur on the sandstones. In the study area, the early Neolithic mound excavated by Greenwell on Broomridge, which produced 204 sherds of Grimston Ware pottery (*cf.* Miket 1987), was located near the 'access zone' (see below; fig.6) of the Broomridge IGA. The Dod Hill long cairn (Gates 1982) is similarly located near the access zone of the Weetwood Moor IGA (fig.8) which may account for its location higher up on the andesite, off the sandstone. Outside the Milfield Basin, the Neolithic cairn at Chatton Sandyfords, dated at 2890 +/- 90bc (Jobey 1968, 40) is located at the intersection of two IGAs (fig.9), and a probable long mound discovered by the author (although previously known about by the Gledhill family of Warden) is situated in the heart of the IGA at Warden in the Tyne Valley (fig.9). There is also a possible early Neolithic tomb situated in the Old Bewick polygon (fig.9; see Waddington forthcoming). The significance of this spatial association is discussed below.

In summary, it is concluded that there is no direct relationship between the IGAs and contemporary settlement or agriculture. The only surviving contemporary archaeology that is associated with IGAs are early Neolithic tombs, which are usually, but not always, situated near the access zone. The positioning of homes of the ancestors in the IGAs may be a deliberate attempt to reinforce claims to these grazing areas.

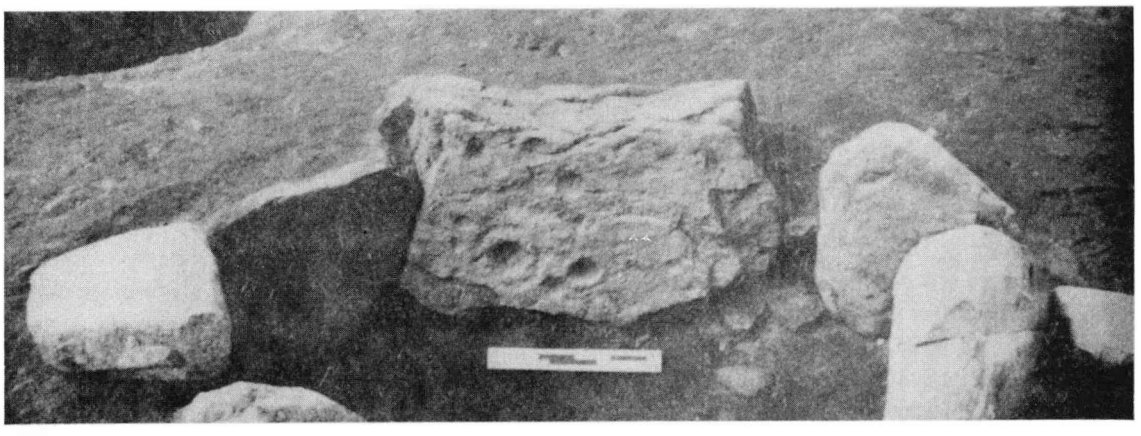
4. Symbolic implications of cup and rings

Cup and ring motifs were applied to naturally occurring outcropping rock in a way which does not detract from the primacy, natural beauty and grandeur of exposed bedrock. That is, this carving tradition compliments the already extant aesthetics of the rock and does not attempt to dominate it or alter the rock to make it become a backdrop for the carvings (fig. 10). Instead the rock retains its status as a natural feature even though it has been inscribed as culturally important. Bradley has made the point (1992, 169) that, "elements of the natural topography were enhanced by 'cultural' designs". Indeed

Nether Largie North Cairn, Argyll



Stamfordham, Northumberland (Museum of Antiquities, Newcastle)



Balbirnie, Fife (from Morris 1981)

Fig. 7. Examples of weathered carvings on cist slabs.

the carvings can be considered to add to the attractiveness of bare rock with a sense of veneration rather than domination (fig.10). This is in contrast to the passage grave art tradition, usually considered to be a middle to late Neolithic phenomenon (and thus later in origin than the cup and ring tradition as argued here), in which sometimes entire surfaces of large stones have a design, usually of a geometric nature, imposed over them (fig.11). In addition, these stones have often been substantially shaped and well prepared before the designs were applied, again highlighting the primacy of the cultural design over the natural form of the rock, as well as communicating the control the artists have over their medium. In effect, the passage grave art tradition is concerned with creating a cultural object, made of stone, in which the natural form has been manifestly subjugated, whereas the cup and ring tradition is concerned only with displaying and evoking a cultural importance that has been attached to an otherwise unmolested natural feature. The characteristics of the passage-grave tradition thus convey the notion of dominance over the rock, and therefore by implication the landscape too, from which the rock came.

The adoption of geometric forms and all over decoration is paralleled elsewhere in the material culture of the late Neolithic. For example Peterborough Ware and Grooved Ware vessels (ceramic styles characteristic of the late Neolithic) have their outside surfaces saturated in decoration, usually with a dominant geometric ordering and geometric patterns, this is in addition to a more uniform and geometric shape to the pots characterised by their diagnostic straight sides, flat bottoms and a more rigid overall design (fig.12). This is in contrast to early Neolithic wares such as Grimston Ware which are characterised by an absence of decoration, a rounded base, often an 'S' shaped profile and in general a form dominated by curves (fig.12). A similar juxtaposition can be made for the curvilinear form of early Neolithic leaf-shaped arrowheads and the rigid geometric shape of the late Neolithic-early Bronze Age barbed and tanged arrowheads. The straight lines and angles of the geometric forms are not shapes common to nature, but are rather a unique culturally inspired conceptual geometry imposed over the 'natural' world. The point here is that the curvilinear designs of the early Neolithic, and the way cup and rings are applied so as to enhance the rock in a fashion harmonious with its setting, implies a strong link with both the pattern and rhythm of nature, together with an awareness of how it manifests itself in the living world.

Such associations suggest an early Neolithic society intimately attached to, and which perceived itself as dependent on, the phenomonological cycles of nature, such as seasonal change and rebirth for example. The implication of the later geometric art is that it reflects a society that feels more in control of its own destiny, or that desires to be, with the natural world perceived as 'other' and subordinate to, and possibly in the possession of, the human world. The disjuncture between the notions of emulation and domination expressed in cup and rings in outcrop contexts and the geometric designs of the later Neolithic respectively may reflect a fundamental difference in attitudes to, and perceptions of, the landscape and 'natural' world. This observation compliments Bradley's account of landscape perception between more mobile groups on the one hand and sedentists on the other (1993, 24-5) bearing in mind that this model does not assume that the herding communities of the Neolithic were sedentists in the sense which can be applied to the Bronze Age settlement regime. It is worth here requoting from Bradley's account the study by Wilson (1988, 50):

"The hunter-gatherer pins ideas and emotions onto the world as it exists.....A construction is put upon the landscape rather than the landscape undergoing a reconstruction, as is the case among sedentary people, who impose houses, villages and gardens on the landscape, often in the place of natural landmarks. Where nomads read or even find cosmological features in an already existing landscape, villagers tend to represent and model cosmic ideas in the structures they build" (1988, 50).

The correlation between the relatively sudden intensification of farming, as demonstrated in the Milfield Basin, with this change in landscape perception during the late Neolithic, emphasises that fundamental changes in the subsistence base operate in association with ideological and social change.

5. Ethnography and folk traditions

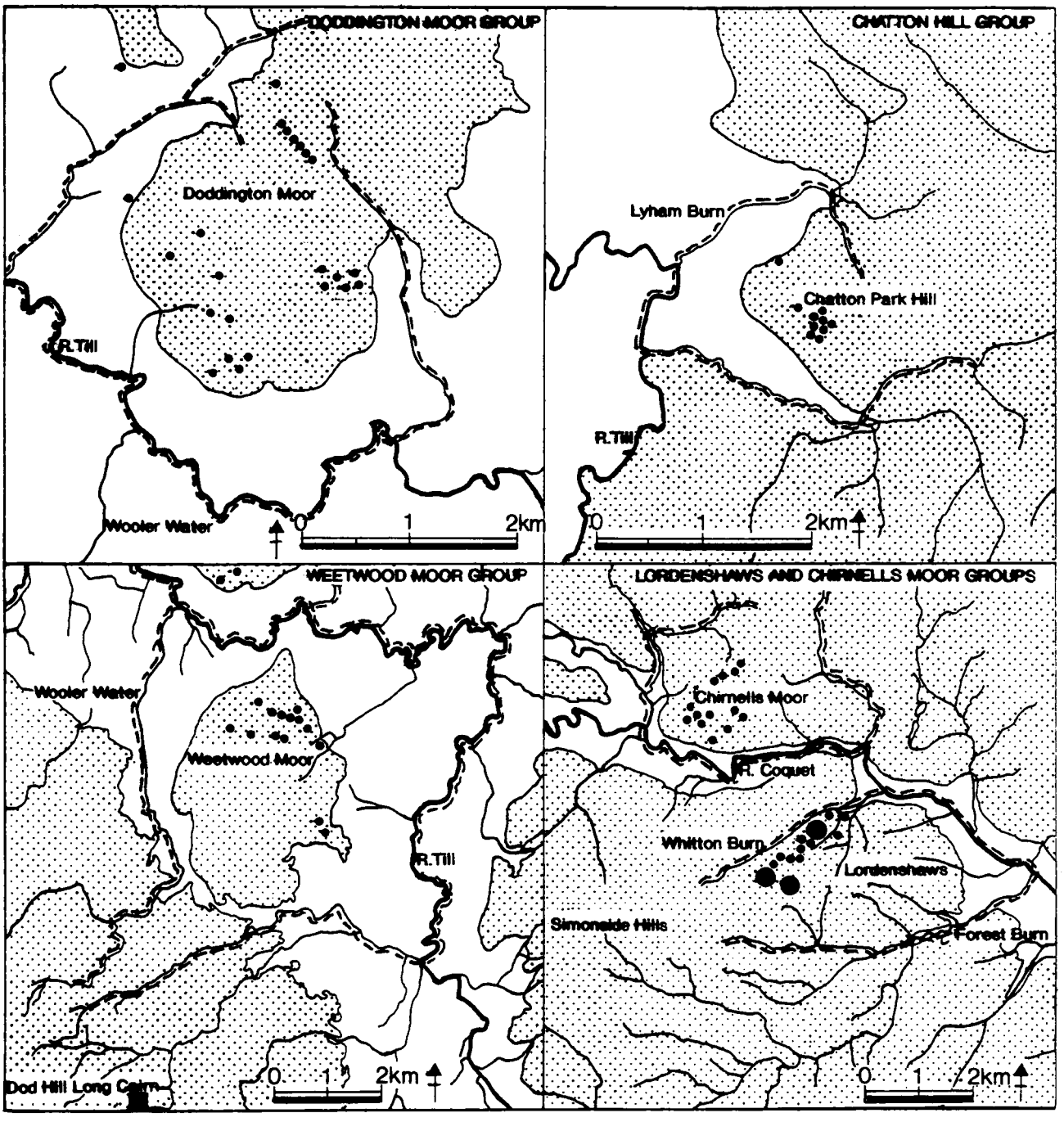
A folklore tradition which continues in parts of Scotland where cup and rings occur involves placing food offerings in the cup marks, usually in Spring, to ensure herds are protected, produce healthy off-spring and that there is a plentiful harvest. The late Ronald Morris assembled and documented a series of these traditions. Concerning a large cup on the Hebridean island of Sail he states,

"The widow of the late farmer there states that in her youth one day each Spring this basin had by custom to be filled with milk. If it was not so filled, the 'we folk' (the fairies) would see that the cows gave no milk that summer. The Kerrera ferryman, to whom I told this, said that on Point of Sleat Farm in Skye when he was a boy there had been exactly the same custom. An Islay resident tells me that the same custom existed there, too, until not long ago and I have received a similar account from Miss Marion Campbell concerning the cup-marked stone near the waterfall beside the old chapel at Cove, Knapdale.....In Argyll and its Isles the pagan gods are not so long dead."

(requoted from Hadingham 1974, 95).

In Ireland bulluans, deep basins similar to those found on the Lordenshaws outcrops in Northumberland, are common, and it is frequently thought that the water which gathered in them would cure maladies such as rheumatism, as well as barreness in women (Hadingham 1974, 95). Again the connection between circular rock carvings and health, life and the cycle of rebirth can be noted.

At a cup marked stone, now used as a cross base,



Land Over 100m

• Cup and Ring Marked Outcrop Rock

● 10 Cup and Ring Marked Outcrop Rocks

Perimeter of Inscribed Grazing Areas

Fig. 8. Some examples of cup and ring marked outcrop rocks within 'inscribed grazing areas' in Northumberland.

in Kilchomon churchyard on Islay, a pestle is provided and the tradition goes that you are supposed to turn it in one of the cup marks three times with the sun on it. You then put a piece of silver in another of the cup marks and the wish you then make is supposed to come true so long as it is connected with fertility (Morris 1979, 18-19).

Modern Australian aborigine groups still produce grooved drawings both on wooden portable tablets and on rock at their totemic centres where sacred storehouses are built specifically to house them (Cowan 1992, 46). These 'tjuringas' (or churingas) are remarkably similar to the cup and ring tradition with the designs dominated by concentric circles, cups, spirals and grooves (fig.13). The Ngalia tribe maintain that women are fertilized by spirit children who enter them. However, these spirit children (taraulba) are thought to live in the sacred tjuringa storehouse (Cowan 1992, 25). The tjuringas embody an aborigines totem identity, signifying a link with their own spiritual existence and also their ancestors (Cowan 1992, 51). These designs are vital to the transmission of esoteric information between generations and thus the preservation of cultural memory. Michell maintains that Aborigines also view the lines as representing the sacred centres along these paths. It is believed that the rock on which these carvings were made procure the release of a life energy, or force, which radiates out along these lines. It is this energy which is thought to fertilize plants and animals and keep them virile and healthy, and that also creates rain; the mainstay of life particularly in desert areas (Michell 1983, 36-7).

Another ethnographic account, this time much closer to home and potentially less acceptable among modern scholars because of the uneasy relationship of the subjects with present day academia, are the beliefs of a modern day cult. In Scotland a druidic based cult practice the propitiation of rock spirits which they believe inhabit the rocks on which cup and ring marks are carved. They believe, after communicating with these "wildfolk" (rock spirits), that in the past the communities which produced them made devotions of milk, honey, grain and suchlike, in return for which the rock spirits would protect livestock, ensure their fertility and health and guarantee the harvest (Naddair 1985, 26).

The most important and striking feature of all these documented traditions is that they all attribute a similar fundamental role to these carvings. In short, they are perceived as symbols associated with the natural cycle, particularly regeneration and the perpetuity of life. As such there is a general association of these kind of symbols with fecundity, creative power, healthy proliferation and ripeness, used in a way to seek protection, propagation and longevity for both the subsistence base and the community, i.e. livestock, crops and people. This phenomenon of the specific cup and ring shapes being invested with a significance that appears to transcend time, place and race is observed elsewhere. In India cup and ring type designs are used to symbolize a Hindu cult of generation known as 'Mahadeo' (Hadingham 1974, 80). Hadingham also states that in the town of Kangra people marching in wedding processions carry stones with designs like cup and ring marks chalked on them (*ibid*). Clearly it is significant that all these recorded beliefs have a common central theme, regardless of place or culture. This begs the question as to whether there exists some fundamental human cognition, or 'structure', which associates these images with fertility and the cycle of life or whether these images have origins in trance imagery. However, it is ventured here that the cup and ring design has its visual cue in a recurring pattern in the natural and observed world, such as can be seen when a raindrop splashes in a pool and causes radiating rings, or in the tree rings in a felled tree/bough or indeed the planets with their observable gaseous rings. The natural cup and ring pattern is thus irreducible, and therefore superficially simple, and as such may have been appropriated by people throughout the world who have chosen to emulate this recuring image, and have then stylized this basic image into a symbolic cannon with a restricted range of motifs. Could it not, therefore, be the appropriation of patterns in nature to reinscribe the landscape and/or natural world with meaning that accounts for the cross-cultural adoption of the cup and ring image. This could be a useful avenue for further research.

It should once again be noted that the evidence presented above is largely circumstantial, but this will always be the case when dealing with a fragmentary data set offering muted evidence. The best that can be done is to bring together all the available evidence, whether circumstantial or primary, and make interpretations from the best informed position possible. However, as the theory of a defined area containing clusters of cup and ring marks took shape and the model in its various forms was built up, taken down and re-erected, other supporting evidence emerged if the IGAs were taken to exist. Although the potential for circularity exists here it should be stressed that after the initial connections were made I looked for further testable evidence to help demonstrate their existence and substantiate how they could have worked as stock ranges as well as generate predictions which could be tested by fieldwork. The IGA system will be described and the supporting evidence which has emerged provided.

The Inscribed Grazing Area and a Model of Early Neolithic Land-Use in the Milfield Basin

During the early Neolithic the main water channel in the Milfield Basin, the river Till, appears to act as a boundary between the settlement zone on the most attractive soils to the west and the IGAs with their cup and ring concentrations and poorer quality soils to the east (fig. 6). With the environmental evidence pointing to only a low level of agriculture during the early Neolithic, the archaeological record remaining silent on the matter, it is postulated that

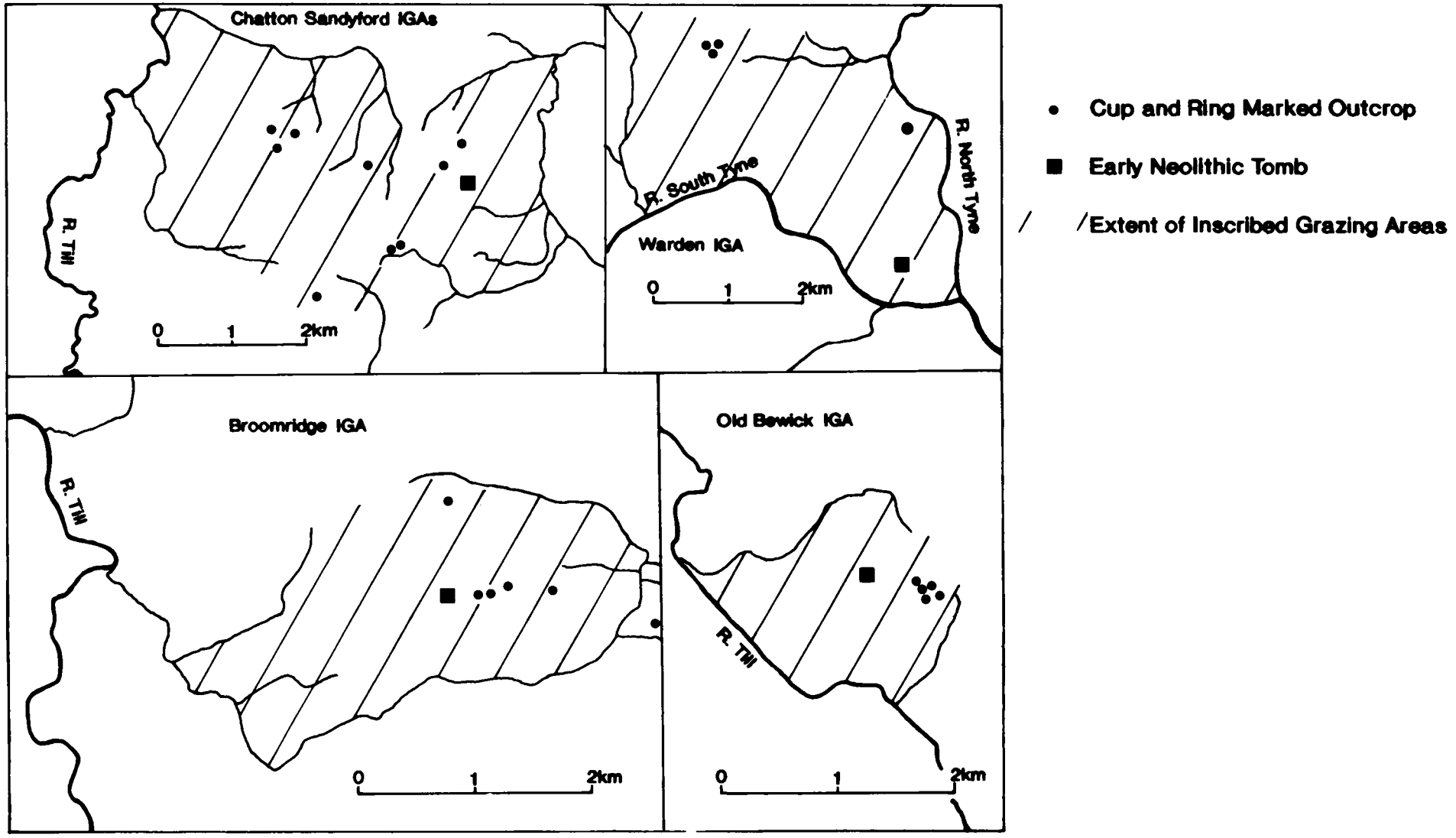
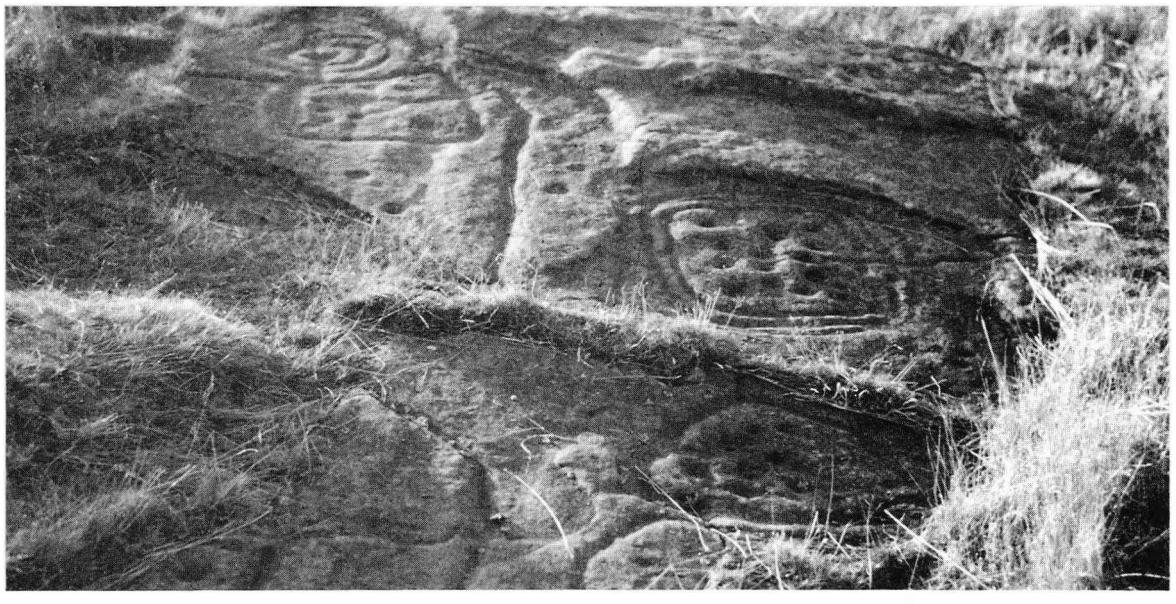


Fig. 9. Examples of 'inscribed grazing areas' with Early Neolithic tombs.

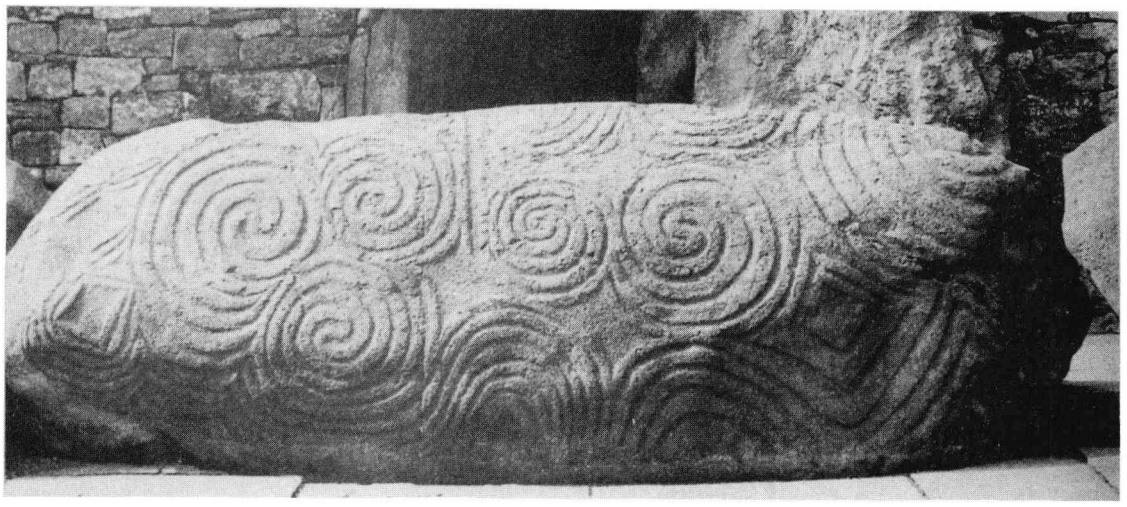
Weetwood Moor

Chatton Park Hill

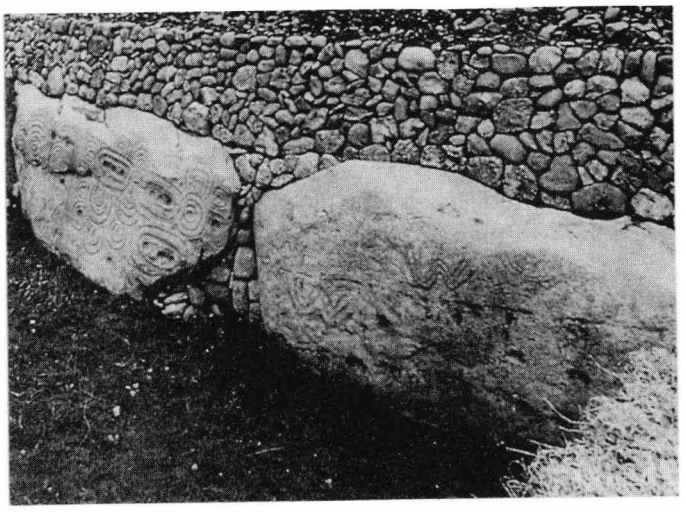


Doddington Moor

Fig. 10. Some cup and ring marked outcrop rocks in the Milfield area.



Newgrange (after O'Kelly)



Newgrange (after O'Kelly)

Knowth (after Eogan)

Knowth (after Eogan)

Fig. 11. Kerb and passage stones from passage graves with all-over decoration.

these communities relied on a predominantly pastoral economy with hunting, fishing and limited agriculture (horticulture) as subsidiary strategies. In the early stages of domestication, and possibly for the earlier control of wild herds, the animals could have been driven into the IGA areas and then easily kept within the limits of the IGA, which as shown by a consideration of the environmental potential of these areas (see above) could have provided an all year round and permanent pastoral range for the animals. With the area being dominated by woodland throughout the Neolithic, the type of wild herds and early domesticates expected would be cattle, pig and roe deer; creatures attracted to wooded environments with clearings. Cattle was probably the main domesticated stock animal during the early Neolithic, as pastoral societies rarely keep domestic pigs (Orme 1981, 258), especially as they are difficult to herd, and sheep tend to be less well represented during this period than cattle (Smith 1984). This would also be in keeping with the pattern of animal exploitation known from southern English and Yorkshire sites where cattle predominated in the early to mid-Neolithic with pig increasingly important in the late Neolithic (Grigson 1982, 306) as communities became more sedentary and more reliant on a mixed economy. Cattle are by nature browsers and grazers and as such are well adapted to wooded or open conditions. This is in contrast to sheep which are suited in the main to large open and closely managed environments (Smith 1984, 103). The IGA would have in many cases provided a ready to hand naturally contained area, which would have required only a minimal input of human labour to adapt it to a stock control system. In terms of a physical barrier the IGA perimeter should be seen as being composed of a number of elements:

1) the larger watercourses of the IGAs, such as the river Till for the Doddington Moor IGA (see fig.4), would have acted as barriers in themselves,

2) water courses are the areas of densest vegetation in uncleared landscapes and in many cases such vegetation proliferation may have provided a substantial physical barrier,

3) human manipulation of this thick vegetation along the water courses to create a more impenetrable barrier by encouraging the growth of a dense and thorny understorey. The vegetation on the outer bank of the IGA perimeters would be the area most apt for anthropogenic enhancement, as animals would have to clamber upwards while trying to break through, thus preventing them from using their own body weight to crash a way through. In addition it would mean animals would still have easy access to the fresh water supplies of the fluvial perimeter.

4) substantial lengths of the IGA perimeters are located in gorges with very steep sides, such as Broomridgedean Burn south-east of Dovehole Crag, making traversing of the fluvial channel at these points extremely difficult.

However, the fluvial perimeters of the polygons should not just be seen as a physical boundary, but also as a symbolic demarcation of a particular space in the landscape, both for the purpose in hand and as a way of defining the claims of a community to a resource area possibly by invoking natural divisions of the landscape as evidence of the 'natural' will of the world. Indeed this could be the primary *raison d'etre* of such landscape zoning. The use of natural water courses as boundaries to define specific areas of the landscape during the Neolithic is not without precedent. Not far away in the borders at the Neolithic enclosure at Meldon Bridge, a site with dates centered on two phases, c.2700bc and 2300bc (*cf.* Burgess 1976), the Lyne Water and Meldon Burn demarcate the south and east sides respectively. Further afield, the Neolithic enclosures at Marden and Waulaud's Bank also make use of water courses in their circuit. Hence the use of natural water channels for symbolically and physically bounding areas of the landscape is a practice known to have been employed by Neolithic communities, including those of the borders region.

So what are the characteristics of an IGA? The following criteria must be fulfilled for an area to be considered an IGA:

1) there must be a coherant cluster of cup and ring marked rocks on outcrop rocks or earthfast boulders,

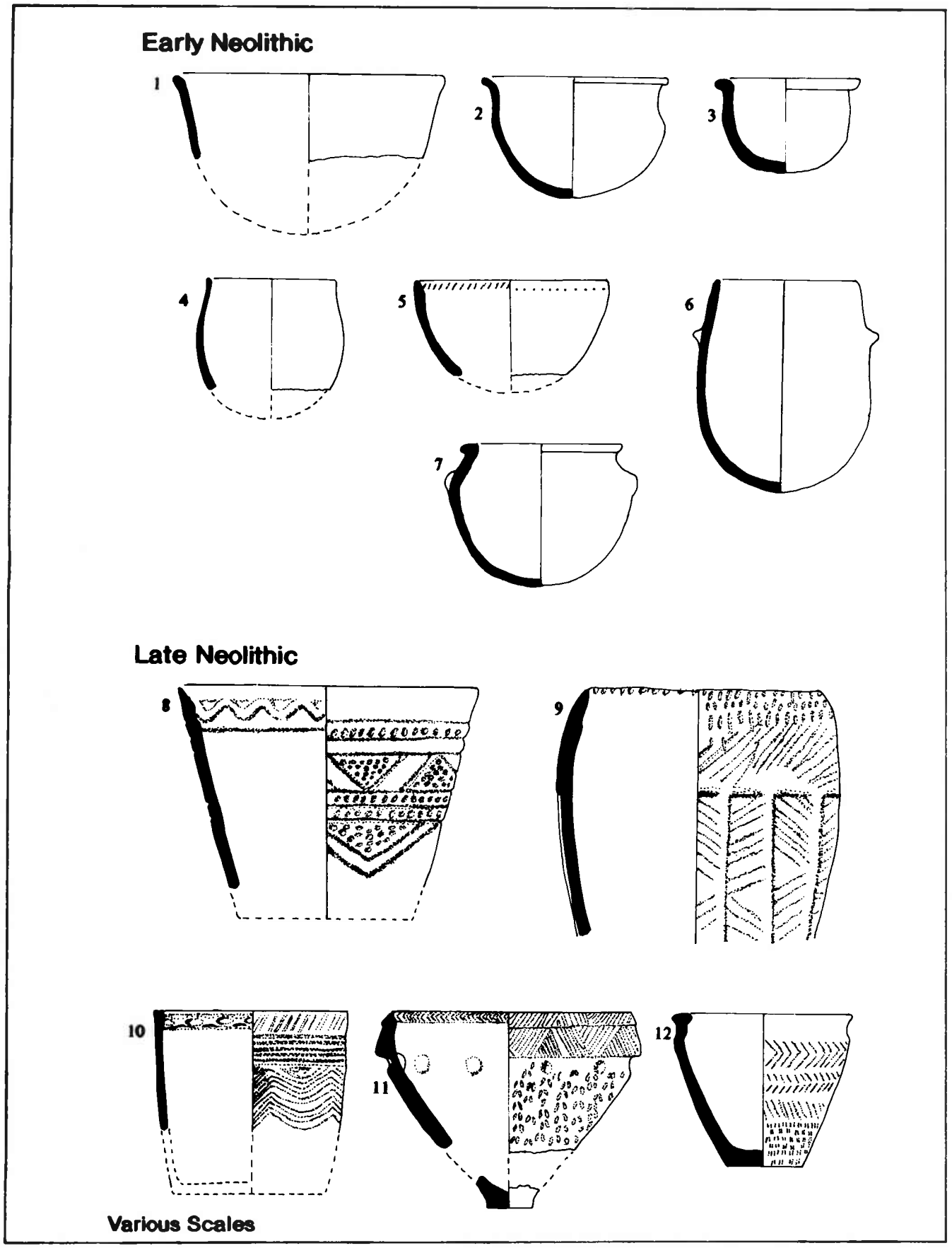
2) these cup and ring clusters must be defined by an obvious fluvial perimeter and contain a variety of soil types, the majority of which is suited to grazing only, together with areas of upland fell and lowland valley,

3) land attractive for early Neolithic settlement and small scale agriculture (typically raised terraces above the flood plain and areas of low level plateau or gentle slopes with light tractable soils must lie immediately outside the IGA and be within easy reach of a return journey from the settlement belt in less than one day,

4) to be particularly convincing the IGA should also have an early Neolithic tomb located within it or in the access zone, but due to differential survival and the common attribution of round mounds as being Bronze Age by default[6] it means that in a number of cases an associated Neolithic tomb will not be identified.

5) the size of IGAs so far identified ranges from 11-20km square.

The areas of the IGA perimeters with no water course, referred to as the 'access zone/area', are between 800m to 1km in length, the centre occurring as a high point in the polygon landscape, thus affording views down in both directions from the watershed to the start of the polygon perimeter water courses. This access zone could be effectively patrolled by one cowherd/swineherd type character, possibly with the help of a dog, to prevent stock from escaping and to keep predators from entering. The stock could for the most part be left to roam freely throughout the IGAs, being rounded up, probably as part



1–2 Grimston Ware, Thirlings Northumberland (after Hurrel); Towthorpe Bowl, Towthorpe Humbs. (after Piggot); 4–5 Windmill Hill pottery, Wilts. (after Smith); 6 Hembury style, Hembury Devon (after Anderson); 7 Chelmsford Camb pottery, Sussex (after Anderson); 8–10 Grooved Ware, 8 Clacton style, Clacton Essex (after Longworth) 9 Durrington style from Durrington Walls, Wilts. (after Longworth) 10 Clacton style (after Piggott); 11 Fengate style from West Kennet, Wilts. (after Piggott); 12 Rudston style, Rudston Humbs. (after Manby).

Fig. 12. Examples of early Neolithic and late Neolithic pottery types.

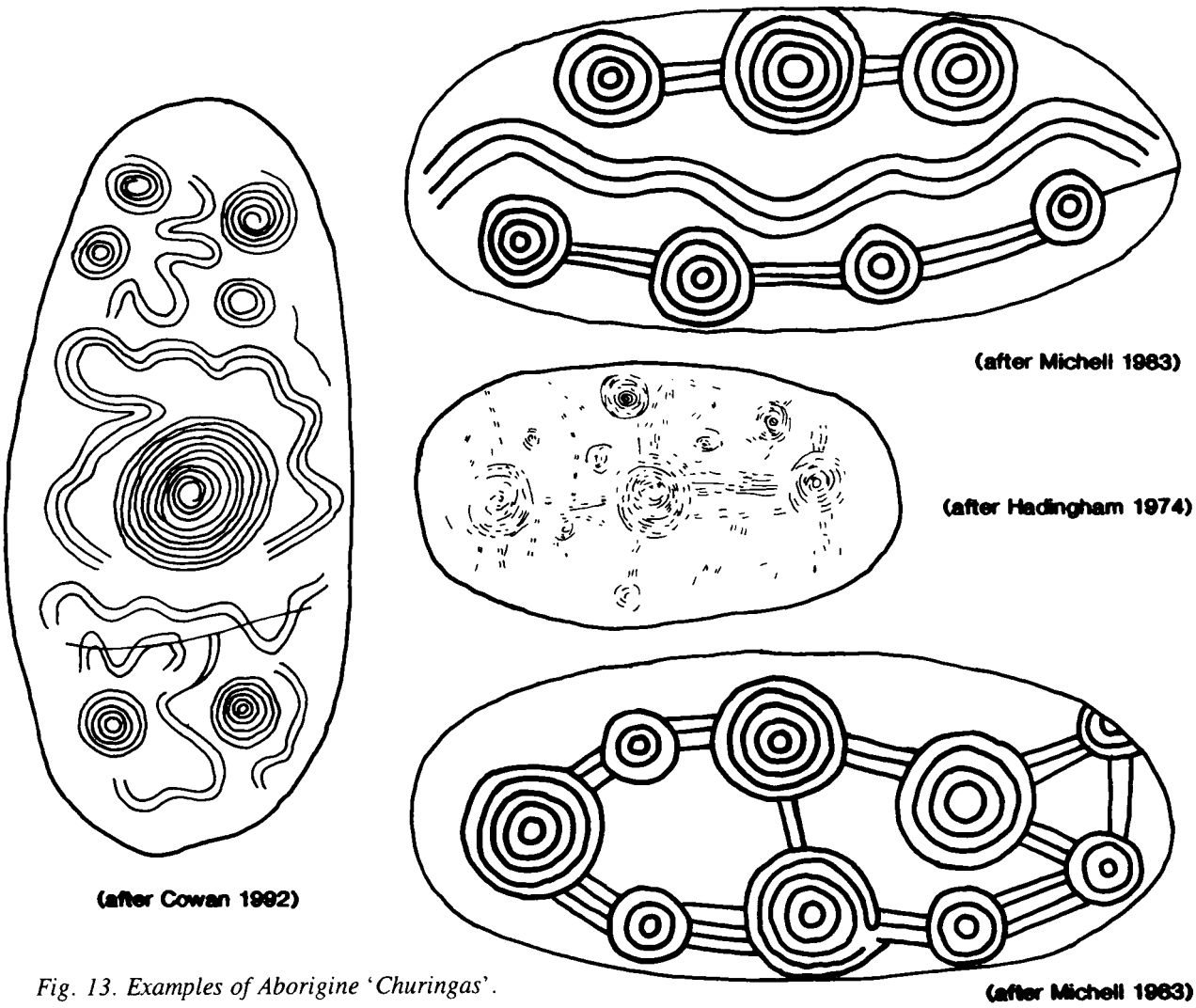


Fig. 13. Examples of Aborigine 'Churingas'.

of a wider community effort, at appropriate times, such as for slaughter, calving and the provision of winter fodder and possibly shelter. As a form of large scale grazing compound, the IGAs would be a pragmatic way of using the landscape, and working with it, to create a productive and sustainable low labour subsistence regime. Such an attitude towards the landscape would be in keeping with the perception of the landscape as argued for above in relation to the cup and ring tradition. As the population levels of late Mesolithic and early Neolithic communities are assumed to be low (Smith 1992), especially in the transitional upland-lowland zone of northern England , a system with low human inputs and high output would have been necessary to facilitate the transition from a hunter-gatherer subsistence base to one reliant, at least in part, on pastoral farming and to a lesser extent agriculture. The IGA subsistence model would fulfill this requirement. Indeed the IGAs, containing a communities stock resource and overseen for most of the time by one or at most a handful of individuals on behalf of the community, would have allowed for the release of the rest of the community for other activities, such as hunting, gathering, fishing, small scale agriculture, pottery production, woodland management, education, religious duties, leisure and public projects such as cairn building etc. Furthermore, this system would also allow for a degree of settlement mobility around the locale of a community's IGA. This would mean pre-existing patterns of life could be continued to some extent, allowing for a more gradual transition towards increased modes of sedentism.

As mentioned above, there is a spatial link between the location of early Neolithic tombs and IGAs. The only two known early Neolithic tombs in the Milfield Basin [5] occur near the access zone of polygons (fig.6; fig.8). Maybe it is too neat a theory to view these early burial mounds as tombs for the cowherd type characters alluded to above who, in a role with great responsibility for the community and the implicit respect that goes with it, may have patrolled these same access areas. Early Neolithic tombs with their multiple burials may have been the resting place for a succession of important members of the local community presumably linked to these parts of the landscape in some way. Slightly less speculatively, the significance of these early Neolithic tombs as territorial markers (Renfrew 1976, 204-205) legitimating claims of a community to a particular area, provides support for the symbolic role of the IGA (see above) in defining the landscape in conjunction with the rock art during the early Neolithic. Renfrew goes on to state in this important paper that, "Often there is a territorial symbolism or iconography which may also involve flags or iconography" (*ibid*, 205), which in this case could be performed by the rock art. The localised character, or 'style', of cup and ring concentrations that has been observed (see above) may be an example of such behaviour, and as such could be used to support the argument for the symbolic division of the landscape, in which IGAs and their associated cup and ring concentrations and tombs are integral components.

The importance of shamans in hunter-gatherer and

early pastoral societies is a well known phenomenon (Rutherford 1986, 18) with such characters often expected to live apart from the rest of the community (*ibid*, 64) only performing at public ceremonies on special occasions at certain times of the year. It has been suggested that shamanism should be viewed as a socio-economic phenomenon associated with a particular evolutionary phase; that of hunter and early pastoral societies (*ibid*, 123). Applying this view to the Milfield area, where Mesolithic activity is known from rock shelters on the scarp slopes of the sandstone fells immediately below the areas where the cup and ring marks occur (Goatscrag for example), it could be suggested that if shamans were ever present in this area, then the Mesolithic and early Neolithic (to use the traditional though unsatisfactory terminology) would be the period/s in which they could be expected to be manifested, on the basis of the correlation between the type of subsistence base and the type of societies in which shamanistic traditions emerge.

In an attempt to test the model I decided to try and predict where IGAs should occur, given the environmental conditions required, and then conduct fieldwork to find out whether these areas had a cup and ring cluster suitably contained within a fluvially defined area, and hopefully with an associated early Neolithic tomb in the same IGA. On the basis of the location of polished stone axe finds and the distribution of sandstone outcrops with adjacent areas attractive for Neolithic settlement and agriculture, I took a risk and predicted in early 1994 at a research seminar that IGAs should be able to be identified in the Tyne Valley, particularly in the areas around Hexham, Harlow Hill and Bellingham (amongst other areas of Northumberland). In the winter of 1994 I came accross references by Beckensall (1992, 71) to cup and ring marks found by Jim Crow and Ann Haigh in the vicinity of Warden, 3km north-west of Hexham. I visited the area, plotted the cup and rings on a map and realised they were located in a classic polygon, in a cluster, near the access zone. Since then another carved rock has been discovered at Warden (Beckensall 1995,19) and a polished stone axe has been found in the garden of a house in Warden. But the best surprise was the discovery of a probable early Neolithic long mound in the heart of the polygon. On the basis of having cup and ring concentrations in well defined fluvial channels, other IGAs have been identified in Northumberland (fig.9; fig.8) at Lordenshaws, Debdon Moor, Chatton Park Hill and Old Bewick, among others.

In areas of Britain where there is an absence of cup and ring marks, such as East Anglia for example, IGAs may not have existed at all, or they may have existed in a different form. The obvious statement that there is almost no outcropping rock in this area is probably not in itself the reason why there was probably not an IGA system here. Rather, this area does not contain agriculturally 'marginal' areas of the kind which occur in the uplands of Britain. This is viewed here as being the principal common thread in the distribution of cup and ring marks on outcrop rock, that is it is a phenomenon which corresponds to the distribution of the semi-upland and areas marginal to Neolithic agriculture in Britain rather than the distribution of sandstone outcrops. Therefore the IGA phenomenon may be mainly associated with a

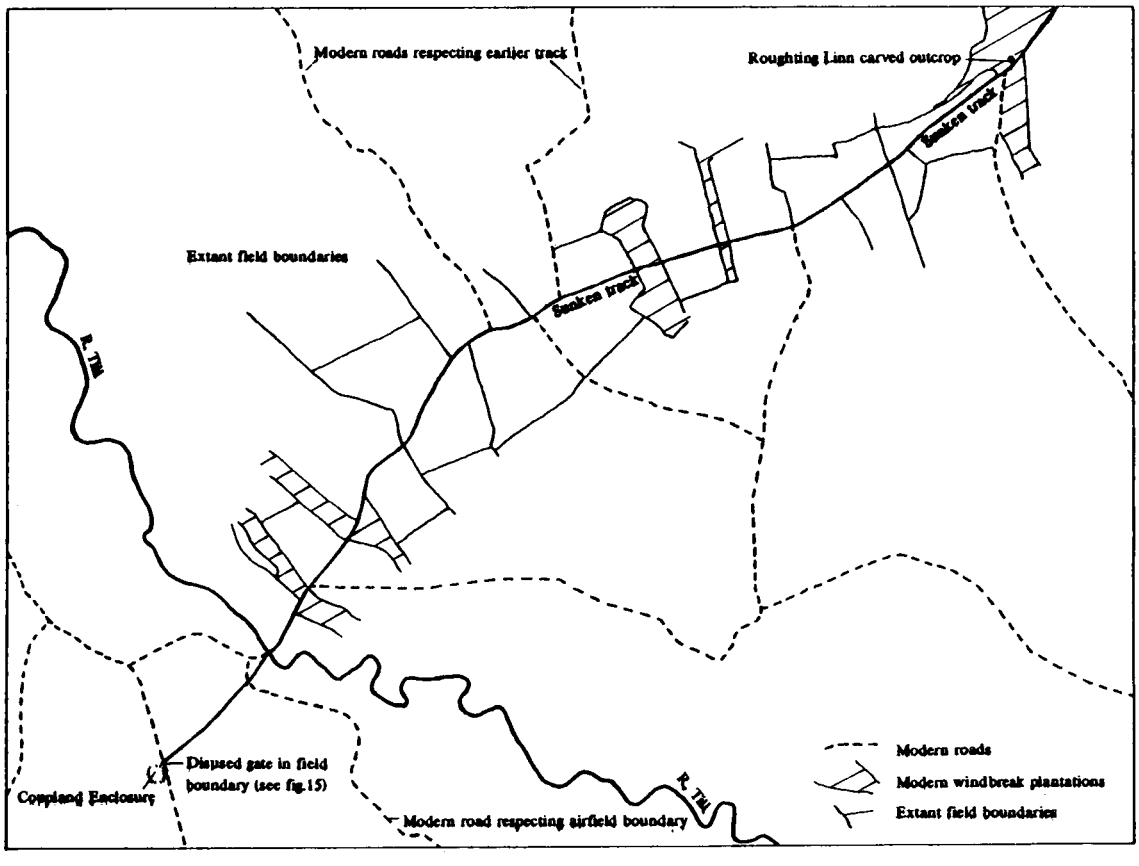


Fig. 14. Ancient track connecting Roughting Linn and the Coupland Enclosure where its south-west end terminates.

specific kind of subsistence practice (*ie.* grazing in a semi-wooded environment) in a particular kind of environmental zone (*ie.* semi-uplands with poor agricultural potential, though useful as woodland grazing) and being areas which had probably been attractive resource areas for earlier Mesolithic groups. Cup and rings may yet be found on media other than stone and in areas currently barren of this symbolic tradition, but on the present evidence they are associated with a very specific and restricted landscape niche, and as they are the only Neolithic symbols which occur on outcrop rock implies that there is a special link specifically between the cup and ring tradition and outcropping bedrock.

The early Neolithic settlement sites in the Milfield Basin, Yeavering, Thirlings and Coupland are located on terraces to the west of the River Till which separates them from the sandstones and the IGAs to the east. This pattern has been enhanced by recent results from a fieldwalking programme, as part of the author's Milfield Archaeological Landscape Project, which has produced marked concentrations of flints directly comparable in terms of assemblage composition to those recovered from the known early and late Neolithic settlement sites at Thirlings and Yeavering (Weyman unpublished). These concentrations are located on the low slopes of Whitton Hill to the north of Milfield village, again on the west side of the river Till on the most attractive soils, above the flood plain. This belt of apparently dispersed semi-permanent individual settlements (on the current evidence) are therefore adjacent to, and outside of, the local IGAs (*ie.* Broomridge, Doddington Moor and Weetwood Moor) which are all on the east side of the Till. The most attractive areas for early farming are located on the low slopes fringing the Cheviot Hills, particularly the area to the south-west of Milfield village (Waddington 1995b). These brown earth soils are light and fertile with good drainage properties. This zoning would help to ensure that herds were kept separate from the main settlement zone and thus prevent animals from trampling structures and eating crops. A dispersed settlement pattern of small individual homesteads situated in a necklace around the terraces and lower slopes of the Cheviots on the west side of the river Till implies people were generally living in a dispersed pattern of family units, probably on a semi-permanent basis, rather than in nucleated villages or as random clusters. However, this band of dispersed settlement can be contrasted with the vacant areas of the IGAs, which were exploited but not inhabited (on the basis of the current evidence). A dispersed settlement pattern such as this has been termed 'loose agglomerations' by Orme (1981, 109), and it is a pattern particularly common among pastoralists that have been the subject of anthropological study, such as the Nuer who live more or less permenently in one area (*ibid* 1981, 109). This is suggested here for the neighbourhoods comprising the Milfield Basin communities, where the family unit is the unit of production, as suggested by the settlement pattern. In summary the settlement evidence and data from anthropological studies, as applied to the Milfield Basin with all the relevant caveats, suggest that early Neolithic communities were agglomerations of people who relied on a predominantly pastoral system. However, all pastoral systems require grazing areas and ways of segregating stock from any crops.

As a predominantly pastoral based, and possibly collective style economy, non-intensive agriculture was probably undertaken in the immediate environs of each settlement. This small scale cultivation is envisaged as being of a 'kitchen garden' nature, possibly practised by women or the low status individuals such as has been recorded by anthropologists for the pastoral Kazak, Fulani, Tuareg and Jie tribes (Orme 1981, 261). The main contribution of agriculture at this stage was probably to add variety and balance to the diet, rather than provide the staple energy component, which was probably still meat and fish. There was now the option to wake up to a bacon sandwich and not just a gammon steak! This kind of agriculture would require a relatively low input of labour, especially as there would be no need for constructing extensive field boundaries. The most heavy demand on labour after the initial clearance of vegetation and stone would be weeding the beds on a regular basis. Thomas has suggested that during the early Neolithic in southern England there was a pattern of fixed-plot horticulture condistioned by seasonal movements within communities based on cattle herding (1991,19). This pattern, interpreted mostly from lithic data, compares well with that suggested here. The initial destruction of the understorey and breaking up of the ground could have been assisted by animal action, particularly the exploitation of wild pigs which are an effective aid to forest clearance (Grigson 1982, 305).

So how was the stock brought from the IGAs to the settlement zone, which can also be considered as the zone of consumption? A droveway and so called 'henge' are clearly visible on aerial photographs positioned on a gravel terrace on the west side of the river Till in the centre of the settlement zone (fig.6). The droveway can be observed for 1.7km, its north end aiming towards the river Till at its old fording point, as the place-name Milfield Ford Plantation implies. Just before the ford the droveway is lost in the heavier clays of the flood plain which are not responsive to crop mark recognition. This would suggest that stock were being herded out of the IGAs and off the sandstone fells, driven over the Till on to its west side at a fording point and then down a droveway through the main settlement belt to a central place where slaughter, over wintering and division of the resources could take place. This, however, requires a number of assumptions to be made:

1) that the so called 'Coupland Henge' is not really a henge in the traditional sense, but rather a stock kraal,

2) that the roughly parallel sided feature which is known for 1.7km is a droveway and not a cursus, and

3) that both these features are contemporary and of early Neolithic date.

To deal with each in turn; I do not consider the Coupland Henge to be a typical henge on the grounds that:

1) all the other 14 or so hengiforms known in the Milfield Plain have a common feature not shared by the Coupland monument. That is, that the other hengiforms all measure between 20 and 25m in diameter, whereas the Coupland monument has an overall diameter of just over 100m. In terms of areal size therefore, the henges of the Milfield Basin consistently cover an area of around 490 square metres, whereas the Coupland monument covers 7854 square metres, an area 16 times larger than any of the henges in the plain. Clearly the Coupland monument does not conform to the normal henge dimensions of the Milfield area.

2) the Coupland monument has a double ditched linear feature (ie. the droveway) passing through its entrances, a characteristic which no other known henge in the Milfield shares.

3) two pits are known outside the north-east terminal of the north entrance of the Coupland monument, again a characteristic unique to this so called henge [7].

As such the Coupland monument stands out as an anomaly and this requires an explanation. Categorisation as a 'henge' is an oversimplification given its context within the milieu of otherwise relatively uniform henge monuments of the Milfield Plain.

The parallel sided feature is probably a droveway rather than a cursus as it has:

1) a sinuous course rather than a straight trajectory,

2) the sides are not parallel throughout its length (both of these points have been made previously by Harding 1981, 91),

3) it is not definitely associated with any of the known late Neolithic funerary monuments of the plain,

4) it passes through a so called henge which is a characteristic which no known cursus shares.

This droveway is almost certainly structurally later than the Coupland enclosure (as it will now be referred to) as the ditches converge to respect both entrances of the enclosure (Harding 1981, 91). However, the enclosure must still have been upstanding when the droveway was built in order for its entrances to be respected by the droveway. As such it is very likely that the two monuments are contemporary and were used for an associated purpose. Harding, who recorded these monuments, has also previously stated this view (*ibid*). Given the anomalous character of these features, in relation to the known and dated late Neolithic monuments with which they have been previously associated, the possibility that they are associated with an earlier Neolithic stock control system is suggested. In an attempt to test the assumptions referred to above an excavation by the author was mounted on these monuments during late summer 1995 (*cf.* Waddington 1996). The excavation demonstrated that: 1) the enclosure and droveway were not only contemporary but were constructed to form an integrated complex with a gate to regulate access into the enclosure, 2) the form of the droveway, which turned out to be a slot trench for a plank fence standing c.1.2m high above ground, is consonant with a use as a droveway rather than a cursus, and 3) the whole monument complex appears to date to the early Neolithic on the basis of early Neolithic pottery (Grimston Ware) from sealed contexts, however C14 dates from these contexts to confirm such an attribution are still awaited at the time of writing (see also appendix 1).

Recent field and mapwork has revealed a direct link between the Coupland enclosure and the cup and ring marked rock possibly associated with the Broomridge IGA at Roughting Linn which is situated near to a waterfall and immediately adjacent to an unusual undated enclosure. A trackway specifically connects this, the single largest known carved outcrop rock in England (Roughting Linn), directly with the Coupland enclosure 5.9km away (fig.14). This trackway, which is now overlain by a modern road for much of its course, is demonstrably ancient as for part of its course it exists as a sunken way up to 1.7m below the level of the adjacent fields in places (fig.15), before it crosses the river Till at Redscar Bridge near to where Neolithic pottery has been discovered (Miket 1976, 113-114) and the old fording point of the Till. In adition, fig. 14 clearly shows that nearly all the other roads and trackways in the Milfield area respect the ancient trackway, according to the 'T-junction rule' (*cf.* Fleming 1988) whereby the abutting boundary, or road for that matter, must be the later of the two. Those roads in the SW corner of the map are modern roads put in to circumnavigate the airfield which was constructed there. The field boundaries which pass straight across the track are likewise relatively modern and demarcate stands of woodland used as windbreaks. Bearing these considerations in mind it is manifestly evident, when later roads and boundaries are stripped away in sequence, that the trackway connecting the Coupland enclosure and Roughting Linn is the earliest axis evident in the landscape, and its importance as an arterial route has persisted over time. This communication route is particularly important as it lends support to the argument for a direct relationship between cup and ring marked outcrop rocks in the IGA pastoral zone with the main zone of settlement outside the IGA area. In this case the Roughting Linn rock could have been significant as an aggregation area for stock on the grazing zone to the east of the river where herds were assembled before being driven down to the settlement zone via the droveway. The occurrence of an unusual multivallate enclosure, which interestingly uses water courses to define most of its perimeter immediately next to the carved rock, makes this a legitimate possibility. The route/track from Roughting Linn to the Coupland enclosure may have been one used specifically by people rather than animals, especially as it is more direct than the droveway route which could have been a routeway from a wider catchment of IGAs once the herds had been driven over at a convenient fording point. Co-incidence does not adequately explain how two points in the landscape (ie. Roughting Linn and the Coupland

Fig 15a. Sunken track on routeway connecting Roughting linn and the Coupland enclosure.

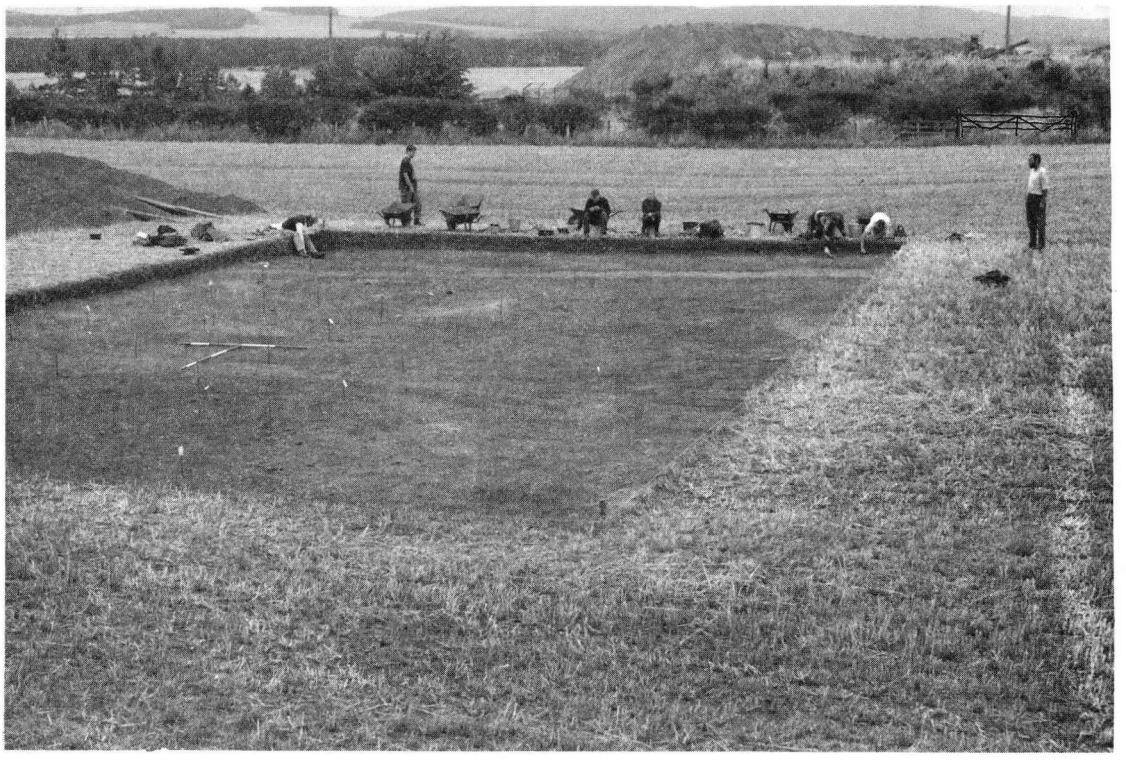


Fig. 15b. Disused fieldgate (top right) marking the course of the ancient track where it terminates at the north entrance of the Coupland enclosure (area under excavation).

Enclosure)separated by 5.6km as the crow flies, appear to be directly connected by a track that is of demonstrable antiquity in places, and at one end terminates precisely at one of these points (ie. the Coupland Enclosure. see fig. 15b).

The Coupland enclosure, located in the centre of the settlement belt, would provide a central place within easy access to the whole community, allowing for aggregations of both animals and people to take place. The slaughter and division of resources among the community may have taken place here, mediated through ceremonial activities possibly including mass feasting, as has been suggested took place at causewayed enclosures in southern England (Smith 1971, 100), and participated in by the whole community. Such an event at a set time, or times, each year would act both as a regulating device by which to measure time and gauge the activities of the subsistence and transhumance cycle, as well as providing a focus for inter and intra-community aggregations where communal bonds could be reaffirmed, disputes settled, goods and gifts exchanged and marriage partners acquired and/or suited for. Other communal aggregations may have taken place at less regular intervals. For example, the burial of a respected person at the local tomb would have required an initial aggregation of people to build the tomb, and then subsequently to carry out funerary rituals, which no doubt also required an audience and after-burial care and attention. Offerings and other ritual activities connected with encountering the world of the other through the mediation of bedrock may have taken place at cup and ring marked sites at certain times of the year to ensure a healthy and bounteous future for the community.

Other Aspects of Neolithic Land-Use and Behaviour

The author's fieldwalking programme is aimed at sampling a transect over the valley from the Cheviots in the west to the sandstones in the east in an attempt to enhance the understanding of the patterning of human behaviour over the different environmental zones of the Cheviots, plain, and sandstone fells. The material recovered, together with that previously collected by Dr. Weyman from the valley floor around Thirlings, shows that chert, agate and quartz were being worked, coming from local sources in the glacial deposits. Some of the flint probably comes from the local glacial deposits and beach material available from the coast 8.5 miles away. A few pieces of high quality black and brown flint, probably imported from outside the area, have been recovered. Most of the stone axes known from the Milfield study area are thought to be of north-east manufacture and are made from sandstone schist, porphyry, greywacke slate and probably limestone (Miket 1987). The two flint axes, both found near Milfield village, are imported material and the value of this flint is demonstrated by their reworking to provide quarries for other smaller tools (*ibid*). In summary, on the strength of the results to date, the lithic material suggests a reliance predominantly on the procurement and use of local materials, while access to more wide ranging exchange networks is demonstrated, though apparently only exploited on a modest scale.

Similarly, pottery manufacture is a locally based industry using local sources of clay, mainly found exposed in the river sections of the Till and Glen. Diatom analysis has confirmed that the clay for a Grimston Ware pot from the Milfield Basin came from these local sources (Gibson 1986, 97-99). Angular quartz and banded agate was crushed and used as temper in the Grimston Ware pots and again this occurs locally in the glacial outwash sands and gravels (Miket 1987, chapter 3). The lack of decoration on the local early Neolithic pottery means that no reference of note can be made to stylistic traits and thus affinities with other early Neolithic traditions. The early Neolithic pottery so far recovered from the study area is all classic Grimston Ware. (*cf.* Miket 1987; Harding 1981, 127-8; Hope-Taylor 1977, 352-3; Waddington 1996).

Woodland management must have played an important role not only in the creation of clearances for settlement and agriculture, but also in the production of suitable timber for structures, tools and possibly boats/ canoes. Most of the stone axe finds have come from the valley floor, suggesting that this was the main focus for clearance during the Neolithic, although this pattern is partly a function of where modern agriculture and archaeological survey have been concentrated. The forest could also offer a source of supplement foods such as nuts, berries and fruits, together with herb types useful for medicinal purposes amongst other things.

Hunting probably remained an important activity, taking place on the Cheviots and open sandstone moors outside the IGAs. The proximity of rivers, which are still heavily fished today and within the migration limit of anadromous fish (which includes sea trout and salmon) would have offered another source of foodstuffs. Gathering, of resources such as nuts, forest fruits and grasses, may have been undertaken. The climatic conditions in the Milfield Plain today, which consist of the highest amount of sunshine hours anywhere in Northumberland, rainfall spread evenly throughout the year, and a location on the interface between diverse but attractive ecozones, does conjure the image of an early Neolithic 'happy valley', which oddly enough is the actual name of the valley through which the Wooler Water flows before it debouches into the Till. However, the Neolithic defended promontory at Meldon Bridge in the borders is a reminder that it was not always a romantic Eldorado in these hills for the Neolithic cowboy.

The Neolithic settlements at Thirlings dated to 3280 +/- 150bc and 3250 +/- 150 bc and Yeavering dated to 2940 +/- 90bc, and the Grimston Ware dated sites at The Hirsel and Coupland, mean that this model is not a static snapshot of a specific phase, but rather the sum of behavioural patterns over a period of about 500-1,000 years. This model is only intended to be applied at this broad chronological scale as it cannot take account of the ebb and flow of shorter oscillations between episodes of intensification and contraction due to the coarseness of the

indicators available. In the light of continued fieldwork aimed at testing predictions generated by this model and enhancing the data set, modifications, ammendments and continued reassessment of the model is expected.

The model is viewed as having implications beyond just a framework for early Neolithic life in the Milfield Basin. It is viewed as having the potential to help understand and explain the transition from hunter-gatherer societies to pastoral communities, in semi-upland Britain by offering insights into:

1) the mechanisms by which the transition was affected,

2) the people involved, ie. the indigenous vs. colonist/invader question,

3) the continuity of 'Mesolithic' behaviour and ideology into the 'Neolithic' and supporting the need for a new 'age' system and the nonsense of the terms 'Mesolithic' and 'Neolithic' in their present forms, and

4) the roles of cup and ring marks and the incorporation of their study into mainstream Neolithic studies.

Endnote

There is sometimes a fine line between making an argument strong and being downright misleading. I hope to have achieved the former and not the latter, by making the model and its development as explicit as possible. Because of the very nature of IGAs (ie. inscribing of a *naturally* defined area of the landscape) unequivocal proof of their function cannot ever be expected to be found. In truth this statement can be extended to include the function of many prehistoric features significant at a landscape scale. However, by generating predictions which can be tested in the field (some of which already have, and have provided a positive result so far) this model moves out of the realm of hypothesis into that of a legitimate interpretative model. Admittance of our frailty in terms of firm archaeological knowledge is not a sign of 'unprofessionalism', lack of 'scientific' rigour or a lacuna in our nuts and bolts understanding. Rather it is an objective assessment which recognises the danger of overstating what amounts to personal tendentious conclusions. Ultimately this zoning of the landscape in the early Neolithic period around the Milfield basin is a product of my own holistic reading of landscape features, environmental expectations and archaeological relationships placed in a spatial framework supported by ethnographic considerations. I have indulged in speculation to provoke ideas, though I have made these speculations explicit where they occur.

Acknowledgements

Although many have encouraged me to write down this interpretative account, Paul Frodsham deserves special mention for his enthusiastic support and for discussing its contents at length. I am also grateful to Mark Gillings and Rob Witcher for comments on earlier drafts and to John Barrett for discussion of aspects of the model.

Appendix 1

Coupland Enclosure Excavations 1995.

A sealed context below the upper fill of the droveway ditch produced several large sherds of diagnostic Grimston Ware suggesting that the droveway must have been constructed during the early Neolithic. As the enclosure is structurally earlier that the droveway then this must be no later in origin than the early Neolithic either. Radiocarbon dates are awaited. Two substantial post pits, one at either side of the northern entrance causeway, provided evidence for a gateway arrangement, probably only up to chest height. The 'droveway' had consisted of two parallel plank fences also up to chest height. Early Neolithic 'domestic pits' apparently earlier than the enclosure, were also discovered.

Conclusions. It appears that the Coupland complex does belong to the early Neolithic and the structural remains of the enclosure, its entrance and the double ditched linear feature are consonant with their use as a stock kraal and droveway respectively. Although this IGA model, generated from a reading of the the cup and ring phenomenon, is borne out by testing in the field this does not mean this model is now proven. Rather, on the present evidence, the model so far is not wrong.

Footnotes

[1] Preliminary geoarchaeological work during Spring 1995 carried out by the Dept. of Geography (Dr. D. Passmore) in conjunction with the author included a series of cores in the two fields immediately east of Redscar Bridge.

[2] These colluvial (hillwash) deposits can only have been formed after these slopes were cleared of their tree cover, which until then would have kept the soil in a relatively stable state. After clearance the soils would then have been rendered unstable and susceptible to erosion and thus the formation of colluvial deposits at the base of the slope. The present pollen diagrams from the sandstones indicate that the sandstones were not significantly cleared until c.1800BC (see main text).

[3] The cup and ring tradition is assumed to have existed since at least the early Neolithic on the basis of the following evidence. 1) The cup tradition at least is certainlyknown to have been in place since the early Neolithic as a cup marked slab was found in a sealed archaeological context lying directly on top of a deposit dated to 3240 +/-105 bc in the Dalladies long barrow which was stated as being "presumptively contemporary with it" (Piggot 1973, 33). 2) A vast concentration of cup marks occur on the capstone of the Pentre Ifan portal dolmen, a class of monument considered to be early to mid Neolithic in date. 3) A re-used and weathered cup marked slab is incorporated into the passage roof at Newgrange and there are cup marks on the reverse side of some of the kerbstones around the tomb. The construction of this tomb is dated to 2475 +/- 45bc and 2465 +/- 40bc (O'Kelly 1982, 231), and this implies that the cup marked slabs which are undoubtedly re-used are from significantly earlier (ie. early Neolithic) contexts. Cup and ring marks occur predominantly on outcropping bedrock, or 'living rock', and earthfast boulders, and it is this living rock open air context which is considered to be the principal context of occurrence from the early Neolithic to the beginning of the late Neolithic (ie. c.4000-2100bc). This assumption is strengthened by the fact that many of the cup and ring marked stone slabs and portables found in late Neolithic contexts, such as in chambered tombs and cairns, have evidently been broken off/quarried from bedrock and carved in an earlier period. Standing stones with cup and ring carvings below

ground level indicate that the stone was part of a carved rock surface before it was quarried and erected as a standing stone (Hadingham 1974, 66), again implying an origin for cup and ring carvings on outcrop rock much earlier in the Neolithic than the construction of megaliths. An example of a standing stone that has been carved prior to its erection is a stone on the north side of the Temple Wood stone circle, Argyll, which has a spiral partly hidden by the packing material around the base of the stone (Hadingham 1974, 66).

[4] So far this only consists of three sites: Yeavering, Thirlings and Coupland, although provisional interpretation of the authors fieldwalking programme indicates a band of Neolithic settlement on the low slopes of Whitton Hill, immediately north of the modern settlement of Milfield, and Miket (1987)discovered a thin spread of charcoal stained soil at the Whitton Hill 'ritual enclosure' site 2, dated to 2870 +/-80 bc, which could be the remains of pre-monument domestic occupation.

[5] Only two demonstrably early Neolithic tombs are known in the Milfield Basin as yet; these being the Broomridge barrow excavated by Greenwell which produced Grimston Ware pottery and the Dod Hill long cairn identified by T. Gates.

[6] In Northumberland, as elsewhere in the north, if a mound is round, and/or very small and low, it is not necessarily Bronze Age and could in fact be Neolithic as has been shown to be the case at a number of sites in Northumberland (Burgess 1984, 138-139).

[7] These pits were recognised through geophysical survey by Harding, 1981, 91)

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