

An Archaeological Resource Assessment and Research Agenda for The Neolithic and Early-Middle Bronze Age of the East Midlands

Patrick Clay

Introduction

This document comprises a Stage 2 resource assessment and draft research agenda for the Neolithic and Bronze Age (Early – Middle) of the East Midlands. It builds upon the assessments for Derbyshire, Nottinghamshire, Lincolnshire, Leicestershire, Rutland and Northamptonshire presented at a seminar at County Hall, Leicester on 28.1.1999 (Bishop 1999; Chapman 1999, Clay 1999a; Membury 1999; Myers 1999).

The introduction of farming into Britain beginning in the 5th millennium BC saw a fundamental change in the way people lived and interacted. The change however may have been very gradual and have left few tangible traces. Our understanding of early farming communities in Britain has seen considerable advances over the past twenty-five years much of which has been based on work in the south of England (e.g. Bradley 1978; Whittle 1978; Barker 1985; Kinnes 1988; Thomas 1991; Barrett 1994; Harding 1995; Edmonds 1999). However there is increasing awareness from research examining other parts of Britain that generalised models based on the south of England may not always be relevant (e.g. Frodsham 1996; Harding *et al* 1996).

Present models of Neolithic settlement in Britain offer alternative interpretations. Whereas the traditional model identified a rapid pioneering phase of agriculture from the late fifth millennium BC, with a slow-down later in the third millennium BC (Whittle 1978), more recent interpretations have challenged this (Thomas 1991, Barrett 1994). Thomas questioned whether arable farming and permanent settlement was a significant aspect of Neolithic life (1991, 28) while Barrett (1994), suggested that during the Earlier Neolithic non-intensive agricultural practices using long-fallow horticulture and some animal pasturing were added to the activities already undertaken by Mesolithic groups. It was argued that more intensive farming with shorter periods of time for the land to lie fallow was only to follow later, in the second millennium BC, with a consequent need for more permanent settlement. The timing of this transition has been contested, with arguments for earlier change in upland and western regions being put forward (Barnatt 1999). The picture which was emerging was one in which the Neolithic landscape and settlement was characterized by mobility (Whittle 1997).

This model however, has been questioned. While the mobility model may be applied to much of Britain it appears to be at variance with the data from the continent and Ireland (Cooney 1997). From the few Earlier Neolithic settlement sites which have been examined, for example Balbridie, Grampian Region (Fairweather and Ralston 1993) and, from this region, Lismore Fields, Buxton (Garton 1991; below p.00) there is strong evidence for the storage of cereals (Jones 2000). This may be seen as evidence supporting the traditional view of cereal-based economies in the Earlier Neolithic comparable to the evidence from continental Europe and Ireland (Rowley-Conwy 1981; 2000). However, in view of the small number of sites with this type of information it has been suggested (not entirely convincingly) that these two sites may have been non-typical or non-domestic (Thomas 1996). The long-fallow cultivation model has also been questioned by Glynis Jones who has argued that it would have been possible to cultivate small plots or gardens in the long term without the need for ploughing or for long fallow periods (Jones 2000, 83). Both models may be over-simplistic in that when animal husbandry is

placed in the equation, then different facets of any community's activities may well work in different ways. Similarly, there is no reason to assume that there were not significant regional differences in farming practice, particularly when upland and lowland situations are compared.

Other aspects of Neolithic life have been examined, including how people perceived the land around them and the nature of tenure, which may have been centred around rights of access rather than ownership (Barrett 1994; Tilley 1994; Barnatt 1996a; Edmonds and Seabourne 2001). While the concept of territories has been adduced for the Neolithic of Wessex and Scotland for example (Renfrew 1973; 1976), these may not be relevant for communities which may still have been essentially mobile. Their concept of space and access to a landscape will have been based on historical knowledge of an area passed down with previous sequences or events within the landscape influencing group's responses. 'Good' experiences in an area might lead to an area being frequently re-utilised whereas 'bad' experiences might lead to the area being avoided. Historical knowledge might be reflected in the archaeological record where multi-period use of one location is detected. This historical knowledge might also have had a symbolic significance. Areas with their own 'mythology' or ritual importance might influence their interaction with different prehistoric groups. All of these factors might lead to the use, re-use or avoidance of different areas, while purely environmental factors may have been of less significance.

It is against this background of lively debate that the evidence from the Neolithic and Bronze Age of the East Midlands can be assessed and an attempt made to formulate a research agenda.

The Nature of the Evidence

In considering an archaeological resource assessment it should be remembered that the resource is the surviving landscape and what it contains. The data recorded in the Sites and Monuments Records are a starting point. For this exercise the landscape resource can be defined as an area of the midlands demarcated by the present county boundaries of Northamptonshire, Leicestershire, Rutland, Lincolnshire, Nottinghamshire and Derbyshire - some 15688 sq km. It can be argued that the East Midlands does not form a coherent region (McCullagh 1963; Dury 1963) and many parts of the study area fit better into other landscape zones, for example the Lincolnshire fen edge with its continuation into Cambridgeshire, north Lincolnshire with South Humberside, the Derbyshire uplands with their counterparts in south Yorkshire and north Staffordshire and the Trent valley with its upstream extension into south Staffordshire. While the study area is defined by the present county boundaries, adjacent areas will, therefore, be mentioned, where they may contribute to our understanding of the region.

The above notwithstanding, the six counties provide a remarkable range and variety of landscape zones – in many ways a palimpsest of the landscape of Britain – crossing highland and lowland and including fen and coastal areas. From a research perspective this can be used to advantage. A transect running northwest to south east from the Derbyshire Peak uplands in the northwest of the region to the Lincolnshire fen edge will encompass a wide range of topographies and substrata including, for example, gritstone uplands, magnesian limestone, coal measures, Bunter sandstones, Trent river gravels and alluvium, Mercia mudstones, boulder clay, glacial gravels, Jurassic ridge limestones, Northampton Sand ironstones, Liassic clays, fen alluvium and Oxford clay. The Neolithic and Bronze Age communities in the region would, therefore, have exploited to varying extents a wide and distinctive range of contrasting environments.

With a few exceptions (e.g. the Derbyshire uplands; the Lincolnshire chalk wolds, alluvial and colluvial buried landscapes) the region is dominated by areas of arable farmland. Much of the region has seen successful agricultural exploitation since the Roman period which, together with

urban development, opencast coal mining, gravel-, limestone-, and ironstone-quarrying, has had a considerable impact on the survival of the regions prehistory. This is highlighted by the data from Northamptonshire which suggests that *c.* 75% of the county has been heavily ploughed, 12% quarried or damaged by urban development with only 2-3% having remained unploughed and undeveloped during medieval and modern times and thus having potential for surviving pre-medieval earthworks, and 6% protected beneath alluvium or colluvium (Kidd 1999). It has been argued (Mills 1985, 41) that it is the landscape zones such as these with long histories of arable farming that were also likely to have been preferred by early farming communities.

Findspots, artefact scatters and cropmarks are the most common categories for the Neolithic and Bronze Age in the Sites and Monuments Records for the six counties. With the exception of the Derbyshire Peak District, earthworks are rare but present within each of the counties in small numbers, including long barrows on the Lincolnshire Wolds, a henge monument at Gunthorpe, Nottinghamshire, round barrows at Wakerly Wood and Woodford, Northamptonshire and at Lockington and Sproxtton, Leicestershire. Important discoveries have also been made following geophysical survey (eg Husbands Bosworth causewayed enclosure, Leicestershire), trial trenching (Redlands Farm long barrow, Stanwick, Northamptonshire) and excavations (e.g the ritual complex at West Cotton, Northamptonshire) many of which have been in post-PPG16 contexts.

In examining the evidence for the Neolithic and Bronze Age (and other periods) it must be remembered that systematic survey has been undertaken only in a few areas and consideration of the Sites and Monument Record (SMR) in isolation will reproduce inherent biases (Mills 1985). The subsoil of the much of the area is not conducive to aerial reconnaissance (Pickering and Hartley 1985; Pickering 1989) and the potential of large areas of pasture and alluvium remains unknown. Therefore extrapolation and model-building from well-surveyed areas will, arguably, be a better basis for understanding how the area was exploited than using SMR-generated data alone.

The region has developed a tradition of fieldwalking surveys with important pioneering work by, for example, Radley and Cooper (1968) in Derbyshire, Foard (1979) and Hall (1985) in Northamptonshire and Liddle (1985; 1994) in Leicestershire. There has also been active research into the Neolithic and Bronze Age of the region dating back to the work of Thomas Bateman and to a lesser extent earlier antiquarians such as Hayman Rooke and the Rev. Pegge. These periods were considered of major importance in various documents looking at priorities for the region (e.g Mahany (ed) 1977; Courtney and Hart 1977, Foard 1979; Hart 1981; DAAC 1986; Clay 1989; Barnatt and Smith 1991; Garton 1991) while research has included an examination of the Neolithic and Bronze Age of the Peak District of Derbyshire (Hawke-Smith 1979; Bradley and Hart 1983; Garton 1991; Barnatt 1996a; 1999; Edmonds and Seabourne 2001), the Middle and Upper Trent Basin (Vine 1982), the western Fen margin and Bain valley in Lincolnshire (Chowne 1988) and the East Midlands claylands (Clay 1996 and forthcoming). Research into specific types of monument has included ceremonial monuments and field systems in the Peak District (Barnatt 1986; 1987; 1990; 1996b, 1996c) and long barrows and elongated enclosures in Lincolnshire (Jones 1998).

There have been several extensive surveys within the region, using a variety of techniques including the RCHME survey of Northamptonshire (RCHME 1975; 1979; 1981; 1982; 1985), the North Derbyshire Survey (Hart 1981), the Peak District Transect Survey (Myers 1991; Barnatt 1996a), the Fenland survey (Haynes and Lane 1992; Lane 1993), the Lincolnshire Wolds survey (Philips 1989), the Raunds Area Survey (Parry 1994 and forthcoming), the Medbourne Survey (Liddle 1994), the Roystone Grange Survey (Hodges 1991), the Derbyshire gritstone moors

surveys (RCHME and PPJPB 1993; Ainsworth and Barnatt 1998; Barnatt 2000, 28-42; Ainsworth 2001), and the Trent Valley Survey (Knight and Howard 1994). Smaller more intensive surveys, for example, Brigstock, Northamptonshire (Foster 1994), Brixworth, Northamptonshire (Martin and Hall 1985), the Bain Valley Survey (Chowne 1984; 1994), Ropsley and Humby, Lincolnshire (Lane 1995), Kenslow, Derbyshire (Garton and Beswick 1983), the Meden valley (Philips and Guirr 1984) and Tuxford areas of Nottinghamshire (Bishop 1999), the Swift Valley, Leicestershire and Oakham, Rutland (Clay 1998; 1999b; forthcoming) have also been undertaken. The region has also seen a growing database of palaeoenvironmental data (Hicks 1971; 1972; Knight and Howard 1994; Brown 2000; Monckton 1995; Rosseff *et al* forthcoming). Building on the results of these surveys, models for landscape exploitation, settlement and land use during the Neolithic and Bronze Age can be developed, and data from surveyed areas will be emphasised in this paper.

Lithics form a significant part of the material evidence and important groups of material from the area have been analysed (e.g Garton *et al* 1989; Healey 1998; Humble forthcoming). Humble's interpretation of a lithic chronology based on his work in the Raunds Area Survey is reproduced as an appendix. Interpretation of the locations of settlements based on lithic scatters, however, does have limitations (e.g Healy 1992; Yorston *et al* 1990). This is exacerbated in an area where flint sources are less readily available than in other regions (Henson 1982; 1983). The locations of possible settlement areas on the basis of surface collections can be suggested, however, following Schofield (1991) with the identification of retouched flint and cores perhaps having more significance than the overall density of lithic material.

Chronology

For the purpose of this assessment the following period headings have been used (following Brown and Murphy 1997). Middle Bronze Age is used to cover the period 1500-1000BC to differentiate it from the Later Bronze Age which is used in the chapter on the 1st millennium BC (Willis 2001).

Earlier Neolithic - c. 4000BC-2800BC

Later Neolithic/Earlier Bronze Age - c. 2800BC-1500BC

Middle Bronze Age - c. 1500BC - 1000BC

It is acknowledged however that further refinement is possible in those rare occurrences where there are stratified lithic and pottery groups and a more sophisticated chronology might be as follows:

Early Neolithic (bowl pottery) – c. 4000-3500

Middle Neolithic (Peterborough ware)- c. 3500-2500

Late Neolithic (Grooved ware; Beaker pottery) c. 2500-2000

Early Bronze Age (Beaker pottery; Collared urns, Food Vessels) – c. 2000-1500

Middle Bronze Age (Bucket Urns; Deverel Rimbury ware) – c. 1500 – 1000

Causewayed enclosures, cursuses, long barrows, chambered cairns and long enclosures are included in the Earlier Neolithic section while acknowledging that some may have continued to be used and served as *foci* well into the Later Neolithic – Earlier Bronze Age (and later). All radiocarbon dates quoted are calibrated to two standard deviations (95 per cent confidence) following Stuiver *et al* (1993).

For the resource assessment the evidence has been divided into broad categories of information including settlement, environment and land use, ceremonial areas, riverine activity and material culture. Ceremonial areas are also subdivided into different categories. It should be noted however that many of these overlap and settlements, for example, may have included ceremonial elements and it is the inter-relationship of these elements which will be of key importance.

Earlier Neolithic

Settlement

Settlement evidence for the Earlier Neolithic is elusive throughout Britain. However one of the few settlements with evidence for buildings of this period is known from the region together with other more ephemeral evidence.

At Lismore Fields, Buxton, Derbyshire an Earlier Neolithic settlement has been excavated following evaluation across a projected line of a Roman road (Garton 1991, 12-13). Situated on boulder clay substratum within an upland basin formed by the Wye Valley at 300m OD and surrounded on all sides by hills the site consisted of a lithic and pottery assemblage associated with a group of features including sub-rectangular buildings with preserved floors, post holes and pits. Analysis of the ground plans has suggested that three similar structures are present. Charred plant remains from the buildings included emmer grains and chaff and flax seeds. A series of five radiocarbon dates ranging between 3990-3105 cal BC (95%) were obtained from this site.

Other settlement evidence can be interpreted from a contrasting low-lying stream and river-side areas close to the confluence of the Soar and Thurlaston Brook, north of Croft, Leicestershire. Here possible palisade gullies for post-ring round-houses have been located dated, on the basis of C14 and lithic evidence to the Earlier Neolithic (Hughes and Rosseff 1995, 105).

Other possible settlements within this period have been identified from excavations at Aston, Derbyshire (Reaney 1968), Ecton, Northamptonshire (Moore and Williams 1975), Dragonby, Lincolnshire (May 1976, 43) and Great Ponton (Philips 1935) in Lincolnshire. Earlier Neolithic pits were located at Tattershall Thorpe, Lincolnshire during the excavation of a Later Neolithic-Earlier Bronze Age surface scatter (Chowne 1993).

Most putative settlement evidence, however, comes from surface scatters, 'site signatures' which may denote the presence of former settlement or associated activity. Interpretation of what activities are represented by these surface scatters remains unclear although some assumptions of what may constitute the discard from a settlement, albeit of uncertain duration, has been attempted by Schofield (1991).

While lithic scatters containing Earlier Neolithic material are widespread throughout the region, little synthesis of this data has been attempted at a sub-regional level. One area where this has been attempted is of a 4200 sq km area centred on Leicestershire and north Northamptonshire (Clay 1996; forthcoming). Here forty-one flint scatters may indicate the presence of settlement areas used by Earlier Neolithic groups with 34.7 per cent located above clay substrata. The mean height above O.D. for the scatters was lower than that for the Mesolithic at 111.26 m compared to 119.25 m, and the average distance from core area to a water source are very similar at 0.36 km compared to 0.38 km. The most popular aspect was an arc between the southeast and southwest.

Several fieldwalking surveys have been undertaken in Derbyshire, including the North Derbyshire transect survey crossing three topographical zones in the Peak District (Myers 1991;

Barnatt 1996a, 50). This demonstrated some correlation between Later Mesolithic and Earlier Neolithic material. Detailed fieldwalking undertaken at Mount Pleasant, Kenslow, Derbyshire (Garton and Beswick 1983) has located distinct clusters of lithics and pottery from which Earlier Neolithic activity could be identified. Other surveys on the Derbyshire uplands including fieldwalking, test pitting and shovel probe surveys (Hodges 1991; McElearey 1992; Myers 1992) suggests that on the limestone, flint scatters containing Earlier Neolithic arrowheads again show a high level of coincidence with scatters containing Later Mesolithic material. This picture has been confirmed and extended by further surface collection projects indicating that in the valley locations there is also a coincidence in the occurrence of materials from these two periods (Myers 1999).

In other areas where systematic survey has been undertaken, at Medbourne (Liddle 1994), the Swift valley (Clay 1996; 1999), Oakham (Clay 1998) and Raunds (Parry 1994; forthcoming), surface lithic scatters containing Earlier Neolithic material are present in valley side locations. At both Medbourne and Raunds low density Earlier Neolithic material has the same distribution as that for the Later Mesolithic. The intensive survey in the Swift Valley included three possible settlement areas, all situated on boulder clay substrata at c. 120 m O.D. on one south- and two north-facing slopes overlooking the River Swift. Earlier Neolithic activity was present on the same Liassic clay area of the Oakham survey as a Later Mesolithic area (Clay 1998). Densities vary from one 'settlement area' every 2 sq. km at Misterton to one every 4.8 sq. km at Medbourne. Lithic densities from the Swift valley survey are comparable with those from surveys of chalkland areas in the south of England including those in East Berkshire, the Maddall Farm area, Wiltshire and the Vale of White Horse, Oxfordshire (Ford 1987; Gaffney and Tingle 1989; Tingle 1991).

Environment and land use

Pollen analysis of samples from the ombrogenous peat bogs in North Derbyshire (Hicks 1971; 1972) have noted pre-Elm decline disturbance to vegetation at Hipper Sick and Totley Moss (Hicks 1971, 655; 1972, 6) which may be due to human interference. From the late fourth to early third millennium BC a series of minor intrusions may have reflected the short-term activity of herders with their animals (Hicks 1972). No evidence of cereal pollen was present in these profiles until the Earlier Bronze Age although, as cereal pollen does not travel far, particularly in a closed wooded environment, its absence from the deep bogs where the pollen cores were taken is not unexpected.

Pollen and insect data from palaeochannels in the East Midlands are also providing information on the palaeo-environment during the Earlier Neolithic. Former river channels active during this period are known from the White Peak, Derbyshire (Wiltshire and Edwards 1993; Taylor *et al* 1994), the Idle valley, Collingham (Bishop 1999), Cottam and Colwick, Nottinghamshire (Salisbury *et al* 1984), Castle Donington (Hemington Fields), Croft and Kirby Muxloe, Leicestershire (Rosseff *et al* forthcoming; Brown forthcoming) and Irthlingborough, Wellingborough, West Cotton and Wollaston, Northamptonshire (Brown 2000). Pollen profiles and insect evidence for most of these areas indicate undisturbed mixed woodland during the Earlier Neolithic, although these may not show small cleared areas which may be visible in pollen profiles (Barnatt 1996a, 51). Evidence of clearance in the first half of the third millennium BC is evident, however, from analysis of former channels in the White Peak (Wiltshire and Edwards 1993; Taylor *et al* 1994). Pollen analysis from deposits at Wellingborough suggest that the local slopes of the Nene had been deforested (Brown 2000, 57) while a partially open environment centred on two islands was interpreted from Wollaston (Brown 2000, 58). Pollen analysis from a palaeochannel between Stanwick and West Cotton suggested an open environment with grass and

no cereals (Brown 2000). A pollen diagram from Collingham, Nottinghamshire has indicated the presence of cultivated cereals in a pre-Elm decline context (Bishop 1999). Cereal pollen is present in an immediately post-Elm decline diagram from Cottam, Nottinghamshire (Scaife and Allen, 1999). There is also evidence for a partially cleared floodplain area below a horizon dated to 2950-2050 Cal BC from a pollen profile at Narborough, Leicestershire (Brown 2000).

Pollen and plant and insect remains from the waterlogged lower fills of the Redlands Farm long barrow indicate that the monument was built in lightly-grazed grassland, within a recent clearing (Brown 2000; Robinson forthcoming; Wiltshire forthcoming). Molluscan assemblages from Giants Hill 2, Skendleby (Evans 1991) were consistent with a grassland environment which had been partly cultivated. Charred plant remains from the buildings at Lismore Field, Buxton (see above) included emmer grains and chaff, flax seeds, hazelnuts and crab apple fruits and seeds. Emmer wheat seeds are recorded from Aston on Trent associated with Grimston ware pottery (Reaney 1968) while charred wheat seeds are known from the ditch deposits associated with Giants Hill 1 long barrow at Skendleby, Lincolnshire, although these may have been of Later Neolithic date (Philips 1936; May 1976, 46). Opium poppy seeds have been located in early fills of the Redlands Farm long barrow, Stanwick (Robinson and Campbell forthcoming; F. Healy pers.comm.).

Fire-setting of tree stumps is interpreted from buried features dated to 3990-3810 CAL BC, beneath an Early Bronze Age barrow at Sproxton, Leicestershire. Soil and land snail fauna analyses of the buried soil indicated a phase of arable land-use followed by pasture with no evidence of woodland regeneration before the construction of the monument (Clay 1981, 10; 1999b, 7). Charcoal from tree throw pits at Irthlingborough, Northamptonshire suggest sequential burning out of stumps between c. 5300 to 3330 Cal BC (Brown 2000; Healy and Harding forthcoming).

Animal bone including both wild and domesticated species, including red and roe deer, pig, cow, sheep/goat, horse and dog has been recovered from the long barrow at Perryfoot in the Derbyshire Peak District (Pennington 1877). Animal bone is also known from the excavations of two long barrows at Skendleby (Philips 1936; Evans and Simpson 1991). While most came from the ditches and may be of Later Neolithic date small quantities of domestic cattle, red and roe deer, pig and dog were recorded from the façade trench and pre-mound soil at Giants Hill 2.

Ceremonial and burial monuments

Causewayed enclosures

Aerial photography has extended the distribution of causewayed enclosures into the Midland river valleys (Wilson 1975; Palmer 1976). Eight examples are known from the six counties comprising four from Lincolnshire at Uffington, Barholm, South Rauceby and Dowsby, (May 1976) three from Northamptonshire at Briar Hill (Bamford 1985), Dallington (RCHME 1985, 30 and fig 2) and Southwick (RCHME 1975, 86) and one from Husbands Bosworth, Leicestershire (Butler and Thomas 1999). All but one were located from aerial photography, the exception being Husbands Bosworth which was found by gradiometer survey targeting a flint scatter (Butler and Thomas 1999; Clay 1999b). Together with the Cambridgeshire causewayed enclosures at Etton, Northborough and Upton (Oswald *et al* 2001, 149-150), these form part of a concentration of these monuments the density of which is matched only in Wessex and the Cotswolds

Gardoms Edge and Cratcliffe Rocks, Derbyshire (Ainsworth and Barnatt 1998; Barnatt and Smith 1997, 34; Makepeace 1999) may represent upland causewayed enclosures previously identified as

hillforts. The enclosure at Gardoms Edge encloses the eastern side of a crest, with the western side formed by a precipitous scarp. It consists of a massive rubble and boulder bank currently 5 to 9 metres wide and 1 to 1.5 metres high partially overlain by Bronze Age cairns and field systems. Along its length of just under 600 metres are a series of approximately seven entrances. Recent excavations have shown it is non-defensive and multiphased; radio-carbon dates are awaited (Barnatt *et al* 1995-2000).

Other than the work on Gardoms Edge and limited trial trenching at Dallington (Chapman 1999) and Husbands Bosworth (Butler and Thomas 1999) only one causewayed enclosure has been excavated, at Briar Hill, Northamptonshire (Bamford 1985). This indicated long-term use but with only intermittent re-cutting of its ditch segments, suggesting that this evidently large-scale ritual site was never marked on the ground by anything more than a line of pits and low, and probably intermittent banks. From radiocarbon dating and the ditches were being re-cut in the late fourth millennium BC and an early fourth millennium BC for its construction might be suggested. The Briar Hill, Husbands Bosworth and Barholm examples are of similar form with closely grouped concentric double ditches forming ovoid enclosures.

Chambered cairns, long barrows and long enclosures'

A second group of Earlier Neolithic monuments comprise chambered cairns, long barrows and long enclosures. Long enclosures, usually located from aerial photography, may in some cases be the ploughed out remains of long barrows (Loveday and Petchey 1982).

For the Derbyshire Peak District, Barnatt (1996b, 130; 1996c, 85;) lists up to 11 long barrows and 16 chambered tombs, the latter being the earlier monuments (Barnatt 1996a, 52). Small-scale excavation of seven of these has been undertaken (Barnatt and Collis 1996, 17) most of which showed evidence of prior disturbance. Of particular note are the early C14 dates (4360-3990 cal BC, 4310-3775 cal BC and 4075-3720 cal BC) from inhumations located within a chambered tomb which was later incorporated into a long cairn at Whitwell, Derbyshire (Schulting *et al* 2000).

Fifteen long barrows are recorded as earthwork survivals on the Lincolnshire Wolds forming two groups in the central and southern sectors of the Wolds with outliers at Tathwell and Walmsgate (May 1976, 45). Six of the barrows are either paired or associated with long enclosures and the Giants Hills barrows at Skendleby have been subject to excavation (Philips 1936; Evans and Simpson 1991). The extensive excavation of Giants Hill 1 revealed six burials (two males, three females and a child). Radiocarbon dates from antlers found in the barrow ditch suggest the barrow was constructed between 3500 and 2700 CAL BC. The earliest features on Giants Hill 2 were dated between 3500 and 3000 BC. The remains of three individuals were recovered all showing evidence of scavenger damage suggesting exhumation before being placed within a mortuary area which was then covered by a mound (Evans and Simpson 1991). Outside the Wolds group only five other long barrows are known from Lincolnshire. At Harlaxton in south Lincolnshire a 'ritual complex' includes a trapezoidal long-barrow type enclosure (Jones 1998). A 'bank barrow' is known from Long Low (Barnatt and Collis 1996; Barnatt 1996a, Fig.2) while a narrow cropmark at Maesyn Ridware, to the west of the study area in the Staffordshire Trent valley, may be evidence of another (R. Loveday pers. comm.).

Nottinghamshire lists twenty-one sub-rectangular long enclosures located from aerial photography. No communal burial mounds, either long barrows or long cairns, are known from Leicestershire and Rutland although cropmarks of enclosures from Misterton, Ketton and Harston (Pickering and Hartley 1985, 58; 74) may indicate ploughed out long barrows (Loveday 1980;

Loveday and Petchey 1982) or long enclosures. Excavations at Eye Kettleby, Melton Mowbray (Finn 1998 and forthcoming) have identified two sub-rectangular Earlier Neolithic 'elongated' enclosures, both with single south-west facing entrances.

The only certain example of a long barrow in Northamptonshire is the excavated site at Redlands Farm, Stanwick dated to 3800–3640 cal BC (Moore and Jackson 1990; Keevill 1992). The distribution of possible long barrow sites in this county from cropmarks shows them to be concentrated on and around the tributary streams that form the headwaters of the River Nene.

Neolithic long enclosures have been excavated at Aldwinckle (Jackson 1976), Grendon (Gibson and McCormick 1985) and Tansor (Chapman 1997), Northamptonshire. The limited available evidence suggests that they went out of use c 3,000 and were mounded over in the Early Bronze Age half a millennium later. Along with the Redlands Farm long barrow, they form a chain of Neolithic long enclosure spaced at intervals of 10.5 - 12.5 km along the Nene valley which is continued by the example at Orton Meadows, Cambridgeshire, both Neolithic phases of which were built in the early to mid fourth millennium (F. Healy pers. comm.).

A group of sites at West Cotton recorded as part of the Raunds Area Survey include a long mound measuring 135 m in length and a long enclosure 100 m in length. The first, with its underlying structure of regular bays, has clear affinities to the long barrow tradition, but its overall form and scale has no direct local parallels. The long enclosure appears to have some affinities to cursus monuments in form. Another example has been identified from excavations at Grendon (Gibson and McCormick 1985) and others are known from cropmarks (Loveday 1989, fig 4.10).

Cursus Monuments

Cursus Monuments are known from aerial photography at Aston-on-Trent (Gibson and Loveday 1989; Garton and Elliot 1998), and Willington (Potlock) in South Derbyshire (Wheeler 1970; Knight 1998) and Normanton on Soar in Nottinghamshire. Radiocarbon dates from excavations at Willington indicate an early third millennium date for its construction (R. Loveday pers. comm.). No cursus monuments are known from Leicestershire, Rutland, Lincolnshire and Northamptonshire (but see above). Jones (1998, 100) has suggested that the apparent absence of cursuses in areas of the Midlands may be due to linear post/pit-alignment monuments being adopted as an alternative to cursus building. Examples of these alignments are suggested from Lincolnshire at Steingot and Bag Enderby (Jones 1998, 100). However, without excavation these may easily be confused with pit alignments of Later Bronze Age or Iron Age date.

Riverine activity

A possible trackway with C14 dates of 4720-4490 and 4480-4320 Cal BC has been located during a watching brief at a gravel quarry at Aston, Derbyshire (C. Salisbury pers. comm.). At Castle Donington, Leicestershire a group of timber posts was also located during a watching brief of gravel extraction. Subsequent radiocarbon measurement of a sample from these timbers suggested a date of c. 3600-3300 Cal BC (Clay and Salisbury 1990, 290). From analogy with other timber structures in the area this has been interpreted as a fishweir, which would make it the earliest example so far identified in Britain.

Material Culture

The Great Langdale polished stone axes (Group VI) are the most common lithic axe type (Clay 1999; RCHME 1980) from the region while the Charnwood area is a source for the Group XX axes although the exact location is unknown (Bradley 1989; Clough and Cummins 1988). The possibility of control of movement of these axes between the cursus/henge complexes at Aston and Willington in South Derbyshire and the Arbor Low area of the White Peak along the Dove-Derwent corridor has been suggested (Loveday forthcoming). The Derbyshire White Peak also shows a concentration of groups VI and VII axes, notably on the shallow calcareous soils of the limestone plateau (Hawke-Smith 1979, 121) and it has also been suggested that this shows control of access to these items.

A distinctive range of elaborate artefacts, known as a 'macehead complex', has been postulated from the Arbor Low area (Vine 1982; Bradley and Hart 1983). The use of imported raw materials and a low level of local chert use suggests extensive contacts beyond the Peak in the later part of this period.

Earlier Neolithic bowl pottery is known from various sites in the region including Dragonby, (May 1976, 43), Great Ponton, (Philips 1935), Tattershall Thorpe, (Chowne 1993), Langfor, Nottinghamshire (Holt *et al* 2001), Aston on Trent, (Reaney 1968), Oakham, (Gibson 1998, 318), Husbands Bosworth (P. Marsden pers.comm.) and Lockington, Leicestershire (Woodward 2000, 52). A radiocarbon date of 3500-2750 Cal BC was associated with the latter.

Blade production formed a regular part of Earlier Neolithic industries, differing from the late Mesolithic in the absence of bladelets reflecting the fact that blanks for microliths are no longer required. Diagnostic finished implements are limited and include leaf-shaped arrowheads, laurel leaves, serrated blades, serrated flakes, long end-scrapers and extended end-scrapers (Humble forthcoming).

Later Neolithic-Earlier Bronze Age

Settlement

Settlement evidence from the Later Neolithic-Earlier Bronze Age is again rare with most limited to discrete deposits such as pits or hearths with little in the way of structural survival. A Later Neolithic to Iron Age settlement associated with enclosed plots and yards has been examined at Swine Sty, Big Moor, Baslow, Derbyshire (Garton and Beswick forthcoming) while possible settlement evidence is also known from Aleck Low (Hart 1985a; Garton 1991). Structures associated with field systems have been located, for example, at Gibbet Moor, Gardoms Edge and Big Moor (Ainsworth 2001), although several of the round houses were subsequently excavated at Gardoms Edge appear to be of Later Bronze Age/Earlier Iron Age date; earlier artefacts were identified amongst the fields suggesting Later Neolithic/Earlier Bronze Age occupation, but its character is still open to debate (Barnatt *et al* 1995-2000). Extensive field systems have been located on the eastern moors of the Peak District (Barnatt 1986; 1987; 1999; 2000). Here clearance cairns have been located within a large number of small fields which were used throughout the second and first millennia BC. Pollen data suggests that clearance gradually expanded from the Later Neolithic onwards (Hicks 1971; 1972; Barnatt 1994; Long 1994; Long *et al* 1998).

Possible trapezoidal buildings associated with Later Neolithic and beaker pottery have been located in south Derbyshire at Willington, (Wheeler 1979, 58). More recent work on the floodplain immediately to the south has found evidence of post holes and pits associated with

Peterborough ware pottery adjacent to a burnt mound (below p.00; Beamish and Ripper 2000; Beamish 2001).

At Stanton on the Wolds, Nottinghamshire, excavations between 1938-1940 (Bird and Bird 1972) located Neolithic flintwork, animal bone and a hearth stratified within a circular saucer shaped depression 7.4m in diameter and over 1.25 deep, which has been interpreted as a hut. Study of the flints indicated a specialised industry with a few pebbles, only two cores, and very few primary flakes, together with a rarity of recognisable tool types. The distribution of finds within the depression appeared to suggest *foci* for different activities, which included food preparation or bone working, illustrated by a flint tool claimed as a 'marrow extractor' which was embedded in a piece of ox femur while sheep, pig, cattle and dog were all represented by the bone from the site.

A recent evaluation at Langford, Nottinghamshire has located pit and post hole features partly sealed beneath the Roman Fosse Way associated with bowl pottery, Peterborough ware and Beaker pottery (Holt *et al* 2001). Barley, spelt and hazelnut shells were present in pits sealed beneath the road agger (Snelling and Rackham 2001).

At Risby Warren, Lincolnshire, excavations between 1919 and 1933 located a spread of features associated with beaker pottery covering 0.5 hectares including 13 hearths and several pits (Dudley 1931; 1949; Riley 1957; May 1976, 65-6). Re-examination of the pottery and a radiocarbon date from Billingham, Lincolnshire has suggested that the settlement, formerly thought to be of Middle Bronze Age date, may better fit the Earlier Bronze Age (Chowne 1980; Chowne *et al* 2001; Bowman *et al* 1990; Lane 1995). The excavation of a sub-rectangular 'clothes line' enclosure forming part of an extensive fen edge complex revealed four phases of occupation beginning c. 1700-1600BC with a settlement containing four-post structures, evidence of cereal production and the presence of sheep/goats. At Deeping St James, Lincolnshire, an evaluation of a flint scatter as part of the Fenland Survey located four intercutting eaves drip gullies associated with Later Neolithic and Earlier Bronze Age pottery (Lane 1993; Lane 1994). Isolated pits containing Grooved ware pottery and flint are known from an increasing number of locations including Braunstone, Leicester (Albone 2000), Castle Donington, Eye Kettleby, and Syston, Leicestershire (Coward and Ripper 1998; Finn 1998; Meek 1998).

An excavation at Ecton, Northamptonshire, has located hearth debris associated with a scatter of shallow hollows, flint and Peterborough ware (Moore and Williams 1975). A small ditched enclosure has been excavated at Elton, Northamptonshire (French 1991). Although the enclosure was associated with possible domestic material there was also evidence of burial activity in the form of a pit with skeletal remains and the remains of a possible cairn.

Again, however, it is the evidence from surface scatters that is providing the wider scale picture of occupation in the region for the Later Neolithic-Earlier Bronze Age. Based on the study centred on Leicestershire and north Northamptonshire (Clay 1996; forthcoming) Later Neolithic - Earlier Bronze Age settlement areas might be suggested from twenty-five lithic scatters, with the highest proportion again occurring in boulder clay areas. These are situated at a lower mean altitude (104.3 OD) from those in the Earlier Neolithic, slightly further from water sources (0.41km) with 48 per cent favouring south-facing slopes. Based on surveyed areas an increase in 'settlement' density is suggested during the Later Neolithic-Earlier Bronze Age with one settlement area every 1.5 sq km for the Swift valley, and one every 3.6 sq km for Medbourne, Leicestershire.

A similar picture is apparent from other fieldwalking surveys including the Raunds Area survey (Parry forthcoming), Walton and Catton, Derbyshire (Myers 1999), the Meden valley, Nottinghamshire (Philips and Guirr 1984), Ropsley and Humby, Lincolnshire (Lane 1995) and the Fenland surveys (Hayes and Lane 1992; Lane 1993) where there is again an apparent increase in Later Neolithic-Earlier Bronze Age activity. Discrete areas of activity were discernible from detailed fieldwalking at Mount Pleasant, Kenslow (Garton and Beswick 1983). Evidence from lithic scatters is indicating the presence of activity of this period in areas previously thought to have remained unoccupied until later periods (Hall 1985) including claylands in Northamptonshire, Leicestershire (Clay 1996; forthcoming) and Nottinghamshire (Bishop 1999) and the coal measures areas in Derbyshire (Garton 1995).

Environment and land use

A rise in the non-arboreal to arboreal ratio in some of the pollen diagrams from East moor, Derbyshire at a horizon dated to c. 2200 Cal BC (Hicks 1971) may suggest a more widespread use of this area during the Later Neolithic-Earlier Bronze Age (Garton 1991). Cereal pollen is present in these diagrams from the Earlier Bronze Age. Pre-barrow arable and pastoral phases are suggested from buried soils beneath round barrows at Irthlingborough (Halpin 1987), Sproxtun (Clay 1981, 10) and Lockington (Posnansky 1955, 25).

Palaeochannels active during the Later Neolithic – Earlier Bronze Age have been located at Langford, Nottinghamshire (Garton *et al* 1997; Howard *et al* 1999), Willington, Derbyshire (Beamish 2001) West Cotton, Northamptonshire (Windell 1989), Colwick, Nottinghamshire (Knight and Howard 1994, 32), Croft, Leicestershire (Rosseff *et al* forthcoming), Kirby Muxloe (Brown forthcoming) and Castle Donington, Leicestershire (Cooper 1999).

An insect assemblage from Langford indicates the presence of mature woodland with oak, beech, lime, elm, ash, hazel and alder. Some grassland, perhaps in woodland glades is indicated by beetle species associated with grassland and exposed animal dung (Bishop 1999). The Later Neolithic environmental evidence from Croft and Kirby Muxloe (Rosseff *et al* forthcoming; Brown forthcoming) indicate woodland with Lime in common with other comparable Midlands sites. The former shows a post-elm decline mixed woodland with slight evidence of human activity (2280-2050 Cal BC). Pollen analysis from deposits at Wellingborough, Northamptonshire suggest clearance between 1825BC and 1660BC (Brown 2000).

Evidence of tree felling dated to the late third millennium BC has been located at Langford, Nottinghamshire (Garton *et al* 1997) while tree-throw pits at Husbands Bosworth, Leicestershire (J. Coward pers.comm) and Willington, Derbyshire (Beamish 2001) suggest clearance in the Later Neolithic (or possibly earlier).

Plant remains, including bread wheat, barley and hazelnut shell are known from the Later Neolithic pit circle site at Oakham, Rutland (Monckton 1995, 34; 1998) while crab apples have been found in a possible Later Neolithic context at Castle Donington, Leicestershire (Coward and Ripper 1998). Emmer is present in a pit at Lockington, Leicestershire dated to 1875-1645 Cal BC; (Monckton 1995, 34) while barley, spelt and hazelnut shells were present in Later Neolithic – Earlier Bronze Age pits at Langford, Nottinghamshire (above p.00; Snelling and Rackham 2001). Carbonised plant remains including wheat sp. and hazelnuts were recovered from the side ditches at Giants Hill 1, Skendleby, Lincolnshire (May 1976, 49).

Bone assemblages are rare with only small groups dating from this period. Of note is the remarkable group of cattle skulls from Irthlingborough (Halpin 1987; Davis and Payne 1993), and

groups from West Cotton, Northamptonshire (Windell 1989), Langford (Garton *et al* 1997), Stanton on the Wolds, Nottinghamshire (Bird and Bird 1972), Oakham, Rutland (Gouldwell 1998 and Sproxton, Leicestershire (Wainwright 1981). These included cattle, sheep, pig, red and roe deer and small mammal species which, at Oakham, suggested proximity to woodland. Animal bone from the ditch deposits at Giants Hill 1, Skendleby, Lincolnshire included cattle, sheep, red deer and fallow deer (May 1976, 49).

Ceremonial and burial monuments

Later Neolithic - Earlier Bronze Age ceremonial and burial areas can be interpreted from earthwork and, more commonly, cropmark evidence. Monuments with Earlier Neolithic origins continue to be used into the late third and early second millennium BC. These include the causewayed enclosures at Briar Hill (Bamford 1985) and Husbands Bosworth (Butler and Thomas 1999) and the cursus monuments at Aston on Trent (Gibson and Loveday 1989) and Potlock, Willington (Wheeler 1979) and often provide a focus for later monuments. A similar situation is known from the Maxey cursus area in Cambridgeshire immediately to the east of the study area. Other small monument complexes include, for example, that at Arbor Low where the henge and later round barrows were sited adjacent to an earlier long barrow.

Henges, Stone Circles, Post Circles and Pit-Circles

The most well-known henge monuments from the region are the Derbyshire upland examples at Arbor Low and the Bull Ring (Barnatt 1990; Harding and Lee 1987). Other examples are known from Bingham, Nottinghamshire, Gunthorpe, Nottinghamshire, West Ashby, Lincolnshire (Field 1985) and possibly Twyford, South Derbyshire. Cotton Henge at Raunds, Northamptonshire (Humble 1994), despite its name, may not be a henge. It is of distinctly unusual plan with no entrances and an exceptional disparity between the diameters of the inner and outer ditches, and evaluation left it undated (F. Healy pers. comm.). Classifications such as 'henge', however can be misleading and should be seen as part of a broad tradition including a wide range of different form of ceremonial monument which can show considerable local variation (e.g Clare 1986; 1987).

Stone circles and ring cairns are known from the Derbyshire Peak (Barnatt 1990). Post circles include the remarkable large example from East Stoke, Nottinghamshire (Harding and Lee, 1987, 28-29), Rearsby, Leicestershire (Clay 1999b) and West Ashby, Lincolnshire (Field 1985). Pit circles, are known from Oakham, Rutland where a sequence of three enclosures demarcated by pits, associated with Peterborough ware, located next to a small ring ditch surrounding a crouched burial were located (Clay 1998). It is likely that the pits originally marked the location of timber posts (Gibson 1994). The Trent valley sites should also be considered with the post/pit circle complex upstream at Barton-under-Needwood, Staffordshire (Harding and Lee 1987, 268).

Round barrows and Ring ditches

In common with evidence from other areas of Britain, round barrows and ring ditches are the most abundant form of Later Neolithic - Earlier Bronze Age monument from the region numbering over 800 and indicated by the presence of surviving mounds or, more commonly, cropmarks of ring ditches. Many of these form parts of cemetery groups or monument complexes (e.g Lockington; Hughes 2000a; Stroxtun, Lincolnshire, May 1976; Tallington, Lincolnshire; Simpson 1976; Harlaxton; Jones 1998). As might be expected the highest proportion of earthwork survivals are in the Derbyshire uplands (Barnatt and Collis 1996) where 187 unchambered round barrows and cairns are of Later Neolithic-Earlier Bronze Age date and the majority of another

443 undated barrows may also be of this period. Of note are the large oval chambered structures sometimes known as 'great barrows' at Minninglow, Tideslow, Stoney Low and Pea Low, paralleled from the Yorkshire Wolds and Wessex. Other possible 'great barrow' contenders are Round hill, Twyford and Cotton Henge (above p.00).

Most of the Derbyshire round barrows are of unditched bowl barrow type, 27 of which show visible remains of stone kerbs. Stone kerbs are also recorded in barrows at Ludford Magna, Lincolnshire (May 1976, 75) and Sproxton, Leicestershire (Clay 1981). Pre-mound timber circles are known from Deeping St Nicholas and Ludford Magna, Lincolnshire (French 1994; May 1976, 75), Sproxton and Eaton, Leicestershire (Clay 1981) and Raunds, Northamptonshire (F. Healy pers.comm.).

There have been numerous excavations undertaken of round barrows and ring ditches in the region including examples at Biggin, (Barnatt 1996b), Harland Edge (Riley 1966), Hindlow (Ashbee and Ashbee 1981) and Hognaston in Derbyshire (Collis 1996); Fiskerton, (O'Brien 1979) and Holme Pierrepont, Nottinghamshire (Guilbert 1999); Deeping St Nicholas (French 1994), Stroxtun (Greenfield 1985), Tallington (Simpson 1976) and West Ashby, Lincolnshire (Field 1985); Eaton (Clay 1981), Lockington (Posnansky 1955; Hughes 2000a), Sproxton (Clay 1981) Leicestershire and Aldwinckle, (Jackson 1976), Earls Barton, (Jackson 1984), Irthlingborough (Halpin 1987), West Cotton, Raunds, (Windell 1989) and Grendon Northamptonshire (Gibson and McCormick 1985),

The excavations of this type of monument have indicated a great variety of form and the majority have shown evidence of multi-phase use. While burials have been located in many of these monuments other examples may have served different functions (e.g. Lockington; Hughes 2000a; Holme Pierrepont; Guilbert 1999; Hoveringham; Elliot and Knight 1999). A variety of different burial practices are recorded from the excavations including crouched burials and cremations with and without grave goods. Excarnation is inferred from some burials (e.g. Sproxton; Stirland 1981) while more tangible evidence in the form of exposure platforms has been found at Longstone Edge, Derbyshire (Myers 1999) and Wigber Low (Collis 1983). The use of coffins is recorded at various sites including Deeping St Nicholas (French 1994, 100), Stroxtun, (Greenfield 1985), Tallington (Simpson 1976), West Ashby (Field 1985) and Eaton (Clay 1981).

Caves and Rock Shelters

It should also be noted that Later Neolithic – Earlier Bronze Age burials are known from locations other than barrows including caves and rock fissures (Bramwell 1973; Gilks 1989; Chamberlain and Williams 1998; Barnatt and Edmonds in press). At Church Dale, Derbyshire, for example, two ovoid cists were located, one associated with a crouched inhumation and child burial while the other contained disarticulated remains. Another crouched inhumation and 32 child burials were found nearby (Piggott 1953). Other burials of this period are known from Rains Cave (Ward 1889 1892; 1893), Dowel Dale, (Bramwell 1959), Fox Hole Cave, Dafur Ridge Cave, Seven Ways Cave (Bramwell 1971) and Treak Cliff (Armstrong 1923).

Rock Art

The gritstone rocks of the north Derbyshire uplands are a suitable medium for cup and ring rock art which are now thought to be of Neolithic and Bronze Age date (Bradley 1993; 1997; Beckensall 1999; Beckensall and Frodsham 1998). Of the best examples, four carvings are known from Gardoms Edge and Rowtor Rocks while two more are known from Eccleshall Wood to the

north of the study area near Sheffield. Two fine carvings have recently been identified at Ashover and further discoveries elsewhere in the Peak have been reviewed. Some other carvings have been found incorporated into later monuments (Barnatt and Reeder 1982; Barnatt and Frith 1983; Barnatt 1996a, 50; Barnatt and Robinson in press), for example the embanked stone circle at Barbrook (Barnatt 1990, 55-57) where cup-marked stones are located near a blocked entrance through the bank and incorporated into a cairn and a cist. The presence of rock art in these areas suggests that it was once common but has been eroded due to exposure to the elements (Barnatt 1996a, 50).

Away from the Peak District cup and ringed stones are recorded from Lockington and Tugby in Leicestershire (Hughes 2000b; Vine 1982, 249 and 409). The Lockington stone was in a partially filled ring ditch and may have served as a marker stone for the metalwork hoard (below p.00); a relationship between the deposition of metalwork and rock carvings has been suggested by Bradley (1997, 138).

Riverine activity

At West Cotton a timber platform has been located on the edge of a palaeochannel close to a complex of Neolithic-Earlier Bronze Age monuments (Windell 1989). Radiocarbon dates suggests construction between 2800 and 2500 cal BC (Parry forthcoming; Brown 2000).

The skeletal remains of twelve humans and associated animal bone and a fragment of withy basketwork were located during gravel extraction at Langford, Nottinghamshire. Dated to *c.* 2100BC these had built up behind a logjam in a palaeochannel (Garton *et al* 1997). The human remains may provide important evidence of how the dead, other than those that were not placed within burial monuments, were disposed of.

A Later Neolithic-Earlier Bronze Age burnt mound has been found during excavations in the floodplain of the Trent and Egginton Brook at Willington (Beamish and Ripper 2000; Beamish 2001). Associated with Peterborough ware pottery and flint, the structure is atypical being at some distance from the contemporary stream edge and near the apex of a gravel island. There is also evidence of food preparation and consumption on the site. A burnt mound at Hoveringham, Nottinghamshire has also been dated to the Later Neolithic-Earlier Bronze Age on the basis of radiocarbon and thermoluminescence dating programmes (Elliot and Knight 1999).

Material Culture

Later Neolithic pottery including Peterborough ware and Grooved ware is known from many sites in the region while Earlier Bronze Age pottery including examples of Beakers, Collared Urns and food vessels are relatively common (e.g. Allen 1988; Allen and Hopkins 2000). Of note is the collection of Early Bronze Age pottery and other artefacts from Peak District barrows excavated by Thomas Bateman (1848; 1861; Vine 1982) now held by Sheffield Museums.

Metalwork has been recorded as stray finds or occasionally in association with other material, often in Beaker contexts. Of note is the remarkable group from Lockington consisting of two gold armlets, and a copper alloy dagger associated with two Beaker style vessels (Needham 2000). The dagger is of composite construction and is a Breton import. Radiocarbon dates of 2580-2200 and 2190-1880 Cal BC were obtained from organic material adhering to the dagger with the latter date being more compatible with the group on typological grounds. Two gold objects are recorded from Lincolnshire; an armlet (since lost) from Cuxwold (May 1976, 100) and a torc from Haxey (Hawkes 1932).

Other finds of note from the region include jet buttons from burials at Irthlingborough (Halpin 1987), West Cotton (Windell 1989) and Warmington, Northamptonshire (Chapman 1999) and amber, faience and jet beads from Cossington, Leicestershire (Sturgess and Ripper 2000).

Lithic forms include short-end and extended end-scrapers, thumbnail type scrapers, transverse arrowheads, barbed and tanged arrowheads and scale flaked knives (Humble forthcoming).

Middle Bronze Age

Settlement

Middle Bronze Age evidence from the region is mainly in the form of metalwork, pottery and lithics. Settlement sites are rare although some of the Later Neolithic-Earlier Bronze Age 'settlement areas' identified from surface scatters (above p.00) may continue into the Middle Bronze Age.

The settlement at Billingborough (above p.00) appears to have continued in use into the Middle Bronze Age (Chowne and Lane 1987). A fragmentary settlement has been excavated on coal measures substrata at Tibshelf, Derbyshire (Manning 1995; Myers 1999) and a Middle Bronze Age field system has been examined at Humberstone, Leicester (Charles *et al* 2000). The latter has affinities with Deverel Rimbury enclosures identified in the south of England and may be part of a settlement (R. Bradley pers.comm.). A field system has been identified at Elton (French 1991) while at Stanwick, Northamptonshire two circular buildings lie next to a field system identified by two short lengths of fence. The base of an ash wood stake burnt *in situ* in a post hole in one fence is dated to 1390-1040 cal BC (2990±50 BP; GU-5320) while two emmer grains from a charred grain deposit in the top of a post hole in the other fence are dated to 1110-830 cal BC (2815±40 BP; OxA-7905) and 1050-830 cal BC (2795±40 BP; OxA-7946; F. Healy pers.comm.). Some as yet undated field systems located from aerial photography may be of Middle Bronze Age date.

Several Middle Bronze Age pottery scatters have been located during the Ropsley-Humby survey in Lincolnshire (Lane 1995, 19).

Environment and land use

An increase in clearance during the Middle Bronze Age is suggested from the palynological data on the East Moors where the non-arboreal to arboreal pollen ratio rises in a series of steps suggesting periods of woodland regeneration within a landscape which is gradually becoming cleared (Hicks 1972, 622).

Pollen, insect and plant macrofossil analyses from a Middle Bronze Age palaeochannel at Croft (Rosseff *et al* forthcoming) see a change from the mixed woodland of the Neolithic with an increase in Alder while grass pollen, cereal pollen and plant remains suggest some nearby cultivated or disturbed land. At Castle Donington similar environmental information from a Middle Bronze Age palaeochannel shows limited woodland and an increase in meadow land and pastureland species (A. Monckton pers. comm.). Spelt wheat has been recovered from charred remains from a pit cluster at Lockington, Leicestershire (c.1425-1260 Cal BC; Moffet and Monckton 2000).

Ceremonial and burial areas

The Middle Bronze Age sees a gradual change in burial practice from the use of barrows and the introduction of flat cremation cemeteries. However some barrows and ring-ditches included under the Later Neolithic / Earlier Bronze Age category may date from this period and re-use of Earlier Bronze Age ceremonial sites in the Middle Bronze Age is known from various sites including examples from Castle Donington (Coward and Ripper 1998), Cossington (O'Brien 1976) and Melton Mowbray (Finn 1998).

Flat cremation cemeteries are known from Hoveringham, Nottinghamshire (Allen *et al* 1987), Briar Hill (Bamford 1985), Chapel Brampton (Moore 1971; 1973), Kelmarsh, (Soden and Dix 1995, 15-16, figs 7-9 and 22), Redlands Farm, Stanwick, Northamptonshire (Keevil 1992), Long Bennington, (Allen *et al* 1987), Ropsley Rise, Old Somerby, Lincolnshire (Chowne and Lane 1987; Lane 1995), Cossington, (O'Brien 1976) and Eye Kettleby, Melton Mowbray, Leicestershire (Finn 1998). The cemetery at Eye Kettleby is one of the largest recorded from Britain comprising over eighty cremations, thirty in urns, located close to Earlier Bronze Age ring ditches. Excavations of an atypical cemetery at Eaglestone Flat in the Peak District, where some cremations were under small cairns while others were not (Barnatt 1994), demonstrates that some of our site typologies may be over-simplistic.

Riverine activity

An important discovery has been of a logboat, dated by radiocarbon measurement to 1440-1310 Cal BC, found with a cargo of stone during gravel quarrying at Aston, Derbyshire (C. Salisbury pers. comm.). A burnt mound, of possible Middle Bronze Age date, consisting of heated pebble debris and an associated timber lined trough has been recorded at Birstall, Leicestershire adjacent to a timber bridge (Ripper 1997). Butchered cattle bones from adjacent palaeochannels at both this site and another from Castle Donington may suggest that cooking/feasting may have been taking place (see above p.00) although other alternative interpretations including saunas are suggested from similar sites in the West Midlands (Hodder and Barfield 1990). Other burnt mounds have been recorded from the Trent valley including Waycar Pasture which was associated with a log and brushwood platform (Bishop 1999).

Material Culture

Middle Bronze Age metalwork from the region has mainly resulted from stray finds and includes side-looped spearheads, palstaves and long-bladed rapiers. The distribution of metalwork favours the river valleys of the Nene, Trent, Ancholme and Witham. A hoard of Middle Bronze Age metalwork from Appleby, Lincolnshire was associated with Later Bronze Age forms suggesting longevity and later deposition (May 1976, 95). Other metalwork of note includes a rapier from Langford (Knight 1997) and a 14th-13th century BC copper alloy bangle from Old Somerby (Chowne and Lane 1987, 40). Deverel Rimbury style pottery is common from the region and represented in many of the cremation cemeteries detailed above.

Middle Bronze Age flint working focused on the production of squat, thick hard-hammer flakes with obtuse platform angles and broad butts accompanied by opportunistic forms, points, denticulates, spurred implements and denticulated and miscellaneous scrapers (Humble forthcoming).

Discussion

The picture which is emerging from the resource assessment is that the region was being exploited extensively, if not intensively, between the fifth and second millennium BC. The Derbyshire uplands, major river and stream valleys throughout the region and the fen edge possesses enormous potential to increase our understanding of these periods. Even in eroded plough zone areas there is the potential to undertake research into the spatial distribution of activities during the period. The evidence however varies in its quality and accessibility while visibility and sample bias remain problems which need to be addressed.

It is notable that there does appear to have been a significant increase in the location of Neolithic and Bronze Age evidence since the implementation of PPG16. A graphic example of this is the 1000% increase in the number of find spots with Neolithic pottery from Leicestershire and Rutland since 1991. This increase in evidence reflects testing previously unknown areas and more large-scale excavations. However there is still a long way to go – the 1000% increase mentioned above brought the number of findspots from two to twenty. Stratified lithic and ceramic groups are still few in number and economic data is limited, partly due to the acidic nature of many river gravel deposits resulting in the paucity of bone survival. While bulk sieving has located plant remains in small numbers, including cereals, this has only indicated their presence and has not been enough to reconstruct different agricultural practices. There has been an increase in palaeo-environmental data showing recognition of its value to the region (e.g. the Trent valley; Bishop 1999).

In common with much of Britain the evidence for Earlier Neolithic occupation in the East Midlands is limited. With some notable exceptions (e.g. Lismore Fields, Buxton) clear evidence of agricultural activity is rare (Kinnes 1988). This may or may not indicate a real absence of activity or more probably differences in its character, but also highlights problems of visibility and survival. Identifying Earlier Neolithic activity from surface scatters is difficult in that the discard of waste may have been in more discrete areas and have used pits (Healy 1992). The evidence from the surveyed areas in the region reflect this in that the intensive surveys, for example those at Mount Pleasant (Garton and Beswick 1983), Oakham (Clay 1998) and the Swift valley (Clay 1996 and forthcoming) have identified Earlier Neolithic *foci* whereas these are rarely identified from the large scale extensive surveys using less intensive collecting methodologies (e.g. The Fenland, Raunds and Medbourne surveys).

Where these *foci* have been identified they have very often been in the same locations as Later Mesolithic scatters raising the problem of separating Earlier Neolithic and Later Mesolithic material (Pitts and Jacobi 1979). There may be a danger of treating lithics using blade technology as a chronological indicator of Later Mesolithic activity when the transition may have been significantly longer with this technology surviving well into the Earlier Neolithic in this region (Myers this volume; Young 1988). Further radiocarbon dating of well-associated lithic material is urgently needed.

Some indication of changes and the introduction of agricultural practices are present from the important palaeoenvironmental data which is present within the region. Cereal evidence was present at the Lismore Fields settlement and in one pre-Elm decline pollen diagram but this still does not help our understanding of how the area was being used. For example was it permanently or seasonally occupied? Is it evidence of the small scale long fallow agricultural practices suggested by Barrett (1994) or are other alternatives of pioneering agricultural expansion still valid (Jones 2000; Rowley-Conwy 2000)?

Earlier Neolithic ceremonial and burial sites are present albeit in small numbers compared to other parts of Britain. Causewayed enclosures appear to be restricted to the very northwest and

southeast of the region and may have been located at the interface of different communities 'home ranges'. Communal burial monuments are present in the Derbyshire peak, Lincolnshire Wolds and within the river valleys of the Trent, Nene and Swift. These apparent distributions however, may reflect problems of visibility and land use and in areas which are not conducive to cropmarks or geophysical survey many of these monuments may still remain undetected.

By the Later Neolithic - Earlier Bronze Age, although settlement areas are still difficult to detect, the results from surveys and the location of monuments does suggest some expansion onto perhaps previously unexploited land (but for example see Barnatt 1996a), together with the continued use of preferred locations many of which had also been occupied in the Mesolithic and Earlier Neolithic. The distribution of monuments is widespread but uneven and again is likely to reflect the distribution of areas where earthworks have survived and cropmarks have formed. Examination of Later Neolithic-Earlier Bronze Age monuments has indicated that there is a wide range of local variation in ceremonial and burial practices and monument construction and use. Burnt mounds are first identified during this period and they may reflect streamside ritual practices. In the lowlands, floodplain areas close to river and stream confluences are increasingly being recognised as possible ritual centres (Brown 2000).

The movement of both raw materials and finished artefacts is evident during this period for example in many high-quality artefacts found in Peak District barrows the 'macehead complex' of finds in the Arbor Low area and the import of continental metalwork (e.g. the Breton rapier from Lockington; Needham 2000). The comparison of flint-rich and flint-poor areas may provide information on transport of flint between the two, at various stages of the reduction sequence. This has the potential to shed light on how, over what distances, and over what general routes people were moving across the landscape, and on how the uses of different terrains may have been related.

Evidence for Middle Bronze Age activity is less common than that for the Later Neolithic-Earlier Bronze Age perhaps reflecting a lack of diagnostic lithic material and changes in the visibility of burial practices. Some surveys however, have identified an increase in Middle Bronze Age evidence for example the Ropsley-Humby survey where discrete scatters of pottery of this date have been identified as surface scatters (Lane 1995). Middle Bronze Age metalwork is evident from the river valleys, which may, in part, reflect their deliberate deposition in riverine contexts.

The data from areas where survey has been undertaken in the region is also showing evidence of Neolithic and Bronze Age activity in areas previously thought to be of low potential for example clay and coal measures substrata. No deliberate avoidance of clayland areas during this period is indicated from the Earlier Neolithic onwards. The true nature of these soils is unclear but the pure forest soils made available by clearance above clay substrata need not have inhibited pioneer agricultural practices. Indeed some of the East Midlands may have been covered by the fertile loess soils known to have been present in some parts of southern England, the extent of which is now difficult to deduce (Catt 1978; Foster 1994, 48). Clay-derived soils would have maintained their fertility for a longer period than, for example, limestone, chalk or sandy soils, and so may have been potentially of more value to pioneer farmers (Sherratt 1980; 1981; Mills 1985). While the boulder clay plateaux away from water sources were still only used intermittently, the clay vales were showing signs of occupation. One possible contributory factor to this may have been the warmer climate ('the climatic optimum') thought to have been experienced during this period where average temperatures were 2 degrees Celsius higher than those of the present day. In the east of the region where modern rainfall patterns are low, and assuming that these patterns can be extrapolated for the Later Neolithic - Earlier Bronze Age, the dryness and fertility of the soils may have been an important factor in the success or failure of arable and pastoral farming. The

greater qualities of water retention of clay soils may have increased their desirability and outweighed any drainage problems experienced during the winter.

Conclusion – towards models of occupation in the region

Covering such a wide and disparate landscape any attempt at an overall model of occupation during the Neolithic and Bronze Age is likely to be flawed and overly simplistic. While different parts of the region are likely to have many aspects of settlement and land-use in common there are also likely to be significant differences as communities adapted to different types of landscape. Two models are presented below based on ongoing research into two areas within the region. These should in no way be taken as definitive or necessarily applicable to other parts of the region but do show where research can enable interpretations of settlements and land use patterns to be attempted.

The Peak District

Some of the most advanced research for the region has been undertaken in the Derbyshire uplands where the quality of monument survival has enabled a far more detailed examination of Neolithic and Bronze Age evidence (e.g. Hawke-Smith 1979; Bradley and Hart 1983; Barnatt and Smith 1991; Garton 1991). Of particular note are the models of how the Peak District was occupied presented by John Barnatt (1996a; 1999; 2000). These re-interpreted some of the earlier research for the area and presented models of how Neolithic and Bronze Age exploitation took place within (and between) four different topographical zones of the area. The Earlier Neolithic period is seen as one where earlier Neolithic groups passed through the landscape at different times of year along traditional paths. They were to continue a seasonal cycle which had occurred for many previous generations but which now included grazing domesticates in the same areas which were also favoured by wild species such as deer (Barnatt 1996a, 50). Central upland pasture areas, where individual bands were more likely to meet each other, would have been shared tenure and the construction of chambered tombs would have identified places in the landscape which had meaning to the groups who had created them. Other more peripheral grazing areas have no monuments but are argued to have still been used extensively. Where there is evidence which might suggest more ‘permanent’ settlement for example the Lismore Fields site this may not be incompatible with a more mobile community but may reflect the fact that many members of the community would not have needed to have moved with the flocks and herds (Barnatt 1996a, 57).

The difference between farming practice in the Earlier Neolithic and the succeeding periods is interpreted as one of scale and location rather than the length of fallow period (Barrett 1994). The establishment of new arable plots or the extension of pasture would have necessitated the creation of clearings within or at the fringes of the woodland. Also, long established cleared ground would have been used more frequently for cultivation and grazing in a gradually more sustained way. By the Later Neolithic-Earlier Bronze Age the balance between farming and hunter-gatherer resources would have changed in favour of the former. There is a gradual change from communal tenure where resources were used in common to one of family holding (Barnatt 1999; 2000). This would have seen the development of a more sustained and perhaps sedentary lifestyle indicated by the development of extensive field systems. Monuments become more hierarchical for a while in the later Neolithic transitional phase, ranging from large communal henges through ‘great’ barrows to the first small ‘family’ barrows (Barnatt 1996a, 52). However, by the Earlier Bronze Age, there was a more local emphasis, with the building of many ‘family’ barrows and stone circles (Barnatt 1999; 2000).

The central lowlands

From the SMR and survey evidence a model has also been attempted for the less visible central lowland area of the region (Clay 1999; forthcoming). The data here suggest that in many cases communities were using the same locations as the Later Mesolithic groups which were situated close to the headwaters of streams and rivers. As the same Mesolithic groups gradually added non-intensive agricultural practices to their hunter-gatherer activities during the fourth millennium BC an expansion of occupation down stream from the 'core areas' located near to these headwaters appears to have taken place. Small-scale clearance to enable new areas to be cultivated, which, over time, would have led to a significant, if gradual, change in the landscape. The use of certain areas for more permanent settlement is perhaps suggested by the few communal monuments of this period which were perhaps constructed at the interface of the groups' 'home ranges'. It is likely that the Earlier Neolithic groups were still mobile with different areas used for different seasonal activities.

Some occupation, perhaps for ritual activities, of low-lying confluences was taking place (Brown 2000) with the interfluvies only being exploited intermittently. It is evident from this area that other environmental factors including slope and proximity to water are likely to have been more significant than the underlying substrata. This is especially true for the initial colonisation and first farming communities who would have been clearing and cultivating a forest brownearth or loess soil which would have been similar, whatever the underlying substrata. Non-environmental factors, not detectable in the archaeological record, may be of even greater significance, however (Mithen 1990).

By the late third – early second millennium BC while mobile stockherding to preferred seasonal pasturing areas was still taking place there may have been longer maintenance of cleared land and more intensive 'short fallow' agriculture (Barrett 1994) with allocation of land for ritual and burial rites, sometimes respecting or re-using areas where communal monuments had been established in the Earlier Neolithic. The maintenance of cleared land suitable for cultivation would have increased the importance of certain areas to these groups. This might have been reinforced by reverence of the groups' ancestors, who would have been seen as important in the establishment of their territories (Bradley 1984). The Later Neolithic – Earlier Bronze Age 'core areas' are more commonly situated at a slightly lower altitude, further downstream.

In the Middle Bronze Age there is the continued maintenance of cleared grassland surrounding 'core areas' first established in the Later Neolithic-Earlier Bronze Age. Ceremonial areas continue to be used with flat cemeteries often located between and on the edges of round barrows and ring ditches. Confluences and riverside locations continue to be of significance perhaps linked to ritual practices which have left their signature in the form of burnt mounds. Evidence for settlement in the second half of the second millennium BC, in common with many other areas, is elusive. To what extent this reflects the beginnings of a contraction in settlement in the face of a climatic deterioration and soil exhaustion or problems of the visibility of the archaeological evidence is unclear. However there were undoubtedly changes in the nature of settlement and society which become more apparent in the 1st millennium BC.

Towards a research agenda

While the current 'mobility' models have been used in this paper it is acknowledged there is the danger that these may become the new orthodoxy (Cooney 1997, 26). They do appear to fit the evidence we have for much of the East Midlands but this may be more a reflection of visibility and survival rather than a true indication of the how the region was being exploited. Within

different parts of the region (and the rest of Britain) at any one time there may have been early Neolithic mobile foragers, early Neolithic mobile forager-farmers and early Neolithic sedentary farmers. It is anticipated that there will be significant local and regional differences in the blend. The aim of any research agenda must be to develop brick-building research and the accumulation of direct indicators rather than too much reliance on assumptions. While new arguments will undoubtedly be formulated the way forward now does require new evidence (Rowley-Conwy 2000).

There is the potential in the East Midlands to make a significant contribution towards this study of the introduction and development of agriculture into Britain and associated activities during the Neolithic and Earlier Bronze Age. Despite some obvious gaps there has been enough high quality survey and research in the region to enable syntheses to be attempted and to suggest models, which can be challenged, modified and altered.

The following five themes can be suggested where data from the region has the potential to advance the debate and provide a framework for future research into the period. While there are numerous other themes and projects which can be addressed at a micro-regional level, for the purpose of this exercise the themes have deliberately been left broad in scope to avoid being prescriptive and provide a platform upon which more detailed research can be built.

- *The study of Later Mesolithic – Earlier Neolithic transitions.*

The transition period between the late Mesolithic and Earlier Neolithic involves hunter-gatherer / farmer contacts and questions whether farming did substitute or supplement the economy of Later Mesolithic cultures in the region. There is a high incidence where Earlier Neolithic material is found in the same location as Later Mesolithic material. This raises the question of whether these mixed lithic assemblages are evidence of a long period of use of the same location or whether lithics using blade industry techniques have a longer life. The examination of scatters where both materials are present, including the sub-surface may provide data enabling a comparison of the two assemblages to be made (e.g. Lismore Fields).

- *The introduction, character and development of agricultural practices*

This is of course an all-encompassing theme which covers the entire period and overlaps with the other themes. It is however crucial to our understanding of how the communities in the region interacted and exploited the area. Other aspects within this theme would include dated clearance sequences, alluviation and the introduction of field systems across the region. It will require an emphasis on ensuring palaeo-environmental data is addressed in fieldwork projects and, where appropriate, scientific dating programmes are included. While the acidity of the soils in some river gravel and upland areas has meant the loss of some economic data (e.g. animal bone) other areas do have better survival potential. The importance of areas with buried soil survival is fundamental to these questions.

There is also the opportunity to re-examine existing collections and re-assess their potential. Although the technique is still developing stable and radiogenic isotope analysis of dated burials may be able to indicate population movements and changes in diet over time which may provide significant information on the way in which agricultural practices changed during the Neolithic and Bronze Age.

- *The study of how different landscape zones were exploited from the 5th-2nd millennium BC.*

It is the remarkable variety of different landscapes that makes the East Midlands special in the study of landscape exploitation. By using compatible survey and fieldwork techniques the previous land-use of different landscape zones can be mapped and compared. These data may inform different models of how the landscape was adapted for on-site and off-site activities including settlement, arable and pastoral farming, transhumance, hunter gathering and ritual. This would enable the models suggested above to be tested and new ones formulated.

- *The development of ceremonial monuments and their environs*

One of the most significant developments of the period is the introduction of ceremonial monuments and their role in the social interaction of Neolithic and Earlier Bronze Age communities. The East Midlands includes a very wide variety of different monument type with considerable local variation, for example cursuses and henges appear to be present in some areas and absent in others (Jones 1998). There is the opportunity for preservation of monuments with mound and buried soil survival or detailed examination of others ideally within the context of their surrounding landscape (e.g. Cotton Henge, Northamptonshire). Of particular importance are areas with monument complexes. (e.g. Arbor Low, Aston on Trent, Harlaxton, Willington). Following the lead of the work at West Cotton there may be the potential to examine how these centres developed over time. The examination of river confluences and upland watersheds are other landscapes which warrant attention in view of the evidence for their use as ritual areas.

- *The nature of Neolithic and Bronze Age societies*

Study of the distribution patterns of Neolithic and Bronze Age sites and artefacts can help interpret how the different communities were organized. This will allow an assessment of differences in local and regional character when compared with better known areas like Wessex. In particular study of ceremonial and burial monuments and the character of their deposits can also enable the exploration of the nature of Neolithic and Bronze Age societies. There is significant research potential through the study of different types of burial to address the character of higher status and other types of grave goods and how this may reflect the nature of the societies that were using them. Other studies which may help address these questions may include the study of regional decorative styles of rock art and other materials such as pottery.

- *Access to resources and trade connections*

Trade patterns within the period are evident from the presence of different artefacts within the region. The potential of the Peak as a copper resource would repay attention. Evidence of Bronze Age mining has been located in the Ecton area of north Staffordshire (Barnatt and Thomas 1998). Further work on characterising and locating the source of lithic raw materials using visual and thin section analyses (Henson 1983; Brooks 1986) would enable more understanding of the access to resources.

One of the least visible aspects is in the routes used for trading contacts. Routeways would have been of particular significance in marking the landscape and it has been

suggested that cursuses were used to formalise or fix parts of these routes (Last 1998). One particular area where research might be concentrated is the Dove-Derwent corridor between the monument complexes at Aston/Willington and Arbor Low to test the model of movement of Group XX axes suggested by Loveday (forthcoming).

Most of the region already has policies in place, which would facilitate these research themes. To ensure that methodologies of data collection appropriate to this research agenda are in place the following approaches might be suggested.

- Land characterisation mapping of the region should be undertaken building on the Northamptonshire land use data and the terrain modeling included in the Trent valley survey. These should enable areas with potential for preservation of deposits e.g. unploughed areas, alluvium and colluvium.
- For specific questions an assessment of existing archives should be undertaken including an examination of the potential for further research including scientific analyses. These might include, for example lipid analysis of ceramics, DNA and isotope analyses of dated human bone collections.
- Surveys of different landscape zones should be undertaken. These might be in the form of transects across valleys encompassing different topographies and substrata following similar lines to the Peak District Transect Survey.
- Fieldwalking strategies should be appropriate to locating discrete Earlier Neolithic scatters including initial survey or re-survey at closer resolution if necessary.
- Palaeo-environmental samples should be taken from dated palaeochannels including small streams in addition to major rivers.
- Bulk sampling for plant remains should be undertaken of Neolithic - Bronze Age deposits (50 litres minimum). This should include evaluations as well as larger scale projects to enable a regional picture to be developed.
- Blank areas should be evaluated. The low visibility areas may have higher potential than the highly visible.
- Research should continue to target areas with better preservation and thus potential for fine-grained analysis, for example the Peak District and the alluviated river valleys building on previous work.
- Fieldwork involving monuments (round barrows or ring ditches) should include examination of the gaps between them.
- Resources should be in place to enable appropriate scientific analyses to be undertaken where the potential is recognized on future fieldwork projects (see above).

However confident we may be in predictive modeling the experience of locating Neolithic and Bronze Age evidence from the region indicates that we should still expect the unexpected.

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Patrick Clay 24.4.2001

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Appendix Suggested chronological indicators of worked lithic assemblages (adapted from Humble forthcoming; Core types from Clark *et al* 1960).

	Later Mesolithic	Earlier Neolithic	Later Neolithic- Earlier Bronze Age	Middle Bronze Age onwards
Core	Single and opposed platform cores prepared for bladelet production. B4 type cores; guide blades; core rejuvenation flakes	A and B type cores with flake and blade removals. Platform edge prepared prior to removals; guide blades, variety of core removal techniques	Mainly unclassifiable; some keeled and single platform; no blade removals; core rejuvenation flakes rare.	Mainly unclassifiable but some crude heeled and rare A types. Preparation fragments rare
Debitage	Bladelets, abraded butts, controlled and precise reduction	Blades, narrow flakes common. Small platforms, acute platform angles	Only slightly longer than broad; unprepared butts; 80-100 degree platform angles. Burnt shattered fragments are common	Squat broad flakes; hinge terminations; broad butts; obtuse platform angles; cortex platforms common. Less waste produced
Scrapers	End-on-blade scrapers	Long-end and extended-end scrapers	Short-end and extended-end scrapers very common, convex and concave edges; Thumbnail type	Denticulated and miscellaneous forms; thick supports; straight angular retouched edges
Other Implements	Narrow microliths - Obliquely and edged retouched and rods. Inverse basal retouch, microburins truncated blades	Leaf shaped arrowheads; serrated blades and flakes; laurel leaves. Few diagnostic forms	Transverse edged retouch, pointed forms on flakes; diverse and miscellaneous forms. Barbed and tanged arrowheads and scale-flaked knives.	Points, denticulates, spurred implements, points on irregular waste, cores used as supports; limited types, opportunistic forms